Local Power

Territorial Governance and the Citizen Energy Transition

Internship Memoir

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Abstract

The transition towards a society powered by renewable energy represents a profound transformation in the relationships between territories and the energy they consume and produce. These territories, multifaceted systems of constantly evolving relationships of proximity, are increasingly where conflict and cooperation over the nature of this transition take place. The present internship memoire investigates the interplay between systems for governing energy in France, focusing on the Citizen Energy movement. Whether led by public actors, citizens, or deep partnerships between the two, these organizations are shaped in their emergence and growth by their territory, and shape that territory in turn as they move from being small-scale local initiatives to playing a major role in future trajectory of the place where they were born. Understanding this process requires a detailed and wide-ranging understanding of the substrates out of which these projects emerge, and an analysis of one specific territory (Mond'Arverne Communauté) reveals both important strengths that a project can grow out of and weaknesses that could limit its long-term impact. At its most ambitious, Citizen Energy serves as a new approach to governance of renewable energy development, one in which the inhabitants and local public actors retake control of their own transition to make it by and for the territory.

Summary

List of abbreviations and acronyms

ADEME: Agency for the Ecological Transition, a national entity with departmental offices

ADUHME: local agency for energy and climate in the Puy-de-Dôme

CRE: Commission for the Regulation of Energy

CREP: Citizen Renewable Energy Project

EDF: Electricity of France

EPCI: Public establishment for intercommunal cooperation

kWh/MWh/GWh: Kilo/Mega/Giga-watt hours, a measure of quantity of electric power produced or consumed

kWp/MWp/GWp: Kilo/Mega/Giga-watt peak, a measure of the peak production capacity of an electricity production unit

MAC: Mond'Arverne Communauté

PCET/PCAET: Territorial Climate, Energy (and Air) Plan

PNR: Regional natural park

Solar PV: Solar photovoltaic

SAS: Simplified joint-stock company

SCIC: Cooperative common-interest company

SDE: Departmental syndicate for electricity and gas

SEM: Mixed economy company

SSE: Social and Solidatiry Economy

TEPOS: Positive energy territory

Introduction

We need an energy transition: that much, at least, is clear. The threats posed by greenhouse gas driven climate change to the health and safety of the vast majority of human beings are demonstrated every year by increasingly urgent scientific assessments, published by the highest international bodies (Hoegh-Guldberg et al., 2018). Our current, fossil fuel intensive, ways of producing and distributing electricity, are responsible for 42% of the greenhouse gasses emitted every year (IEA, n.d.). If we don't overhaul the way that energy is generated, distributed, and consumed, we will not be able to make the changes needed to our system in the short time we have left to avert the worst effects of climate change. Renewable energy technologies such as wind farms, solar arrays, biogas, and wood-based heating systems get more efficient and less expensive every year, offering at least a partial technical solution. But every energy system is also a social, economic, and political system. In the wealthy countries of the world, there exists the technical and productive capability to rapidly reduce dependence on non-renewable energy sources, and yet few if any of those governments are able to commit to truly ambitious goals. If not for purely technical reasons, then why?

Acknowledging the importance of a broader range of factors in any possible energy transition forces us to ask not only what sources of energy we will deploy, but how, with whom, against whom, and, just as importantly, where. Every renewable energy project is located in some specific place, and every location will have its own unique (social, political, economic) context that will impact how, and also whether, that project comes into being. In France, as elsewhere, numerous renewable energy projects have been stymied by local opposition, and others have gone forward in a way that reduces public support for the development of future projects (Rüdinger, 2016). Local-level opposition is certainly not the main reason for the continued failure to move quickly toward an energy transition. Nonetheless, a locally anchored, non-speculative, democratically governed, and ecologically committed approach to the building of critically important renewable energy infrastructure would seem to offer a path forward. A path toward a model of renewable energy development that could build political will for the energy transition and thereby carry it forward with and for, rather than without and against, France's diverse territories. This is the starting point for Citizen Energy.

The Citizen Energy movement that has developed in France, primarily over the past 20 years, attempts to make average citizens actors of an energy transition that is locally led from the bottom up (Energie Partagée, 2020). The broad array of actors that have come together to found this movement, both public and private, participate in an increasingly territorial governance of renewable energy systems in France which is molded by and molds those territories. Citizen Renewable Energy Projects are economic entities, selling the energy produced by their installations. They are also outgrowths of their territories that are locally anchored, non-speculative, democratic, and ecologically conscious (Energie Partagée, 2010). This internship takes place in this context of greater involvement by diverse institutions in this swiftly growing dynamic of Citizen Energy in France.

My internship was carried out from March 16th, 2020 to September 16th, 2020 in collaboration with three different organizations: HVL University in Norway, the ERASME center for excellence at Polytech Clermont University, and the intermunicipal government of Mond'Arverne Communauté. My work with HVL University took place within the European project Collective Action Models for Energy Transition and Social Innovation (COMETS), under the direction of Professor Valeria Jana Schwanitz and in collaboration with Professor August Hubert Wierling, and doctoral researcher Jan Pedro Zeiss. The goals of the COMETS project include understanding and quantifying the impact of Collective Action Initiatives on the energy transition throughout Europe. I was responsible for studying and reporting on the context in France and acquiring data on initiatives in the energy transition here. My responsibilities to HVL University also overlapped with my work with the ERASME Center in one important way: together with these two groups, I co-authored forthcoming articles on systems modeling applied to the question of CAIs in the production of renewable energy. These articles, and mastering the modeling methodology leading up to them, was the major focus of my work with the ERASME Center, overseen my Professor Arnaud Diemer, and in collaboration with Professor Cécile Batisse and fellow intern Steven Fournier. My work with Mond'Arverne Communauté was managed directly by Project Manager Michaël Grenouilloux and overseen by a steering committee composed of current and former elected officials, inter-municipal functionaries, members of ecological associations and founders of Citizen Energy cooperatives. I had two major responsibilities in my work with Mond'Arverne: on the one hand, performing a study on Citizen Renewable Energy Projects with a focus on how the intermunicipality could favor their emergence, and on the other hand, beginning the process of holding meetings and gathering interested stakeholders for such a project, including the organization of a café-debate on the place of average citizens in the energy transition. This internship context provided me with the opportunity to study the Citizen Energy movement in France, with a focus on the emergence of these initiatives and on their reciprocal impacts on the territories that they come from.

Along with documentary research, the primary method of information gathering for this investigation was a series of 37 semi-directive interviews with representatives of a broad range of organizations and institutions involved in some way in the energy transition in France. The interviewees work (or worked), in volunteer or paid positions, in local governments, state services, natural parks, small businesses, ecological organizations, non-profit networks, renewable energy production cooperatives, as consultants within the emerging field of Citizen Energy, and in other positions relevant to the subject of this paper. The full list of organizations, with interviews numbered for reference in this text, can be found in Appendix 1. The interviews were, for the most part, solicited by the author via email, performed via telephone, and recorded with the consent of the interviewees. The resulting audio and detailed notes are used in this paper as primary source material. New interviews were conducted on this basis until the point of saturation, when the responses given by each subsequent interviewee no longer provided significant new material for the study. After this saturation point, a smaller number of

interviews were performed with actors whose importance or significant experience made their inclusion in the study essential. Given the aims of this paper, which does not seek to establish a detailed analysis of the representations or discourse of the interviewees, no coding or classification scheme was attempted. The interviews are here treated as expressions of opinion, descriptions of personal experience, and the analysis of professionals in their domains of expertise, rather than objects of study in their own right. It would have been possible to evaluate the contents of the interviews more explicitly, and such an approach would certainly lead to valuable insights, but that is not the focus of this paper. An example of an interview structure and the questions posed can be found in Appendix 2. However, owing to the semi-directive and organization-specific nature of the interviews, each one is unique.

From the beginning of the process of investigation, our primary interest has been in understanding the factors that shape the emergence of, and later forms taken by, Citizen Renewable Energy Projects. Through study of many individual examples of these projects, it became clear that each one was unique and that the process by which they were created was both historically and territorially contingent. The specific configuration of actors, institutions, and economic conditions they encountered constituted a system within which these Citizen Energy projects grew. At the same time, for the oldest of these projects, it was clear that they were shaping the territory in turn. This dialectical relationship between Citizen Energy and the territories it emerges in brought us to further investigate the nature of the territories, their governance, and their development. A territory is more multifaceted than a simple geographic boundary, composed of its people, its history, its networks of relationships, and more, which can be understood as forms of proximity (Torre, 2019). Its governance, similarly, is an evolving process bringing in diverse stakeholders to pursue its development (Leloup, 2005). These systems bore both a clear resemblance to and relationship with our primary subject, leading to the central question of this study: **how does Citizen Energy in France both emerge from and impact its territories and their systems of territorial governance of energy?**

This study is broken down into three chapters. Chapter one will lay out the core concepts needed to understand the rest of the study. First, by pursuing usable definitions and more detailed understanding of territory and the proximities that are its building blocks, as well as territorial governance, differentiating it from territorial government, and territorial development. Second, by providing a history of the territorial governance of energy systems in France, up to and including the emergence of the Citizen Energy movement. Chapter two focuses on understanding Citizen Energy in detail, both at the level of specific Citizen Renewable Energy Projects and in terms of its relationships with the territorial governance of renewable energy. Finally, chapter three proposes a framework for assessing the "fit" between a territory and Citizen Energy as a major actor, or even as the primary philosophy, in its governance of renewable energy. The framework is then applied specifically to Mond'Arverne Communauté to attempt to test the tools proposed here and draw out potentially useful lessons.

1. Territorial Governance and France's Energy System

"[…] territory should not be understood as a simple spatial echelon among others – the local echelon, between a municipality and the state – where, through a proper application of subsidiarity, policies of proximity and adequate interfaces are built. It does not correspond to a neutral administrative layer where public policy is applied through a top-down hierarchical approach. (Leloup et al., 2005)[1] "

In this first chapter, we provide the necessary context to understand what follows, and in particular the evolutions of governance in France's electrical system from the early years up to the emergence of Citizen Energy, and to analyze the evolutions of this movement up to today. In section 1.1 we lay the basic theoretical framework that we will use throughout the rest of this study primarily by seeking definitions for several highly polysemic terms. Section 1.2 is devoted to a brief history of the development and governance of energy in France, allowing us to present the actors and systems that will be important for the rest of our discussion.

1.1. Defining Territorial Governance

1.1.1. What is a Territory?

To be able to describe the territorial governance of energy and its relationship with the modern Citizen Energy movement in France, we must first arrive at a definition of territory that suits our purposes and have some idea of how a given territory comes into being. To attempt to clarify what is often considered an excessively vague concept (Torre, 2015) we will first examine the different facets of the concept before bringing them together.

A territory, as a geographic entity, is a physical space on the earth with borders and a total extent influenced by, among other things, topography of physical features such as rivers or mountains. As we will see in our discussion of geographic proximities, this is a crucial dimension, as many territories are delineated based on measures of time and distance for travel from one place to another. Similarly, the historical political forces which set those borders have been influenced by geography. This relationship leads to the next conception of territory.

The administrative aspect of a territory generally springs naturally to mind as well. Here, the territory is understood as the area of operation of a government actor that does not overlap with other government actors *of the same scale* and is formally independent from them. A department exists within a region, within France, and within Europe, but no department can overlap with another one, for example. This very naturally poses the question of multi-scalar understandings of territory, which can complicate discussions on this topic. If a given point on

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[1] Translated from French by this author.

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a map can be within multiple territories at once, and administrated by many levels of government at the same time, the articulations between each territory and both the higher-order ones containing it and the lower-order ones contained by it (as well as those outside of it or overlapping it) become an important part of the definitions of each of those entities. An administrative understanding of territory is closely related to its historical dimension.

From a historical perspective, a territory is the sum of the major events and figures involved in giving it the shape and character it has today. Many territories were born and disappeared in the geographic zone that we now refer to as France, and each of them has left their mark on the culture, customs, languages, and borders of the modern nation-state. The territory's history continues to shape it concretely, in the forms of infrastructure, political institutions, and its productive systems. France, viewed in this way, is the sum of all of this history that led to the country we see today. In particular, the historical elements that make up the popular imaginations of the inhabitants of the territory, and those who consider it from the exterior, build the "story" of the territory that people tell themselves and others about it.

This narrative character embedded in society is the last approach that we will highlight here, although there are many others that we could. Put simply, in a social dimension, a territory is any place where the people who believe that they live in that territory, and attach some importance to it, live. Geographically, this can correspond to a lost historical territory, like the old region of Bourgogne, or to a bioregion, or some other shared construction of identity for its inhabitants. Its nature, along with what it means to live there or be from there, is are shared and evolving social constructions.

The definition of territory that we are using for this study embraces all of these elements. Torre (2019), in an article on proximity relations and their role in both territorial development and governance, provides hints as to what a territory is, by first saying what it is not:

> *"Territories are not mere geographical entities, but also collective productions resulting from the actions of a human group, with its citizens, its governance mechanisms and its organization. They are in continuous, long-term construction and develops through oppositions and compromises between local and external actors. They are characterized by a history and preoccupations rooted in local cultures and habits, a perceived sense of belonging, as well as modes of political authorities and specific organization and functioning rules."*

This description brings together all of the dimensions discussed in this section, underlining the fact that a territory is the constantly changing sum of many parts. Going further, Leloup (2011) suggests describing territories and their development using the framework of complex socio-economic systems, irreducible to the sum of their parts. While agreeing with the systemic character of the territory, Lamara (2009) underlines the importance of previously unidentified or unexploited territorial resources in the construction of a territory.

Helpfully, these wide definitions focusing on the dynamic and systemic aspects of territory allow us to take a vast array of factors into account when studying the actors and relationships at play. Less helpfully, they greatly increase the difficulty of describing the totality

of the forces operating there. While maintaining our attachment to this rich understanding of territory, we choose to focus most of our attention in this study on the actors, their relationships, and the different ways in which they are in proximity with one another. It is this approach through socio-economic proximities that will be our starting point in pursuing a more thorough understanding of territorial dynamics and what contributes to making each territory unique.

1.1.2. Constructing Territory out of Proximities

Prominent scholars on the questions of territorial governance and development hold that the many of the basic building blocks and driving forces underlying a territory, its construction, and its evolution can be understood in terms of proximities, both geographic and organized (Leloup et al, 2005; Torre, 2019). Their work has served to bring depth and texture to the analysis of territory, which has too long been treated as a neutral point in space by economics.

The proximities approach to the socio-economic analysis of territories is a relatively recent development, with the first systematic proposals for methodology dating back to the early 1990s (Bouba-Olga & Grossetti, 2008). Given both its newness and its growth in popularity over the past 10 years (Torre, 2019), it is unsurprising that a variety of definitions and schemas exist for describing and classifying proximity. For this study, we have chosen to adopt the simple two-proximity framework of Torre and Rallet (2005), which easily maps onto the Pecqueur and Zimmerman (2004) three-proximity framework. In both cases, the analysis of proximity relationships and their role in defining a territory begin with geographic proximity.

Geographic proximity is a relationship between two or more objects of study, usually socio-economic actors (i.e. organizations or individuals), specifically:

> *"Geographical proximity is above all about distance. In its simplest definition, it is the number of meters or kilometres [sic] that separate two entities. But it is relative in three ways: in terms of the morphological characteristics of the spaces in which activities take place. In terms of the availability of transport infrastructure. In terms of the financial resources of the individuals who use these transport infrastructures. (Torre, 2019)"*

The inclusion of time and cost, and not only physical distance, makes it clear that proximity is mediated by infrastructure and socio-economic structures of inequality, as well as raw geography. Two people connected by a low-cost high-speed rail line are "closer" to one another than two people separated by a mountain range, even if the number of kilometers separating each pair is the same. Similarly, a pair of wealthy people living on opposite ends of that same high-speed rail line should be thought of as being in greater spatial proximity to one another than a pair of poor people. Geographic proximity, then, should be understood not only as the physical distance between two objects, but also as the time and resource costs required to reduce that distance to zero, relative to the available resources of the actors in question. This form of proximity is the first and most important one in the definition of a territory.

Most obviously, geographic proximity circumscribes the area that a territory covers. Describing the process by which a territory comes into being, Leloup et al. place this proximity

center stage: *"It is built thanks to longstanding relations of geographic proximity between a wide variety of actors; these "neighbor" relations can lead to concrete actions and even the creation of common norms[2]"* (Leloup et al., 2005) Spatial proximity is thus the basic precondition for the construction of a territory; the ability for actors to interact cheaply and easily, both when they choose to and by happenstance, allows relationships to form between them. The relationships open the door to the creation of organized proximities.

Drawing on their previous work in the field, Torre (2019) explains that organized proximity refers to: *"the different ways of being close to other actors, regardless of the degree of geographical proximity between individuals."* This somewhat vast description is then specified by breaking it into two sub-categories: a logic of belonging and a logic of similarity.

Organized proximity based on a logic of belonging (organized-belonging) refers to the degree to which two actors are close to one another within a network of relationships. This specific form of proximity can be understood as roughly equivalent to *organizational proximity* from the work of Pecueur & Zimmerman (2004). Borrowing from the literature on social *embeddedness*, such as the works of Granovetter (1973, 2005), organized-belonging proximity can be understood as the distance between two or more actors on a graph of a social network in which those actors are represented by points and the ties between them as lines of various weights. The weights of these ties represent their strength, with stronger ties being those that we invest more time and resources into and tend to have greater trust in. The fewer ties that are needed to bridge the shortest distance between two actors, the more those actors are in proximity to one another.

This form of proximity is one of the primary determinants of the spread of information through a social network, with different network structures having different impacts on the speed and quality of information spread. Broadly, the closer two actors are to one another in the relationship graph the more easily information will pass from one to the other. By extension, if actors are arranged in a dense relationship graph (i.e. one in which each actor has multiple short relational pathways to reach each other actor), they are more likely to share the same set of information. Dense networks tend to be associated with strong shared social norms as they are easier to enforce and more regularly reinforced from multiple other actors in the network (Granovetter, 2005). This dynamic is the inverse of Granovetter's (1973) famous demonstration of the strength of weak ties, in which he shows that weak ties are more likely to provide novel information than strong ones, specifically because they tend to bridge gaps between otherwise disconnected social networks. We can easily see how the nature of the networks present in a given geographic area would be important determinants for the nature of territory in that place.

Extending Granovetter's arguments, we can posit that differences in network arrangements in a geographic area are reflected in differences in the territorial system there. An area characterized by many small, tight-knit social groups with strong ties internally that are only distantly connected to one another will not tend to circulate information rapidly through the network, but will tend to have robust, locally shared social norms and ideas about the world.

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[2] Translated from French by this author.

The "echo chamber" effect tends to reinforce shared norms and motivate action through imitation of others in the network (Granovetter, 2005). This might correspond to a rural zone in which the local topography and infrastructure makes travel between villages difficult, and in which most economic and social activity occurs at the level of family units. On the other hand, an area in which many people have many weak ties to many others, information will tend to move quickly through the network but the ability to enforce social norms or construct a shared representation of the territory (and who belongs) will be reduced. This is typical in a metropolitan setting with many different groups freely mixing with each other.

However, it is important to avoid caricaturing all rural zones as isolated and clannish and all urban areas as places of constant interaction and openness. A set of villages in the countryside that come together for regular markets, all contain workers in a nearby factory, and that maintain a vibrant scene for cultural events will be characterized by a "looser" network arrangement. Similarly, an urban area in which multiple tight-knit communities (ethnic, religious, class-based, or otherwise) exist side by side with little interaction might have dense, isolated networks. These different arrangements of the structures of organized-belonging proximity are both influenced by and influence the third form of proximity we will discuss here: organized-similarity.

Organized proximity based on a logic of similarity *"corresponds to a mental adherence to common categories; it manifests itself in small cognitive distances between some individuals. They can be people who are connected to one another through common projects, or share the same cultural, religious (etc.) values or symbols."* (Torre, 2019) This form of proximity can be read as equivalent to Pecueur & Zimmerman's (2004) institutional proximity, in that these projects, values, and symbols are all themselves institutions in the socio-economic sense. Torre goes on to say that this form of proximity can either develop within reciprocal relationships between actors, such as within a social network, or emerge from some pre-existing commonality between strangers and thus facilitate communication, such as being a part of a common diaspora. This form of proximity is then both a result and a facilitator of organized-belonging proximity. It is important to note that the shared ideas of any given organized-similarity proximity must, implicitly, contain some rules for inclusion and exclusion (Torre, 2019). For example, to be a "true" member of a diaspora, you may be expected to adhere to some set of religious, political, or moral beliefs or perhaps practice some set of expected behaviors. These rules can be contested and can evolve, but the fact remains that the construction of a common category that allows for organized-belonging proximity also means the exclusion of some actors. The marking of borders, both geographic and conceptual, takes center stage when we consider the form of organized-similarity that is most relevant to this study: the shared idea of a territory.

This dynamic is made explicit by Leloup et al. *"a territory defines itself with respect to its environment. It results from a process of discrimination, from a dynamic of construction of an "inside" as opposed to an "outside."* (2005)[3] Construction of these borders happens along

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[3] Translated from French by this author.

multiple lines, geographic of course but also frequently in terms of history, culture, ethnicity, or religion. The idea of the territory is itself a common category, or institution, which brings those that are seen as being "within" into organized-similarity proximity with one another and pushes those defined as "without" further away. Importantly, since the definitions of the different borders of the territory are not necessarily identical between actors, the similarity of their definitions of what it means to belong also constitutes a sort of organized proximity. Two people may agree that they both belong to the same territory, but if they hold irreconcilable views of what that means (for example a conception natural spaces to be preserved and admired versus a wild land to be civilized and exploited) they are not especially close to one another in this respect. Here again, various territories will have very different arrangements of this form of proximity: some will have a very consistent shared view of the various kinds of borders that define their "within" and their "without" and this group definition will both result in and result from tighter social relations, while others will house many different ideas of what it means to belong and the social norms that go along with it. As we have seen, the three proximities that we have discussed here combine with other local factors (climactic, geological, agricultural, etc.) to define the borders and nature of the territory in question.

These different types of proximity act in a dynamic interplay to create and shape the evolution of the territories that we observe. Starting from a basis in geographic proximity, the relationship networks that repeated close contact facilitates give rise to shared norms and representations and a common construction of who belongs what it means to belong. These representations then modify the networks and formal organizations that comprise the territory, which can have downstream impacts on public investment choices that will then modify the geographic proximities. Once a territory emerges as a shared idea of its residents, it is by no means a fixed or permanent entity. In the churn of these systems, understandings of the limits of territories may grow or shrink and some may be created or disappear, abandoned by their actors, or subsumed by another neighboring territory. It is in this perspective of the territory as a constantly evolving thing, composed of geography/infrastructure, actors/relationships, and shared representations/rules for belonging that the idea of territorial governance takes on its full meaning. These proximities are the substrate out of which territorial governance can emerge as well as the things that the process of territorial governance modifies.

1.1.3. Territorial Governance (as Distinct from Territorial Government)

The ways that the regulation and development of territories are managed is evolving in France, moving from a top-down mode in which a small number of public actors make the majority of decisions to something more horizontal and inclusive (Leloup et al., 2005). Broadly, *"To govern is to make decisions, to arbitrate disputes and conflicts, manage modes and processes of production, and contribute to the regulation of economic and social activities."* (Torre, 2019). However, this function can be carried out in any number of different ways, depending on the specifics of scale, culture, and politico-economic systems. To avoid confusion on this topic, but also to give context to discussions later in this study, it is important to distinguish here between the closely related ideas of territorial government and territorial

governance. In France, territorial government refers to all of the levels of government at the sub-national scale, which include an imposing (and growing) number of different entities.

1.1.3.1. Territorial Government in France

Territorial government in France is primarily composed of two types of entities: Territorial Collectivities and Public Establishments of Intermunicipal Cooperation[4] (EPCI) (Assemblée nationale, n.d.). A Territorial Collectivity is a sub-national government entity that is administratively independent from both the state and other Territorial Collectivities and which has its own directly elected governing council. Examples include regions (such as Auvergne-Rhône-Alpes), departments (such as the Puy-de-Dôme), municipalities (such as Saint-Amant-Tallende), and certain metropolitan governments (such as Lyon Metropole). An EPCI is a public organization in which different municipal-level governments (or those of different administrative levels in the case of a mixed syndicate) join together to coordinate their activities, share resources, and create mutualized services for their populations. There are two categories of EPCI: EPCI with its own Fiscality and EPCI without its own Fiscality.

Those with their own fiscality, the right to levy their own taxes, include metropoles, urban communities, communities of agglomerations, and communities of municipalities (which we will refer to as intermunicipalities)[5]. These entities have their own sets of mandatory competencies (i.e. the domains of public action that they are responsible for) and can also be assigned additional competencies by the municipalities that make them up. Intermunicipalities, for example, are required to take on the competency of economic development and may be assigned responsibility for the local water system. Which competencies can or cannot be held by a given level of Territorial Collectivity shift regularly but are at least in part reflections of the current understanding of the principle of subsidiarity, which is broadly understood to mean that political decisions and tasks should be taken on at the most-local possible level at which they can be effectively enforced. Or, more concisely, from the recommendations of a European working group on the topic of subsidiarity: *"it should be endeavoured as far as possible to manage affairs as closely to the citizen as possible"* (Delcamp, 1994). Those without independent taxation authority include a wide variety of intermunicipal syndicates, such as those for electricity and gas or regional natural parks, among others. Municipalities are generally behind the creation of these structures, and their administrative boundaries for action are defined by those of the Territorial Collectivities that compose them. All of these structures exercise formal territorial government within their domains of competencies, which are clearly delineated by the law (although some are optional and are thus defined by agreement among the governments that constitute the ECPI).

The formal decision-making authority for territorial government is only given to public actors: private organizations and individuals can consult, lobby, persuade and even withhold participation, but in the end the choices rest with elected officials and public servants. While

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[4] « Etablissements publiques de coopération intercommunales »
[5] « Communautés de communes » in French

some public decisions may be made informally in practice, formal rules exist for the vast majority of them, at least with respect to the individuals who are allowed to make them and where the final responsibility for their outcomes lies. These characteristics of territorial government are often perceived as rigid and slow to adapt (Leloup et al., 2005) and the growing interest in the idea of territorial governance is in part at attempt to overcome these limitations.

1.1.3.2. Territorial Governance and Territorial Development

Academic discussions of governance, as distinct from government, began in the field of Management Studies in the Anglo-Saxon world in the 1980s (Torre, 2019). Naturally enough, the initial object of study was the firm and its systems of decision making and authority. The term has since diffused into other disciplines. One core concept which has been carried over from Management Studies is that of stakeholders, meaning every type of actor that has a stake (i.e. can impact or be impacted by) in the decisions of a firm (Freeman, 1984). At a minimum, this includes the customers, suppliers, employees, and local communities that the firm is somehow in relation with. The basic argument of stakeholder theory is that firms should create value not only for shareholders (owners), but for all of their stakeholders, and take their needs and wishes into consideration. Territorial governance takes this approach and applies it at the level of territories. Torre (2019) makes this relationship explicit:

> *"It can be defined as a process of coordination between different types of stakeholders or actors (actors in the production sector, associations, individuals, public authorities or local authorities), with asymmetric resources, and who meet around issues concerning their territory and contribute, with the help of appropriate tools and structures, to the elaboration- collaborative or conflictual -of common projects for the development of territories"*

In this way, the territorial governance approach exceeds its intellectual predecessors in stakeholder theory by not only taking the interests of stakeholders into account, something that can be done even in a centralized and public-dominated territorial government system, but affirming the importance of integrating them into systems of power and decision making. The essence of territorial governance is the creation of networks of relationships (organized-belonging proximity) between diverse sets of stakeholders with the goal of collectively guiding the future of the territory (Leloup et al., 2005).

The increased interest in the idea of governance comes at a time of in which nation-states are seen as losing importance relative to globalized systems of trade and production (Figuière & Rocca, 2012). With previously thriving territories experiencing the negative impacts of deindustrialization and ecological disruption, the question of how to chart a path toward a desirable future is an open one. In this context, territorial governments find themselves without a strong nation-state to intervene of their behalf, there is a growing acknowledgement that cooperation and coordination among different spheres of society is not only legitimate but needed to shape territorial development.

Development itself is a famously difficult concept to define in a way that applies across contexts, and here we are choosing to embrace a very broad meaning. We begin with Perroux's (1961) formulation: *"all transformations of economic, social, institutional, and demographic structures that accompany growth, make it lasting, and generally improve the conditions of life of the population.[6]"* This definition provides a strong starting point for any economic discussion of development, but is not necessarily well adapted in this form to the context of already wealthy and relatively comfortable societies and as such two words need to be interrogated before we can be comfortable adopting it as our own: *growth* and *improve*.

Growth is here referring to the *"real product"* of the population in question, generally measured as the sum of added values of all goods and services produced within the territory being studied (most often nationally). However, not all such growth improves the conditions of life of the population and in fact, in the wealthiest countries (such as France), growth is weakly correlated with subjective wellbeing and can be negatively correlated with it (Jackson, 2016). As such, we choose to set aside the growth focus in Perroux's definition above while still accepting the idea that some local increase in wealth is usually desirable. The other question to address here is what exactly is meant by the words *improve the conditions of life*. If we take that to mean an improvement in relatively objective measures of mortality, ignorance, and poverty, it would seem that many of the things that are commonly classified under "economic development" no longer really fit. If, however, we take "improve" to refer to an increase in the subjective wellbeing, we arrive at something more useful for our context. The subjective character should be underlined, as it implies a process of defining what is good and desirable before pursuing it.

With these two friendly updates to Perroux, we arrive at a working definition for development (for our purposes) as simply being *all transformations of structures (of all types) that accompany a lasting improvement in the subjective wellbeing the population.* This bring us close to Torre's (2015) approach to development as a process whose objective is to *"improve the wellbeing, and in fine the wealth, of populations"* and which *"surpasses the purely economic and geographic spheres, to include social dimensions and all the way to the contributions of biotechnical disciplines such as ecology or soil sciences.[7]"*

With this rough definition of development, the importance of the idea of territorial governance comes into clearer focus: if development is concerned in large part with a subjective measure, then it is up to the territory to define not only what strategies to employ to pursue development, but also to collectively define what development even means for them. Unsurprisingly, this can be a conflictual process and interests can be divergent or even opposed, but the ability for a coherent territorial governance system to emerge depends on its ability to resolve the conflicts in a way that is acceptable to the majority. Referring back to our discussion in section 1.1.2, alignment between these conceptions of a desirable development path for the territory can be understood as forms of organized-similarity proximity and part of the measure

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[6] Translated from French by this author.
[7] Translated from French by this author.

of a successful territorial governance system is how it finds a way forward that is not too far from the positions of the assembled actors while also bringing them closer together.

These are *"more flexible forms of power"* (Torre, 2019) when compared to central public planning, and apply to a much broader cast of actors than the more limited concept of government. Territorial governance can take place among purely private actors who find some mutual interest in coordinating their research and development activities, for example.

Similarly, civil society[8] and the Social and Solidarity Economy (SSE) can be sites of emergence of territorial governance. When diverse structures from within the Social and Solidarity Economy (SSE) come together around common visions for the future of the territory, as Itçaina (2010) observes in the history of Basque territories in France. In fact, Figuière & Rocca, (2012) suggest that we should only employ the term governance when actors from the public, private for-profit, and civil society/ESS sphere coordinate all together.

This being a dynamic process, the spread of this style of governance from one distinct group of economic activities to another is neither automatic nor systematic. For example, department may have a robust and collaborative system of agricultural cooperatives that work with public actors, distributors, and farmers on questions relevant to that group of activities while lacking any similar coordination of renewable energy development. Naturally, these parallel systems can pursue different visions of desirable territorial development which can be in conflict with one another. To the degree that these systems increase the number of activities that they manage, we can refer to an increase or expansion of territorial governance. Each of these instances of territorial governance can be viewed as a tool through which the various actors relevant for an activity are brought into coordination.

1.1.3.3. Tools for Territorial Governance

Systems of territorial governance are built not only by the general philosophical approach outlined above being held by the actors involved, in particular the public ones, but around specific tools whose function is to bring diverse stakeholders together in coordination on important issues. These tools can take many forms: from collectives, committees, and advisory groups to more institutionalized and formal structures such as associations, multi-stakeholder cooperatives, and EPCIs (Rey-Valette et al, 2014). Sometimes the goals of the programs all but explicitly reference the creation of territorial governance systems, as in the case of some initiatives born out of the SSE such as Territorial Poles of Economic Cooperation (PTCE). These innovative structures put in place by the 2014 law on the Social and Solidarity Economy bring together SSE actors, traditional for-profit enterprises, and local public actors (among others) to undertake economic cooperation with the goal of creating innovative projects and advancing sustainable development (Chevalier, 2016).

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[8] We intend the term "civil society" to mean any voluntary private group, formal or otherwise, whose primary purpose is not the pursuit of profit. This has overlap with the Social and Solidarity Economy and specifically the Associationist current (Laville, 2016), but exploring that in depth is beyond the scope of this paper.

Even one-time events can be examples of tools for the construction of territorial governance, such as the Territorial Start-Up[9] events (Chevalier, 2016). These events bring citizens together to come up with and launch socially innovative solutions to territorial problems that they themselves identify. The process of putting these events together requires a great deal of coordination ahead of time, however, as local government, training centers, coworking spaces, investment clubs, and many others are necessary to achieve the ambitious goals of not only imagining but actually creating solutions. This collaborative, cross-sphere effort that allows the identification and creation of new territorial resources and their mobilization in the pursuit of a shared and citizen-driven vision of territorial development is a perfect example of a tool for territorial governance.

So, the important question when choosing whether or not to qualify an initiative, organization, or policy as a tool for territorial governance is not what specific form it takes. Instead, we should ask whether it has the effect of increasing the degree to which actors in different spheres coordinate their actions and align their visions for the future development. As we will see in the next section, the history of energy governance in France includes at least one clear example of such a tool, even before arriving at the emergence of Citizen Energy.

1.2. Deterritorialization and reterritorialization in France's electricity system

1.2.1. A brief history of France's electricity system

1.2.1.1. The Early Years (1880 – WWII)

Beginning in early 1880s after the importation to France of the "Edison Model" for centralized production, transport, and distribution of electricity, the first examples of electrification in France were a piecemeal affair. In most places where electricity arrived before the first world war, it was individual factories, inventors, and engineers that drove the dynamic (Poupeau, 2017). In cities, newly minted power companies sprang up quickly to serve the rapidly growing demand, often with many different competing companies operating in the same area. Unsurprisingly, rural areas tended to be less well-served than cities where private investments in transmission infrastructure were more easily profitable thanks to the greater density of potential customers and the shorter distances to traverse. As we can see, geographic proximity, both in terms of raw kilometers between production and consumption and through the uneven development of distribution infrastructure, was a determining factor in the very divergent experiences of different territories during this early period of electrification.

For a number of reasons, cities and towns were the central public actors in this period of electrification (Poupeau, 2017). First, because of the emergent nature of the market, a great number of small power compagnies often existed in cities, each of which was competing with the others for the use of the public domain and to furnish the city with power (in particular for

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9 French: "Start-up de territoire"

public lighting). Perhaps more importantly, because these newly created electric power companies very often had to make use of the public domain or interact with public infrastructure to build their transmission lines, the municipality had de-facto authority to determine the conditions of that use. Often this would mean significant fees paid to the municipality, as well as preferential rates on electricity for public use. These contracts were often short-term, and without a stable and consistent judicial structure surrounding them, which made investment in electrification a somewhat risky proposition.

The law of June 15th, 1906 sought to bring order and predictability to this system by making municipalities the concessionary authorities for a public service of electricity distribution (Poupeau, 2017). From then to now, electricity distribution is treated as a public service for which the final responsibility lays with the municipality. This did not mean that cities and towns across France suddenly began operating their own power companies, however. Indeed, for ideological reasons of attachment to the principles of free market competition, the national government was relatively hostile to the idea of municipalities directly providing for their own power generation and distribution. The vast majority of electricity distribution in France was handled via a "concession", meaning that the public authority with the responsibility to provide this service contracted with a private entity who ensured its delivery, with oversight by the munnicipality. While some did indeed build their own systems of production and distribution via different structures for public economic activities ("régies" and Mixed Economy Companies in particular), such as in Grenoble, this required a great deal of political will and easy access to abundant power to overcome the opposition of the state.

This was the moment when the activities of production and distribution of electricity became formally separated, with the former still considered as a mostly private sector activity and the latter a public service. As alternating current technology came to dominate in the early 20th century, allowing long-distance transport of electricity, the national government became more and more involved in the development of a nationally interconnected grid through the use of large-scale concessions. The French electricity sector was moving towards the structure it would have until the second world war: private for-profit production (with some exceptions), nationally publicly managed transport, and the emergence of something resembling an early form of territorial governance of energy distribution at the local level.

The rapid development of large power holding companies pushed municipalities to band together in defense of their interests (Poupeau, 2017). The interwar period saw the creation of hundreds of intermunicipal syndicates for electrification, in particular in rural areas. These syndicates served to bring together the resources, competencies and negotiating power necessary for their municipalities to pursue their new public service mission of electrification and distribution. Owing to the limited resources available to most rural municipalities, and the delicate nature of the relations between local elected officials and the various services of the state, these syndicates did not so much exercise unilateral authority over their domains of competence as they did organize a diverse group of actors in pursuit of a shared goal of territorial development in the domain of electrification, as this passage makes clear:

"The task consisted of writing dossiers, soliciting expertise from project owners [...], mobilizing elected officials and certain influential local figures (Deputies, Senators, Prefects, Ministers, etc.), inciting the population to purchase bonds, pressure national government agencies to obtain credit, etc.[10]" (Poupeau, 2017)

The effectiveness of this approach in driving electrification led to an explosion of the number of intermunicipal syndicates for electrification: while in 1908 only 22 intermunicipal groupings of any kind existed, by 1937 there were 1,674 electrification syndicates alone. The intermunicipal syndicates, and the departmental-level ones that would later supersede them, are the earliest examples of territorial governance in the energy sector in France.

During the early period of electrification, the French state had been consistently committed to the principle of free competition and avoiding territorial monopolies. Even the law of 1906 giving municipalities ownership and final concessionary authority over distribution systems was an attempt to stabilize a burgeoning and chaotic marketplace in which investors found it difficult to justify the large investments required because of the significant risks they faced (Poupeau, 2017). Municipalities were discouraged from becoming their own producers or distributors and encouraged to put different potential contracts into competition, even purchasing power from multiple producers at once. Throughout the interwar years, as left-wing political forces gained influence, the question of public provision became impossible to ignore.

1.2.1.2. The Great Centralization (1946 – 1999)

In the aftermath of WWII, the CGT, Communist Party, and the National Council of the Resistance pushed toward the creation of Electricity of France (EDF) and the nationalization of nearly all French electricity production (Poupeau, 2017) with municipalities fighting to maintain their role in distribution. Indeed, the law of April 8th, 1946 gave birth to EDF and created a national monopoly for all electricity transport and nearly all production but did not remove the competences of distribution and rural electrification from municipalities. Some smaller-scale producers were allowed to continue operation, as well as the Mixed Economy Companies and agricultural power cooperatives. This law also left space open for Local Distribution Companies (ELD), the publicly operated structures that still directly manage the distribution needs of 5% of French electricity consumers in certain zones (in Strasbourg and Grenoble, for example). Through the conflicts and compromises that went into this law the entire French electricity sector was rendered public, and the activities of production and transport were nationalized. Distribution remained in the hands of municipalities, but they were destined to struggle to exercise real autonomy with respect to EDF.

The late 1970s and 1980s were the high point of centralization in the electricity sector: distribution, transport, and production were handled (almost) exclusively by a single publicly owned organization that sold electricity at a set of uniform rock-bottom prices throughout the entire country (Boulin & Boiteux, 2000). Energy syndicates (whether departmental or

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[10] Translated from French by this author.

intermunicipal) had some role to play in the continuing electrification of rural areas, the delivery of some electricity-related services, and some degree of responsibility for the maintenance of the low-tension distribution system depending on their contract with EDF (Boyer, 2019) (Interview 36). Territorial Collectivities, including the regions created in the 1980s, would have the technical authority to intervene in this sector through the general competency, which granted the right to involve themselves in any activity that was in the interest of their territory. In practice though, the real decisions mostly took place at the national level, given the strength of EDF and the massive investments involved in any serious restructuring of the energy system. This was doubly true once France definitively chose the path of nuclear energy.

While 12 nuclear reactors had been built in the 1950s and 1960s, it was following the first oil shock of 1973 that France moved decisively to massively develop its production of nuclear energy. In the space of 10 years, EDF began construction of over 50 reactors, more than enough for the consumption of the entire French population and all of which are still in service today. This creation of this centralized, nuclear-driven electricity sector made it possible for all of France to benefit from low and stable electricity prices that were homogenous across the country. However, from the beginning, this system has been under strain as the end of the "30 glorieuses" and the significant overcapacity created by new nuclear plants made the economics of power generation delicate (Poupeau, 2004). The anti-nuclear movement, born after the bombings of Hiroshima and Nagasaki in the second world war, was fiercely opposed to this development and began campaigns that continue to this day attempting to gain public support for their opposition to this model. Unfortunately for them, the view of electricity as both a public service and as a technical problem to be handled by engineers had a strong base of support. Throughout the 1970s and 1980s, the debate continued. It was not until the disaster of Chernobyl in 1986 and the deception by French nuclear authorities, along with the Bruntland Report in 1987 that general public skepticism reached a high enough level to reverse this trend as the 1990s began (Rivat, 2010).

Toward the end of this period, we begin to see signs of the changes that will come to shape the current period of energy governance in France. In 1992, in a rising trend of decentralization, the concessionary authorities of public distribution networks (municipalities and their syndicates) were able to renegotiate their contracts with EDF for the first time on the basis of freely agreed upon terms. The model contract negotiated by the FNCCR, the federation representing most electrification syndicates, was very advantageous to their members and the 84% had signed it by 1997 (Poupeau, 2015). This contract had the particularity of advantaging departmental syndicates over intercommunal ones, as the value of the contract varied with the number of inhabitants within the syndicate. As a result, the number of departments who had transitioned from a structure of intermunicipal syndicates to one of SDEs grew from just over 40 to over 80 (Poupeau, 2015). According to Boyer (2019), after this contract, *"the syndicates appear to be reinforced in their role as defenders of the local public service of distribution[11]"* having affirmed their ability to negotiate with EDF for the best interest of their territories.

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[11] Translated from French by this author.

The move away from a centralized system had begun. The process of entering the European Union, alongside concerns about the role of nuclear power, would soon push France toward the slow and difficult reterritorialization of energy that we see today.

1.2.1.3. 2000s to today: The EU, and Renewable Energy

The process of integration into a single European market, and in particular the need to align with rules on state aid and free competition, has fundamentally reshaped the French energy sector. Under European directives, it would be forced to transform from a series of regulated monopolies run by a single state actor, EDF, to a system of managed competition involving both public and private structures. The French system, since 1946, has consistently rejected a market philosophy of pricing, preferring instead a combination of marginal-cost efficiency and an ethic of public service (Poupeau, 2017). The transition toward a unified European market required an alignment of practices between countries and the basis for that alignment was regulated competition, such that no country would be perceived as gaining an unfair advantage over the others and private actors would be able to gain market share in their non-home countries. Perhaps ironically, this opening of the French energy sector to competition, especially in production, has played a key role in the development of Citizen Energy and of its most important actors.

From 2000 to 2007, the right of consumers to choose their own electricity supplier was extended to a greater and greater number of clients, starting with the largest industrial sites and eventually reaching individual households in accordance with the 2000 law on the modernization and development of public electrical service (Loi n° 2000-108 du 10 février 2000). The Commission for the Regulation of Energy (CRE) was created at this time to regulate this new market. This was when the activities of distribution (transmission of low-voltage power near the point of sale) and supply (sale to the final consumer) because differentiated, with the former remaining a public monopoly and the later being open to competition. In practice, this meant the creation of a whole swath of new electricity suppliers that would attempt to make a space for themselves in this new market. One example of such a new organization that is particularly relevant for this study is Enercoop. Created in 2006 through an alliance of ecologically engaged associations such as CLER and Friends of the Earth, as well as the Nef cooperative bank, Enercoop is a network of cooperatives throughout France that contracts directly with renewable energy producers and consumers that want to be assured that their electricity bill is going to support the further development of truly green energy (Enercoop, n.d.b). Thanks to the opening of the electricity sector to competition, Enercoop has been able to both reach a larger and larger number of clients each year (over 90,000 in 2020) and also to develop their base of producers, including by investing directly in larger-scale projects. Constructed as a network of regional-scale cooperatives, Enercoop affirms the importance of territorial governance of renewable energy development while also mutualizing their resources at the national scale to make it possible for them to take on the complex and challenging work

of being an electricity supplier in France. Over this same period, the legal forms of the structures most responsible for supplying energy to France were fundamentally altered.

This was a period of significant institutional changes, with transformations, splits, and the creation of entirely new actors. In 2000, the Commission for the Regulation of Energy (CRE) was created to oversee the proper operation of the new energy market in France (CRE, n.d.). In 2004, EDF went from being a Public Industrial and Commercial Establishment[12] (EPIC) to a joint-stock company (SA), with the state as the majority shareholder (EDF, 2020). EDF retains a public service mission and is still the only supplier able to offer the regulated prices that remain so attractive to individual household clients. The other major transformation at EDF during this period is the splitting of its distribution and production activities.

Enedis, originally Electricity Grid Distribution France (ERDF), was split away from EDF in 2008 in accordance with European directives requiring that all member states separate the activities of production, transmission, distribution, and supply (Enedis, 2020). This new company, an SA 100% subsidiary of EDF, would take over as the manager of low-tension grids and the guarantor of a uniform, high-quality standard of service across the country. In the 95% of France not covered by an ELD, Enedis would be conceded these roles by the entities with the legal responsibility for these grids, invariably departmental energy syndicates empowered by intermunicipal syndicates which are in turn empowered by their member communes. While each SDE negotiates its own agreements with Enedis (with prices being determined by the CRE), splitting up the responsibilities for different specific aspects of grid maintenance and distribution, Enedis legally always has responsibility for grid hook-ins of professional producers, the most important activity as far as new small-scale renewable energy producers are concerned (Interview 36). This means that every new electricity producing installation that depends on the low-tension grid across 95% of France must at some point deal with Enedis, which is a source of some tensions with Citizen Energy projects who frequently run up against long administrative delays and prohibitive costs (Mignon & Rüdinger, 2016) (Interviews 4, 23, 31, & 33).

Crucially, with the successive waves of decentralization increasing the authority of territorial collectivities, this period has also seen a growing reterritorialization in the governance of renewable energy. The electricity sector may remain dominated by nuclear, which has represented between 70% and 80% of total production since 1990, but the portion represented by renewables continues to grow (IEA, n.d.). In 2019, renewably generated electricity covered 23% of the total electricity consumed in France (RTE, 2020) and the decentralized nature of the production has made it necessary for local actors to have a greater and greater say in its governance. This is the portion of the energy system for which we can speak meaningfully of a movement towards reterritorialization, and it will be our primary focus for the rest of this study.

From 2005 to 2019, a series of laws gave departments, regions, and EPCIs more ability to act in that sphere, either through the creation of climate planning documents, via their regulatory authority, or by developing projects themselves. While each is important, the most

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[12] In French: "Etablissement public à caractère industriel et commercial"

significant changes for out study come from the Grenelle II law of 2010 and the TECV law of 2015, and especially as regards the evolution of the Territorial Climate and Energy Plan (PCET).

The PCET (originally PCT), which had existed since 2004, was a process of diagnostic, planning, and consultation by which a municipality or intermunicipality would commit to significantly reducing its greenhouse gas emissions and take steps to prepare itself for climate change (Boutaud, 2016). In the beginning this process was voluntary, but the Grenelle II law of 2010 rendered it obligatory for any region, department, or intermunicipality with more than 50,000 residents. The 2015 law on the Energy Transition for Green Growth (TECV) lowered this threshold to 20,000 and added air-quality issues to make the modern PCAET (Chabanel & ADEME, 2016). It also removed the responsibility for creating this document from all public actors other than EPCI's with their own fiscality (intermunicipalities of different types).

The multi-stage process for the construction and use of a PCAET is laid out in a document published in by Agency for the Ecological Transition, the ADEME (Chabanel & ADEME, 2016). The first step is a diagnostic of the production and consumption of energy, the greenhouse gas emissions, and the atmospheric pollutants in the territory. After that, the process requires the creation of a strategy and an action plan (out to the year 2050) for achieving locally determined objectives, but importantly also those laid out in planning documents for higher-order territories. For the national level, this means the Pluriannual Program for Energy and the National Low-Carbon Strategy. For the regional level, the Regional Schema of Sustainable Development and Territorial Equality. For the EPCI level, the Territorial Coherence Schema. Each of the actors responsible for those higher-level planning documents then have the right to give comment and in some cases demand changes to get the different levels of plan into coherence. Finally, the action plan is put into place and the objectives are tracked by both the EPCI and a government representative. It is important to note that the objectives in this document are not legally binding for the territory, but for Boutaud (2016), PCETs and PCAETs nonetheless played a significant role, whether voluntary or obligatory, in the growing awareness and acceptance of the role of local governments in the energy transition.

The Grenelle II and TECV laws also greatly facilitated the direct participation in renewable energy by municipalities and intermunicipalities (Boutaud, 2016). First, by expanding the competencies allowing them to own and operate renewable energy production facilities. And second, by allowing them to invest directly in local renewable energy projects, which would become a very important lever for the growth of the then-nascent Citizen Energy movement that we will present in the next section. Finally, and also relevant to the movement, the 2019 Energy and Climate law began the process of translating the European framework of Renewable Energy Communities into French law (Rüdinger, 2019).

Renewable Energy Communities (REC) were first introduced through Article 2(16) of European Directive 2018/2001, also known as the Electricity Directive. RECs are a new type of market actor in the renewable energy sector, and specifically a non-commercial one. Their primary purpose, as described by this directive, is to *"provide environmental, economic or*

social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits." This limitation makes it clear that, although they are expected to participate in a market currently dominated by large actors, they are not to be motivated simply by the profit motive. In the language of the directive, an REC is *"based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity."* The different clauses of this requirement can be understood in a variety of ways, with the word proximity being the most potentially polysemic (as should be obvious to readers of this study). The proximity referred to here is a geographic one, roughly, and is most likely to be interpreted into French law as meaning the neighboring territories, up to a departmental scale, with the exception of public actors. So, a private investor can be considered a local actor so long as they live in the same department or a neighboring one, but a local government entity would have to be either in the same municipality or a neighboring one if it was a town, the same EPCI or a neighboring one if it was an EPCI, etc. (Interview 31). Finally, the shareholders or members of an REC must be *"natural persons, SMEs [Small or Medium Enterprises] or local authorities, including municipalities."* This requirement reinforces the territorial character of these RECs, as the only eligible investors are those that reside there are (presumably) take an interest in the future development of their territory. The same directive calls on member states to promote the development of RECs by developing national "enabling frameworks" which include the removal of unjustified regulatory and administrative barriers. The adaptation of this directive into French law is important for the growth of territorial governance of renewable energy, in particular for the Citizen Energy movement who could soon see a special legal status that corresponds exactly to their needs written into French law (Interview 31).

1.2.2. The arrival of Citizen Energy in France

1.2.2.1. The Emergence of Energie Partagée

While other places in Europe saw the emergence of citizen cooperatives for the production of renewable energy much earlier (Poize & Rüdinger, 2014), the first generally recognized example in France began to take shape in 2002 in the area around the town of Rédon in the Bretagne region (Interview 32). Everything started with a couple trying to install a wind-turbine on their land to produce their own electricity, but the regulatory difficulty and capital-hungry nature of such a project forced them to become more ambitious in their plans. Inspired by examples of similar initiatives in Denmark in the 1970s, the group of citizens that gathered around this project launched an effort to build a wind-farm near their town, calling it Eoliens en Pays de Vilaine (EPV). While it would be over 10 years before the installation was actually built (2003 to 2014), along the way their work would help spark a movement for Citizen Energy in France (Energie Partagée, 2017). We will go into more detail on the specifics of EPV's story in section 2.2.1, with this section focusing on the emergence of the Citizen Energy movement.

In 2009, the French Agency for the Ecological Transition (ADEME) commissioned EPV to lead a conference on the topic of "citizen wind-turbines" which resulted in the creation

of, among other regionally specific structures, the Energie Partagée association in 2010 (Energie Partagée, 2017). This new structure was heavily financed by the ADEME, but also involved the participation of other actors within the Social and Solidarity Economy movement (SSE) including mutualist banks such as Crédit Coopératif and the Nef, the cooperative electricity distributor Enercoop, and several associations involved in the fight against climate change such as HESPUL. These assembled actors agreed that structuring the sector and creating an organization that could advocate for the movement as a whole was critical to its success. This association was to become the main pillar of the Citizen Energy movement in France.

The Energie Partagée charter, signed on May 18th, 2010, defines the motivation for the creation of EP, their shared vision, their commitments, the mission of the new organization, and what exactly a Citizen Project is (Energie Partagée, 2010). The text begins with 4 impasses that have moved the signatories to action: an environmental impasse, an ecological and geopolitical impasse, a social impasse (in particular North-South inequities), and a political impasse. These impasses are held up as results of the current system of production and consumption of energy.

The vision proposed of a new system involves, first, a reduction in energy consumption through efficiency gains and through a more conscious use of resources, and second, fulfilling the remaining needs with 100% renewable energy. This vision is to be accomplished while preserving ecological systems and natural resources, in a peaceful and convivial society, and maintaining the importance of harmonious territorial development. The vision section also includes affirmations of the importance of active citizen participation, sharing of economic benefits, intergenerational justice, a logic of public service for energy that leaves no territory behind, and international energy solidarity.

The engagements of the charter are intended to define the general ethical commitments of the movement and the *"tools, actions, and projects that result from it.[13]"* They include an ecological engagement to consider both global and local impacts of their work, an economic engagement to participate in local development of sectors related to energy, a social engagement to fight energy inequality and waste while creating a secure and fairly priced energy supply, and a democratic engagement to create transparent governance systems in partnership with territorial governments while engaging in public education on energy issues.

The mission of this new movement is laid out clearly: *"allow citizens and territorial actors to choose, to retake control of and to manage the modes of production and consumption of their energy, by the emergence in the territories of CITIZEN PROJECTS, respecting the values of this charter.[14]"* The final part of the charter, which we address in section 2.1.1, defines precisely what exactly a Citizen Project is. Beyond simply a formalized alliance based on values and a vision for a new energy system, Energie Partagée is an organization that concretely manages and promotes the movement.

Among other things, the work of Energie Partagée (EP) includes lobbying, the production of knowledge and tools, and the promotion of the Citizen Energy model through

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[13] Translated from French by this author.
[14] Translated from French by this author.

events and media (Interview 7). EP has also created a fund that invests in Citizen Renewable Energy Projects and in which people from all over France can place their money, a kind of indirect crowdfunding tool for the movement. Most importantly, they manage the regional-level networks that help project groups through training and advising, from both peers and experts. These 17 networks are managed either directly by employee of EP (10 networks) or through pre-existing partner associations at the regional level (7 networks), such as Auvergne-Rhône-Alpes Energie Environnement (AURAEE) (Interviews 31 & 4). The regional network manager positions in the partner associations are also mostly financed by the ADEME (Interview 4).

Energie Partagée is also the main collector and publisher of information about the movement and its projects, including a citizen project map and data visualization tools on their website[15]. But to be able to produce such tools, they first had to provide a robust definition of what exactly is and is not a Citizen Energy Project. Indeed, the association has a label, "Energie Citoyenne" which they apply to projects that request it and that meet the criteria laid out in their charter. The actual attribution of this label is done in a decentralized way at the regional level by the local non-profit or EP employee who is charged with managing that region. The process, as described in Interview 4 with an employee of EP's central office in Paris, simply involves someone from the project getting into contact with the manager of the regional network and requesting that they be considered a Citizen Project. The regional manager then evaluates their eligibility by using a matrix from EP with the information provided to them and through interviews with the group in question. The person filling out the matrix has near-total autonomy in arbitrating situations that are unclear. According to the same interview, EP is attempting to update their intake and labeling procedure, so that each regional network manager has a committee at their disposal to help them with the work of assessing difficult cases. If a project receives the label, they become eligible for investment via the EP Fund, are given a project description page, and are included on the map of citizen projects on the website.

This decentralized way of inviting new projects into the movement goes along with a great deal of diversity in the actual forms that Citizen Energy takes in the territories.

1.2.2.2 A Movement across France, Taking Different Forms

With Energie Partagée coordinating the movement at the national scale, an ecosystem of organizations working in Citizen Energy has grown up. For example, Coopawatt in the Auvergne-Rhône-Alpes region is a cooperatively owned and operated consultancy that works with both local governments and CREPs to help new projects to take shape, structure themselves, and build their first set of installations (Interview 23). On the lobbying and public communication side, the Collective for Citizen Energy advocates for the definition of a national objective of 15% Citizen and local government energy production by 2030 (currently about 0.04%). The collective is made up of large national associations and cooperatives such as the WWF, Enercoop, France Nature Environnement, and various SSE specific groups such as the Laboratory for the SSE (Collectif pour l'Energie Citoyenne, 2017). Also, in an expression of

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[15] Project map URL: https://energie-partagee.org/energie-citoyenne/tous-les-projets/).

the importance of territorial differences, other organizations have stepped in to offer their own regionally specific variants of the Citizen Energy approach. Two in particular stand out for their originality and the degree to which they have managed to expand to other territories, and both are examples of a trend towards different kinds of mutualization that has emerged in the Citizen Energy movement in recent years (Interview 4): Centrales Villageoises and Cowatt.

Between 2010 and 2014, Centrales Villageoises was born out of a process of experimentation by Auvergne-Rhône-Alpes Energy and Environment (AURAEE), involving 6 regional natural parks in the former Rhône-Alpes region (Fontaine, 2018). The goal was to explore possible alternative business models for the development of clusters of solar PV rooftop installations, which had become significantly less economically viable after a drastic reduction the resale price of small-scale solar energy in 2010. The result was an association which would promote a specific model of CREP, Centrales Villageoises, in which each local citizen group would be an independent legal entity, but all would agree to respect a common charter, to use their standardized set of bylaws (open to some modification), and to participate in the network. In addition to the many volunteers, the whole network is maintained by a single staff member working for the association Centrales Villageoises (Interview 20). Because of the thin margins of the rooftop solar PV business model, none of the individual Centrales have yet been able to hire an employee, but since they mutualize their resources within this network they are each able to benefit from his advising and assistance.

On top of this, those who join the network gain access to documentary resources, management tools developed by the association, and the combined experience of all of the other members. As of today, there are 52 territories engaged in the Centrales Villageoises network, making it the most widespread single model for rooftop solar PV CREPs. Even though the origins of this network are in the former Rhône-Alpes region, nearly half of the CREPs of this type are spread out through the other parts of France. The other model of mutualization that seems to be gaining a growing following is Cowatt in the Pays de la Loire region.

Cowatt was born in 2017 as the result of a collaboration between two departmental-level non-profits (ALISEE and ELISE) involved in informing and assisting the public on topics of energy saving techniques and renewable energy (Interview 33). These organizations had observed that there were a substantial number of nascent citizen groups interested in starting their own CREPs, specifically to develop rooftop solar PV. However, these "collectives" found that the fixed costs involved in the operation of their own independent companies made it difficult to construct a viable business plan. So, in concertation between these associations and the citizen collectives, they began to explore options for mutualization to make these small, local projects viable. Insurance, bank fees, accountancy, and other administrative costs in particular could be efficiently pooled across many organizations, while maintaining the positive aspects of the very locally driven approach that most of these rooftop solar PV CREPs have.

Specifically, the solution proposed by Cowatt was to create a single legal structure that would house the activities of each citizen group across the three departments of their region that ALISEE and ELISE cover (with the goal of covering the whole region eventually). This would

allow them to save significantly on legal and administrative fees, as well as have a stronger position from which to negotiate prices from their suppliers. They were also able to create partnerships with other SSE actors such as the MAIF mutual insurance company and Enercoop, as having a single point of contact for all of their collectives substantially reduces the transaction costs for those organizations. As a part of their public education missions, the associations behind Cowatt give some their employees' work time to Cowatt. These employees create high-quality guides and management tools (such as business plan frameworks and roof evaluation checklists) that are then made available to all of their citizen collectives.

At an individual project level, Cowatt handles the creation of contracts, evaluates the viability of proposed installations, and contracts for both required inspections and later maintenance (Cowatt, 2020). For their part, the citizen collectives each take shape under their own initiative, select their roofs, negotiate with owners, and raise their own funds which add to the capital of the centrale Cowatt SAS. Each new citizen group joins the governance structures of Cowatt, which exist at a regional level. SAS Cowatt has formal legal authority over all of the projects that it houses. This means, in practice, that a group on the far side of the region will be able to weigh in on the decisions of another group (Interview 33). There are over 20 citizen collectives currently operating under the Cowatt umbrella, at various stages of development.

According to an employee of ALISEE that devotes a significant amount of time to Cowatt, the most challenging aspect of creating this model was managing the tension between mutualization and local anchoring (Interview 33). Citizen-led rooftop solar PV CREPs generally default to their intermunicipality as the territory at which to take action, and there is very often a strong attachment to that scale. *"Cowatt is a tool supporting the work of collectives at the EPCI level.[16]"* (Interview 33). It is this attachment that gives them the ability to raise the funds they need to finance their installations. Other residents of that EPCI are more likely to participate financially in the development of a territory they consider important that is run by people that they may have some social-network connection to. The two organized proximities, belonging and similarity, are decisive in convincing other people in the territory to put their trust and their money into the project: their proximity within networks makes it possible to reach them with the information and be viewed as trustworthy while their proximity based on a shared identification with the territory makes those requests more likely to succeed. These advantages of local implantation don't end at fundraising, as at each stage of the CREP's development it will benefit from its presence in a social network in which information passes freely and more people come to trust and identify with this citizen initiative. The goal of Cowatt, then, is to maintain these critical aspects of proximity that make citizen solar PV projects possible at all, while mutualizing enough costs to make the finances work out.

The differences between these two modes of mutualization, Centrales Villageoises and Cowatt, show that each territory creates its own mode governance for Citizen Energy based on its own unique circumstances and the arrangements of the resources and proximities that differentiate it from others. Auvergne-Rhône-Alpes developed their system in 2014 in a context

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[16] Translated from French by this author.

of much higher electricity sale prices than what Cowatt faced in 2017, making the need for mutualization less intense (Interview 4). In addition, while Cowatt is based on a coalition of departmental-scale associations, the experimentation that led to CV was run by the region-scale environment and energy agency AURAEE, in partnership with regional natural parks that constituted the initial territories of application and testing of the new model. On the one hand, the associations involved in Cowatt are working to shift the relevant territory for action from the EPCI level to the inter-departmental level. On the other hand, the PNRs involved in the creation of the CV model are themselves EPCIs with an interest in devoting their energy to projects within their own borders and so the overarching CV association serves to articulate the action of multiple territories, rather than shifting to a single higher-order one. While CV is a common tool created among many territories, Cowatt is a common project that unifies those territories in a shared governance and a common financial destiny. Finally, the people interviewed on the subject suggest that the attachment of project groups to this smaller EPCI scale is higher in the regions it operates in than in the Pays de la Loire (Interviews 4, 22 & 33). Although it is not clear to what degree this is actually the case, these interviews suggest that Cowatt's high degree of mutualization would not be possible everywhere and requires the right institutional arrangement and organized proximities within the population.

Citizen Energy represents a movement toward reterritorialization of the production of energy, making its governance by and for those territories. As we have seen in this section, its emergence is a part of the long back and forth evolution of the energy system in France, from territorialized beginnings to extreme centralization and slowly back toward model that is closer to the population, at least as regards renewable energy. This return to local anchoring of energy production only seems to be growing, and all on the basis of concrete citizen engagement. In the next section, we will investigate the relationships between specific Citizen Renewable Energy Projects, their territories, and the systems of territorial governance that they employ.

2. Nature, Emergence, and Opportunities of Citizen Energy in Territorial Governance

Chapter 2 will be dedicated to acquiring a deeper understanding of the interrelationships between territory and Citizen Renewable Energy Projects. First, in section 2.1.1 we explore what exactly these novel entities on the energy landscape are, both by the values and practices that bind them to the movement and by their day to day reality as human organizations and economic actors. Section 2.1.2 lays out the process of emergence of one of these groups, specifically one that is dedicated to rooftop solar PV production. In section 2.2, we go into detail on three different examples of these emergence processes to show how different types of territorial governance systems applied to Citizen Energy can shape its trajectory, and finally how these groups can come to shape (sometimes profoundly) those systems.

2.1. The Citizen Renewable Energy Project, Territorially Situated

2.1.1. What is a CREP?

In approaching this question, it is first important to clear up a common confusion in discussions of Citizen Energy: the difference between Participatory projects and Citizen Renewable Energy Projects (CREP). Participatory projects are those that integrate, to one degree or another, either average citizens, local public actors, or other groups that are not traditionally involved in development of renewables into the planning, financing and/or the governance of the project (ADEME, 2016). This very wide definition encompasses everything from crowdfunding of solar and wind farms through bonds and other debt, without access to governance, to projects in which the local population and municipal governments are in the driver's seat of planning, financing, and building the installation. If a larger-scale project falls under certain rules for percentage local ownership, it can receive a participatory bonus to the electricity it sells under requests for proposals piloted by the CRE. According Rüdinger (2019) then, Citizen projects are *"a very specific model in the extended family of Participatory projects.[17]"* It is this model that interests us for the present study, and we will spend this section discussing two approaches to understanding CREPs: through the Energie Partagée charter and as a socio economic actor with specific compositions, business models, and legal forms.

2.1.1.1. A Definition via the Energée Partagée Charter

The Energie Partagée charter sets the definition of what qualifies as a Citizen Renewable Energy Project (which they simply refer to as a Citizen Project), and is thus eligible for labeling, inclusion in their database, presence on their online map, and potential funding through Energie Partagée Investment. To begin with, *"Every project must have a coherent and global approach,*

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[17] Translated from French by this author.

integrating: a very favorable energy balance sheet, respect for environment and populations [and] care for economic returns to the local area[18]" (Energie Partagée, 2010). The charter then goes on to lay out the 4 criteria that define a Citizen Project: local anchoring, non-speculative ends, governance, and ecology.

According to the charter, local anchoring is defined in the following way:

"Local anchoring: the company operating the project is controlled by territorial collectivities, private individuals (and their groupings) and/or the Energie Partagée Fund. This means their ownership of a majority share of the company's capital and/or by a shareholder agreement guaranteeing their control over the long term. We seek the creation of direct relationships between producers and consumers to raise awareness of the links between energy needs and the means of production."

At least three things are notable here for our purposes. First, according to the central organizing association of the movement, a Citizen Project is necessarily a local one. While it is not explicitly laid out here, the scale for determining whether or not investors are "local" or not is the EPCI (Interview 31): to be considered local actors they must be based in the same EPCI or a neighboring one. This approach defines territory through an administrative lens, most likely in the interest of simplicity and legibility for public actors. Second, this definition for local anchoring underlines the importance of two forms of proximity in the definition of the movement: geographic and organized-belonging. The geographic angle is evident, as the presence of investors from a far-away territory are seen to reduce the project's Citizen character regardless of the nature of those investors, with the exception of the Energie Partagée Investment Fund. Organized-belonging proximity enters the picture through the incitation to create direct links between producers and consumers, reducing the distance between the two in their social networks and thus facilitation the spread of information and even of values. Finally, this attribute, and indeed the rest of the definition provided in the charter, place primary importance on control rather than ownership. It is possible for an outside entity to own a super-majority share in the company operating a renewable energy project, but so long as a shareholder agreement guarantees the long-term control of the types of citizen actors mentioned above, the project can still receive the label. So, it is the governance of the project, rather than the ownership of it, that must be territorial/local in nature.

Here is how the charter circumscribes the objectives of projects eligible to be labeled, posing itself in opposition to some of the uglier practices of large-scale, for-profit developers:

"Non-speculative ends: the investments are made to be directly used, and the returns to shareholders are limited. A portion of the profits is directed towards education, to investment in further citizen projects, and to actions of solidarity. We seek a Social and Solidarity Economy ethic*, providing access to energy at just and transparent prices."

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[18] All charter sections translated from French by this author.

The note attached to the asterisk in this description reads, *"Objective of service to members rather than profit; independence of management; democratic decision-making process; primacy of people and labor over capital in the sharing of revenues."* This aspect of the definition will be familiar to students and practitioners of the Social and Solidarity Economy (SSE). From the beginnings of the cooperative and associationist movements in the 19th century, a central tenant of the organizational forms has been the primacy of humans, or the mission, over capital (Laville, 2016). This attribute does not totally exclude the pursuit of financial returns, but rather requires that they be both limited and not the central focus of the project. The explicit references to the values of the SSE serve to signal that the ends pursued by the organization are not enough and that both the means employed and the ethical character of the company's functioning should be taken into consideration. The choice to situate the movement within the SSE is likely an outgrowth of the actors assembled around the table at the signing of this charter (mutualist banks, associations, cooperatives) who all fall within that sphere. This can be understood as an expression of organized-similarity proximity, in the sense that it creates a basis for coordination with other actors in the SSE, and in particular associations for whom economic activity is generally less of a focus and profit is deprioritized. Indeed, we do observe that most Citizen Renewable Energy Projects emerge from local networks centered around associations and other socially, politically, and ecologically engaged initiatives (Interview 4). The next section continues in this same direction, addressing governance.

The charter's third criterion for defining a Citizen Project brings in questions of democracy and transparency:

> *"Governance: the governance of the company operating the project is democratic, of a cooperative type, transparent and clear, with guarantees in place for the long-term maintenance of the project's mission. The chosen form of governance must allow for community oversight of production costs and for total transparency in internal functioning and on finances of the project."*

While apparently straightforward, this passage stops just short of providing a concrete definition for what the term *democratic* is meant to refer to. Although the elusion to the cooperative model is suggestive of the classic *one person = one vote* system most commonly associated with that model, this criterion avoids that level of specificity. And not for nothing, either: some Citizen Energy labeled projects do not in fact use that system, and some are very far from it. The most obvious example is the various projects piloted by Mixed Economy Companies, those organizations that allow both public and private investment but require the public actors to remain majority shareholders. These companies are required by law to attribute votes during shareholders' general assemblies strictly based on the share of capital ownership, the traditional mode of corporate decision-making. However, the argument can be made that the public institutions that make up the capital of a Mixed Economy Company are by their very nature democratic. Another example of the unclear definition of the word *democratic* is the case of certain projects belonging to the Centrales Villageoises network presented in section 1.2.2.2. Concerning governance, project groups may choose to use a *one person = one vote* system, or

they may choose from several other options which attribute different numbers of votes to different shareholders based on their capital share, although with a very limited possible range from the lowest to the highest number of votes (Interview 20). While these examples leave the question of defining *democratic* somewhat unresolved, it may be that this lack of clarity is not a bad thing for the movement as a whole, as this allows it to encompass a wider swath of interested groups and give the individual projects more flexibility to define their own rules (Interview 20). The insistence on transparency helps to maintain trust between the project and the area it operates in, which is important for increasing the acceptability of its projects (one of the primary goals/benefits of this model). The final attribute mentioned deals with considerations above and beyond the production of renewable energy.

Fourth, the charter commits to going further than a limited focus on energy, with its ecology criterion: *"...the company operating the project is committed, voluntarily and for the long-term, to respecting the environment, from the global level to the local level, and to an energy consumption reduction approach."* Here, the reference to an energy consumption reduction approach can be interpreted as referring to the Négawatt scenarios, a regularly updated set of models for the energy transition put out by the Négawatt group, a set of research and advocacy institutions that work on climate change (Négawatt, 2017). This model shows how France could reach carbon neutrality and 100% renewable energy production by 2050. While also promoting increase in renewable energy production, the phasing out of nuclear power, and improvements to agricultural techniques, the first and most important aspect of the model is a reduction by half of the consumption of energy for all uses. This scenario came up frequently in interviews, with actors as diverse as government agencies, national associations and energy production cooperatives all talking about Négawatt, often as though it were universally understood common sense (Interviews 24, 25, & 32. So, the Citizen Energy movement does not seek simply to maximize the production of renewable energy, but rather to participate in a viable path toward an energy transition. Indeed, many CREPs either consider or actively pursue diversification of their activities into advising and public education on energy consumption reduction (Interviews 32 & 35). This focus is unsurprising, considering the foundational role played by Enercoop in the creation of this movement: Enercoop's Dr. Watt program is focused on reducing energy consumption through renovations and changes to individual behavior (Enercoop, n.d.a). While understanding the importance of this aspect of the mission of Citizen Energy, we restrict our focus in this study to the renewable energy production aspect of the movement, as this is the thing in common between all of the CREPs studied; energy saving education and help with renovation are domains that these organizations sometimes expand into after years of development of their core activity.

Finally, the charter closes the section on what constitutes a Citizen Project by expanding the field of consideration to encompass more than just the organization: *"Respect for the charter will guide the choice of partners in the conception and the realization of the project."* The partners chosen by a Citizen Project should not be in contradiction with the values and modes of operation of laid out in the charter. Such a project should not, in theory, partner with a fossil

fuel company for the development of one of its installations, for example. It would also seem to suggest that a partnership with a predatory American hedge fund should be avoided. This is a clear recognition of the importance of organized-similarity proximity in the Citizen Energy movement: to coordinate with other actors, they must share similar (or at least compatible) norms and values. Indeed, the charter, taken as a whole, is a clear attempt to create a community that recognizes itself as has similar ideas of what rights, restrictions, and responsibilities are contained within that membership. In other words, "*a mental adherence to common categories*" that Torre (2019) uses to define organized-similarity proximity. Not only do these shared values allow the people who recognize themselves in them to join together as a movement, it also allows them to come together locally around a common vision for their territory to form the actual organizations that will do the work of building Citizen Energy at the their level.

Moving beyond this high-level values-based definition given by the movement, a CREP is also a specific organization with its own legal existence, members, and business model.

2.1.1.2. A Definition via The Organizations Themselves

A CREP is a formally independent legal entity that falls under French private law whose activity includes (although is not necessarily limited to) the development, production, and sale of renewable energy through any technology. There is no specific legal form dedicated to cooperative production of renewable energy, a France-specific difficulty highlighted by Poize and Rüdinger (2014). Nonetheless, each renewable energy project must have a Project Corporation (PC)[19]. This PC is the entity that, at a minimum, owns the productive infrastructure and sells the energy being generated. Larger installations, such as ground-based solar farms over 300 kWp (Interview 6) or wind-turbines, must each constitute a separate legal entity with its own equity and governance. By contrast, rooftop solar PV focused CREPs are most often single legal structures that develop many smaller projects. As a result, a CREP almost always takes one of the following forms: an SAS or SCIC if it is initiated by private actors, or a SEM if it is fundamentally a public project.

In essence a radically slimmed-down form of the Joint-Stock Company (SA), the SAS is the simplest and most flexible of the various French legal forms for businesses, granting its shareholders great freedom in setting their own bylaws. The main reasons for choosing an SAS by interviewees (4, 27, 32, & 35) are the speed of getting the company registered, the freedom to decide on the payment of dividends, and the high degree of flexibility in defining the rules of governance. As we saw in the discussion of the Energie Partagée charter, democratic governance is an important aspect of what makes a CREP what it is, and the SAS allows the shareholders to adopt a system in line with those values. Democracy on a one person = one vote basis, with the possibility to create colleges, is the standard governance model for the other most popular legal form in the world of CREPs: the SCIC.

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[19] In French "Société de Projet"

The Cooperative Common Interest Company (SCIC) is a multi-stakeholder cooperative whose function is to bring together a variety of types of members who share an interest in a good or service, and who wish to contribute to its creation (CGSCOP, 2020). Legally, the SCIC is a modification of either the SAS or Limited Liability Company (SARL) form, adding on additional elements to both ensure and recognize its cooperative nature. The biggest of these restrictions is the limited percentage (42.5%) of its profits that it can distribute to its members, with the rest going into indivisible reserves. While the total reinvestment of profits into the SCIC can provide a more solid economic footing for the company, this choice can exclude potential members whose primary interest is to obtain a modest return on investment while also contributing to local economic development, according to an administrator whose CREP chose the SAS form (Interview 32). The motivations for choosing the SCIC over an SAS are generally ideological, with attachments to the values and methods of the Social and Solidarity Economy often put forward (Interviews 8 & 21). While a local government can choose to invest in a SCIC, or since 2015 in an SAS, for the production of local renewable energy, it is also possible for them to take the initiative on those projects using a Mixed Economy Company (SEM).

A SEM is a private joint-stock company in which public institutions hold a majority capital share but with private entities also owning shares (Collectivités-locals.gouv.fr, 2016). The governance rules for a SEM are relatively inflexible and shareholders' assemblies must assign votes based on the number of shares held (Interview30). In the realm of energy, SEMs are almost always outgrowths of the SDE for their department, and the importance of these actors in the areas where they choose to take an active role is hard to overstate. In addition to generally being anchors of the local energy ecosystem, SEMs serve two primary purposes in the realm of Citizen Energy: as a financial instrument facilitating fundraising from different public and private sources to be invested in renewable energy projects on the one hand, and as the actual developer, owner and operator of projects on the other. As a structure for investment, their combination of public and private capital is used to purchase shares in renewable energy Project Corporations (PC), which can either be CREPs, developer-led projects, or those initiated by the SEM itself. Investing in developer-led projects allows public authorities to have a seat at the table in shaping specifics of the installation and to benefit from the economic returns it will create via the payment of dividends. The SEM can also initiate its own projects, which it does frequently, meaning that the project starts and remains oriented toward the public good of the territory, taking into account not only economic but also aesthetic and safety concerns (Interview 30). It also means that both the decision making power and financial benefits of the project remain locally anchored (Interview 31). Not all renewable energy focused SEMs are considered CREPs, as most have not yet chosen to open up their capital to investment by local citizens, but those who do are powerful motors for the development of citizen energy.

Whatever the legal form, its members (or shareholders) are most often individual residents of the territory where it operates (either individually or grouped into an investment cooperative or similar organization) but can also be legal persons such as local business, civil society organizations such as socially conscious investor circles like CIGALES clubs

(Interviews 15 & 18), local public actors, or the Energie Partagée Investment fund and other similar financial entities. Members purchase shares in the CREP and are usually its main source of non-debt investment capital. In any given CREP, the majority of the members are not actively involved in the day-to-day operations of the organization. Most members limit their support to investment and perhaps some occasional help in spreading the word when the CREP needs to raise funds. Some smaller number view occasional assistance with volunteer tasks as a part of the commitment to the group and can be found handing out flyers or behind stands at events, for example. However, the people who truly constitute the beating heart of the organization are the Core Project Group[20].

For our purposes, a Core Project Group can be defined as a collection of individuals, ranging in number from a low of about five to a high of around twenty, that perform the majority of the labor needed to build the CREP (Interview 23). This group is generally only an informal entity that exists insofar as they are the ones doing almost all of the work. This labor comes in many forms, which are relatively consistent across the CREPs studied here. Table 1 presents a summary of the types of activities that the Core Project Groups engage in, broken down into 3 categories corresponding the most common Working Groups used. This division of labor is recommended for emerging CREPs actors in the field, including Coopawatt (Interview 23), a consulting firm specialized in citizen energy projects, and the Centrales Villageoises network (Interview 20). This working group system is apparently used across all technologies, but it is the most systematic for CREPs focused on rooftop solar PV installations.

Working Group	Financial/Legal	Communications	Technical
Associated tasks	Drafting bylaws; recommending legal forms; provisional budgeting; financial reporting; managing bank relations; seeking subsidies…	Social media presence; building and maintaining a website; organizing events; fundraising campaigns; newsletters...	Qualifying installation sites; evaluating engineering proposals; estimating probable future revenues; basic maintenance...

Table 1. Common tasks of CREP core project group during emergence phase.

During the creation and early life of the CREPs studied here (mostly solar PV), these groups are entirely made up of people freely giving their time without the expectation of payment for their labor. It is true that some CREPs choose to provide dividends to their investors after several years of operation, and also that some have been able to achieve a sufficient size to fund a paid employee position, but neither of these factors come close to compensating the initial core project group for their labor. The amount of work required can reach the level of several full-time-equivalent positions for 2-3 months, according to a volunteer administrator in a solar PV CREP launched in 2017 (Interview 35). Often, an emerging CREP will get outside

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[20] In French "Noyau dur"

assistance from the paid employees of a public actor or form a consulting firm. However, that paid labor is fundamentally situated outside of the project and neither stems from nor depends on the internal resources of the nascent CREP. Groups that use technologies requiring large amounts of capital such as wind-turbines and biogas facilities are both rarer and have more latitude to hire staff to assist the otherwise largely volunteer project (Interview 32).

In all of the interviews and documentary research that form the basis for this study, there was no disagreement on the importance of the core project group to the emergence of these citizen projects (Interviews 3 & 33). The director of Coopawatt even goes so far as to say that *"The most important issue for these collectives is the human dynamic equilibrium."* (Interview 23). Recent academic research on the topic is similarly clear (Fontaine, 2018). When they are addressed, the human dimensions are consistently affirmed to be the most important ones in determining whether and how a CREP will take shape in a given territory. The emergence of a Core Project Group is often the first identifiable step in the building of a project.

2.1.2. The Emergence and Evolution of a CREP

Each CREP is the unique result of the specific people, economic context, and territorial conditions that they emerge within. The renewable energy technology chosen also plays a large role in the specific contours of the organization and how it emerges. Wind, solar, biogas, wood, and water powered projects all follow different paths from their shared beginnings as an idea that inspires the residents of an area, all the way to becoming an important actor in the territory's energy system. While there are commonalities between these technologies, and differences within them, the most well understood and replicable processes of emergence are in the solar PV focused CREPS. For these reasons, and because our research interviews were mostly focused on this type of project, we will describe the process of emergence for these groups.

The new CREP begins as an idea in the minds of one or many people within the territory, along with the motivation to do something about it. The idea that citizens could be directly involved in the development of renewable energy via rooftop solar PV installations generally comes from an outside source of information such as a documentary, a chance discussion with a friend, through networks dedicated to the energy transition, or any other way that people can learn about the existence of the Citizen Energy movement. However it arrives, the idea then takes root and people begin talking about it to the people around them and a group of interested people begins to form (Energie Partagée, 2018).

In these very beginning phases, the information about the project beginning to take form tends to travel by word of mouth across relational ties. It then stands to reason that the overall spread of this information, who it reaches, and the speed at which it travels would be conditioned by the organized-belonging proximity of the first movers to other potentially interested people in their social networks. These relational ties will tend to transmit more information and have a greater capacity to motivate action to the degree that they are strong, but also to the degree that the person receiving it is getting it from multiple sources in short succession (Granovetter, 1973 & 2005). For this reason, we tend to see these beginnings of

Core Project Groups emerge in social networks around associations engaged in ecology or local democracy where people already know and trust one another. It is not uncommon to find groups of locals who have banded together around shared ecological values, but do not have a concrete goal in mind yet, and who then decide to make their mission the creation of a CREP once they learn about the possibility (Interviews 8 & 34).

In the majority of cases, these early stages involve the participation of one or more of the EPCIs covering the area where the interested group is in the process of emerging (Interviews 7, 8, 20, 23, & 31). Partnering with citizens is seen as a way of uniting the population behind a common *territorial project*, gaining more economic benefits from developer-led production in the area through co-investment, and benefitting from the often substantial capital that citizens themselves can bring to the project (Interviews 3, 7, & 17). Often, it is even someone in the EPCI itself that first has the idea for a CREP in the territory, and the EPCI that tries to spark the interest of its citizens (Interviews 8, 10, 16, 17, & 34). It is most often an intermunicipality that takes on the task of helping these citizen initiatives to emerge, as these are the public actors which are both large enough to provide sufficient rooves to develop, and small enough to remain in close contact with their inhabitants (Interview 20). This assistance can come in many forms, but the most common are administrative and grant-writing assistance, lending the use of meeting rooms and mailboxes, direct investment in the CREP, hiring outside organizations like Coopawatt as consultants to the project or even to plan its emergence, and hosting public information sessions on the topic. These public information sessions serve to amplify the message that was otherwise mostly passed within preexisting social networks, using their means of communication to jump over the gaps between those networks and bring people into direct organized-belonging proximity who likely would not have otherwise met one another. The EPCIs that involve themselves actively in these early moments have much to gain, and in particular they can ensure that the territory of action of the new CREP includes their entire territory. This is especially important as the level of identification with EPCIs as a relevant territory is generally low. This form of public support can make a significant impact in shaping the way that the Core Project Group conceives of itself.

The result of this early stage of development is the constitution of a collective of somewhere between 20 and 50 interested inhabitants (Interview 23), within which the Core Project Group naturally forms. For this to occur, the people assembled must immediately begin to form ties with one another, as strong as possible, as those human connections are what will allow them to continue working together and enjoying it over the multiple decades that such projects typically last. *"Never forget the conviviality"* was the advice offered by a former President of Eoliens et Pays de Vilaine (Interview 32), underlining once again the importance of the human dimension. Echoing our discussion of the emergence of a territory in section 1.1.2, the emergence of a Core Project Group relies heavily on geographic proximity.

The geographic proximity of members of the Core Project Group to one another, and to the sites of their projects, represent a limitation on the possible spatial reach of a CREP that relies primarily on volunteer labor. When a participant in a CREP goes to a group meeting,

travels to check on a potentially malfunctioning solar panel, or presents in front of a gathering of local citizens and officials, their ability to do so is limited by the distance they have to travel to get there. This is the primary reason given by the pioneering Combrailles Durables cooperative in the Puy-de-Dôme for why they do not wish to expand their activities far beyond the area where their organization started, and where most of the active volunteers live (Interview 21). This is also one reason why the intermunicipality is typically the territory of action for CREPs; with some exceptions, these EPCIs are not so large as to make any part of them "far away" from any other part. This is one reason why Cowatt, which serves as an umbrella organization for their project communities, encourages its members to focus their efforts that this scale (Interview 33). Finally, remembering that geographic proximity is not limited to raw kilometers but instead encompasses travel time and cost, some very sparsely populated areas with little public transit may simply be unable to sustain the emergence of such a group. In an anecdote related in Interview 4 by a trainer and facilitator with a regional environmental non-profit, one group in the mountainous Savoie region has been trying to form unsuccessfully for over two years (Interview 4). The long distances between villages, the poor winter road conditions, and the very separate nature of each mountain valley have made meeting with sufficient frequency difficult and has begun to seriously sap participant motivation. But the potential for a Core Project Group to form and be sustainable is also conditioned by the values, norms, and self-identification present within it.

After the Core Project Group has begun taking shape and the early-stage territorial borders of the future CREP come into focus, the group will have a number of important decisions to make with regards to the mission and values that they want to incarnate. Should they only work with local contractors for installations, or look outside of the territory for the best price? Is it better to reinvest all of their money, keeping it dedicated to the mission of renewable energy development, or should they offer dividends to their investors to be able to attract more? Are they willing to partner with large, traditional renewables developers or does the highly capitalist nature of those businesses run afoul of the group's ethic? The need for a an organized-similarity proximity of values is particularly well illustrated by a question that inevitably arises in the process of planning their projects: equipment sourcing.

A solar PV installation is an assemblage of solar PV panels, made up of groups of photovoltaic cells, with other pieces of electronic equipment, particularly an inverter which converts direct current (DC) solar power to alternating current (AC) power for home self-consumption or transmission to the electrical grid. As with so many manufactured goods, solar equipment manufactured and assembled in China is among the least expensive and solar equipment assembled in Europe tends to command higher prices, in particular due to higher labor costs in these places. The key components are rarely fabricated in wealthy countries such as those in the EU or Japan (Hanada, 2019).

For some who join a Core Project Group, a solar PV installation is not worth building if the panels were not entirely made in France. For others, the country of origin of the panels is a relatively unimportant question compared to the viability of a project. Still others choose a

middle path, with most aspects of panel construction handled in Europe, and inverters, control units, and other required technical equipment coming from France. This problem was described clearly in an interview with a former president of Combrailles Durables, (Interview 21). He described debates within the cooperative around panel sourcing, arriving at the compromise position of purchasing panels whose solar cells are produced in China but with panels and other electronic equipment assembled in Europe: *"We try to do our best without setting the bar too high.[21]"*. This same analysis applies to a wide range of values that are placed in opposition to one another, requiring the group to reach compromise to move forward fruitfully. Once the Core Project Group has reached acceptable compromises, thereby bringing the commitments of the organization into close enough organized-similarity proximity to be not only acceptable but motivating for all of them, the formalization of the CREP can begin.

Around this time, most groups choose to create a legal structure, join one of their local Citizen Energy networks, divide into working groups, and then begin to build their business plans. For rooftop solar PV based CREPs, the first step in economic planning process is to identify rooves that could be suitable for an installation, based on orientation, shading, size, structural considerations, and the owner's willingness to participate (Centrales Villageoises & Energie Partagée, 2020). Larger rooves are more profitable thanks to economies of scale paying down fixed costs and this will often mean working with local governments who own many buildings with large rooves such as gymnasiums, schools, & police barracks, among others (Enregie Partagée, 2017) . Local governments are also more likely to see the public interest in projects like these, and in addition to investing directly may also offer the use of their rooves for only a symbolic rent. Once again, these rooves cannot be too far away from any Core Project Group member willing to participate in occasional maintenance, but they also cannot be too far away from an appropriate grid hook-in location (Interview 21). Enedis is the sole entity that the law allows to connect producers into the grid, although most SDEs have the technical capacity to do so (Interview 36). Depending on the distance from the nearest transformer able to accept the new capacity and the strength of the local grid, the cost of hook-in can go from 1,300€ to over 10,000€, which can render these small installations economically unviable (Interview 10). This is another example of how geographic proximity and infrastructure can be decisive for a territory's ability to generate a new CREP: a higher-quality, more extensive grid makes each project within the territory easier financially. With a cluster of 5 to 10 rooves identified, the Core Project Group can create a fleshed-out business plan and begin finding its financing.

Projects for clusters of rooftop solar PV installations are almost always financed by a mixture of their own capital, raised through various sources, and a traditional bank loan. The usual recommended split is 30% capital and 70% debt (Interviews 4 & 23). In most cases, the majority of the capital is raised from average residents, buying shares in the company and becoming voting members. These fundraising campaigns represent huge amounts of concentrated work, as the amounts to be raised can often exceed 50,000€ (Interview 10) or even 100,000 € (Interview 35), but they are consistently described by knowledgeable actors as being

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[21] Translated from French by this author.

"far from the hardest part[22]" (Interview 23). The most effective form of communication for these campaigns is, once again, word of mouth, meaning that process relies heavily on a "well-networked" Core Project Group; a CREP started entirely by recent arrivals to the area would struggle to raise citizen capital. Local public actors can also invest in the CREP, and sometimes do at a very significant level as in the case of Ouest Aveyron (Interview 16). Some SDEs even invest outside of their departments through their SEMs, as the SEM Soleil in the Loire did when aiding SAS CEVIAL in the Rhône to raise funds (Interview 35).

Depending on the territory, there may also be SSE organizations like CIGALES investors clubs (Interviews 15 & 18), or local complementary currency associations such as the Doume in the Puy-de-Dôme department, which invested in the SCIC Toi & Toits (Interview 8). For larger projects encompassing several hundred kWp or more, various larger scale (national or regional) Citizen Energy specific actors such as Enercoop or the Energie Partagée investment fund may choose to participate. By contrast, bank loans are usually a simple process. While it used to be the case that many banks were hesitant to fund CREPs, the past 10 years of development of the Citizen Energy movement have led banks to gain institutional experience with the business model (Interview 19). It has not hurt that the primary source of revenue for solar PV focused CREPs is extremely stable and predictable over a span of 20 years thanks to the obligatory purchase contracts put into place by the French state in 2000.

With the increasing acknowledgement of the importance of combatting climate change, in 2000 the French government sought to support the development of smaller-scale and decentralized production by creating a new policy tool that would become a key component of the development of Citizen Energy: obligatory purchase contracts with a fixed sale price (Loi n° 2000-108 du 10 février 2000). This policy requires EDF to purchase all of the electricity produced by smaller-scale renewable energy installations at a fixed price agreed on for the length of the contract, which is 20 years for solar PV. The goal was to offer a subsidized price over the long term to aid in the development of both the technology and of the sector (installers, engineering consultancies, etc.). Over time, the prices offered were to diminish and the program would eventually disappear entirely as it became unnecessary to provide outside incentives for new projects (Interview 10). As an example, here is an extract of the pricing table currently in use for new contracts this trimester for installations that are not integrated into their rooves:

Peak Capacity of Installation	Prices (c€/kWh) from 01/06 to 30/09/2020
9 to 36 kWp	11,79c€
36 to 100 kWp	10,25€

Table 2. Obligatory Sales Contract Prices for Solar PV T3 2020, Source: photovoltaique.info

The price has descended from a high point of over 60c€/kWp in 2010 (Interview 21), but still remains attractive enough to continue developing for 36 and 100 kWp installations, which can

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generate a modest return on investment and allow a CREP to cover its fixed costs and justify its time-investment if grouped together into clusters (Interviews 2, 4, & 10). For a comparison, Enercoop currently offers 6c€/kWp with long-term contracts for 36kWp installations and their price is intended to support their producers[23] (Interview 6), so we can assume that at least (slightly less than) half of the price offered by EDF is a subsidy. This price support for small-scale solar production benefits individual home owners and especially farmers thanks to the frequently large rooves of agricultural buildings, but has also been referred to as a tool for territorial innovation for their capacity to support the creation of novel organizations and partnerships through the resources that they effectively transfer from the territories with the largest concentrations of energy consumption (usually urban) to those that have a higher capacity to produce (largely rural) (Cointe, 2016). Whether urban or rural, with the 20-year contract underlying the business model and helping to ease the worries of banks, and the citizen funds raised, the CREP can move on to the installation and operation of its first few rooftops.

The actual process of selecting the physical components and getting them put on the rooftop brings in a wider range of private for-profit actors: equipment distributors who are involved either directly or through a solar installation company, those installation companies themselves, insurance providers for the equipment and also the rooftop (though some are mutual insurance companies), and usually engineering consulting offices. Two results are worth noting here. First, this engagement of private actors in this project is the basis for 35.3% of the economic benefits provided by these projects, which a study on the topic by Energie Partagée estimated at 2,5€ per euro invested (Pernot Du Breuil & Zambeaux, 2019). Second, the act of bringing these actors together under the same project can create connections that would not otherwise exist as installers, bankers, public servants, elected officials, representatives of civil society organizations, and average citizens mingle at events and even attend meetings together. To the extent that the CREP is convincing in its presentations, it can even move all of these actors closer together on issues of renewable energy development. These relationships increase the ability of the territory to coordinate with itself on issues of renewable energy development (Interview 10). In other words, the emergence of a CREP can reinforce the capacity for territorial governance of renewable energy.

Once the cluster of installations is in operation, the CREP is now free to move on to other projects, diversify its activities, or simply content itself to operate and maintain what it has already built. According to a person with experience starting several solar PV CREPS, some are are "mono-project", with no greater ambitions than to simply build a few installations and then tend to them (Interview 10) but most have in mind the continued development of more rooftops, hoping to one day reach the scale necessary to hire an employee. Few CREPs have reached that level, such as Combrailles Durables (Interview 21) thanks to their first installations being under the very generous early 2010's pricing scheme, and most find it difficult to do so with the thin margins of rooftop solar PV production. Others seek out new activities such as advising or public education on energy saving techniques, maintaining their commitment to the

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[23] Enercoop pricing information: https://www.enercoop.fr/content/notre-offre-petits-producteurs

Négawatt-influenced vision of Citizen Energy. The first solar PV CREPs have now reached the status of important partners in their territory for the development of renewable energy, often invited to participate in new projects as a matter of course. Perhaps it is possible for such an organization to go even further than that and, with the active participation of the other important actors in the territory, instill its Citizen Energy logic into the whole ecosystem of territorial governance guiding the development of renewable energy.

2.2. Territorial governance of and through Citizen Energy

Building on a framework proposed by Gilly and Perrat (2003), Leloup et al. (2005) break down territorial governance into three broad types depending on the types of actors that initiated and are leading the dynamic: Private, Institutional, and Mixed (or Partnership Based):

> *"Private governance corresponds to the case in which an organization (an R&D center, a business association, a leading firm, etc.) is the key actor in the process of coordination of actors. Institutional, or public, governance corresponds to the case in which it is an institutional actors (or multiple institutions) that plays this role (administrative territorial collectivity, state, center for public research, etc.). In reality, these "pure" types are rarely encountered and we most often find an association of the preceding forms, in which case we choose to speak of mixed or partnership-based governance.[24]"*

In this section, we lightly adapt this framework to better fit the study the territorial governance approach offered by Citizen Energy, specifically by adding a Citizen led type of territorial governance in which organized civil society (associations, cooperatives, mutual aid organizations, citizen collectives, etc.) and residents that are not acting as representatives of any public or private for profit actor spark and lead the dynamic. While all CREPs are to some degree Partnership based by their very nature laid out in the Energie Partagée charter, it is still meaningful to distinguish between these three categories as representative of points on a scale going between citizen initiative/control to public initiative/control. Three examples of highly successful projects help us illustrate how these different categories can both emerge from and lead to different territorial governance arrangements. Finally, drawing on our observations in this section and elsewhere, we propose a scale representing the degree of integration of Citizen Energy into the local territorial governance of renewable energy. This scale is progressive and is a first attempt at hypothesizing the process of evolution of a CREP into something more.

2.2.1. Citizen Led: Energies Citoyennes en Pays de Vilaine Group

As addressed briefly in section 1.2.2.1, one of the first examples of a citizen renewable energy project in France, the group that would go on to create the non-profit association Éoliennes (wind-turbines) en Pays de Vilaine (EPV) was started in 2002 (Energie Partagée,

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[24] Translated from French by this author.

2017). However, in the 12 years it would take them to achieve their original mission, they would have to not only expand their vision of the limits of their "territory", but build entirely new structures of territorial governance of renewable energy along the way. In interview 32, a former president of the association EPV (now Énergies Citoyennes en Pays de Vilaine) described the growth and evolution of their group of organization as taking place in three phases, each one corresponding to a major changeover of the Board of Directors.

The first phase of development, the *"pioneer phase"* started with a couple of farmers in the Bretagne region trying to build their own small wind-power installations and quickly evolved into a collective project with a group of volunteers working to develop multiple wind-farms in the area around Redon. This town of around 9,000 people had suffered from deindustrialization in the 1970s but has been able to maintain a thriving associative sector and good quality of life thanks to the success of rural youth movements, a high propensity to volunteer, and simply because *"people here are used to working together"* (Interview 32). The first people who gathered around the project were largely motivated by the idea of being a part of the development of their territory.

After several permit refusals and regulatory roadblocks stymied their first projects, the group decided to structure themselves and form the Éoliens en Pays de Vilaine association in 2003. The choice to identify their project with the geographic region around the Vilaine river, reflected the fact that the project *"was very much linked to a very specific territory and their town, and so we had all of the people who were from that area and who wanted to participate in the development of their wind turbines.[25]"* (Interview 32). This phase was a typical example of the ways that proximity impacts the emergence of these projects. A combination of geographic and organized-belonging proximity allowed a group of citizens to come together around a project for their territory, aided by a shared history and conceptions of their territory as being a cooperative one (organized-similarity proximity).

In its early interactions with public authorities, this enthusiasm emerging from the grass-roots encountered a mixed reception. The intermunicipality that included Redon was initially dismissive, then skeptical, and never a strong source of support. According to a former president of EPV (Interview 32), they believed that there was no way a small citizen-led association could succeed and in any case that the EPCI should exercise significant control over the development of the project. By contrast, the Loire Atlantique department was willing to support the project by funding initial viability studies for site for their wind-farms, leading to EPV choosing two sites in, or adjacent to, the intermunicipality of Redon. With their EPCI unhelpful, their local project blocked by the responses of regulatory agencies, and aid coming from the departmental level, EPV went through its first transformation.

In the second phase of development, beginning around 2006 when the Bretagne region and the department funded an employee position in the association, activists from the area began to play a greater role in the organization. They wanted to show that it was possible to for citizens to accomplish these sorts of projects (Interview 32). In addition, the size of the territory

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[25] Translated from French by this author.

that EPV would involve itself in grew considerably to encompass the regions of Bretagne and Pays de la Loire (and beyond). Also, during this phase, EPV went from being a single association to building a group of interconnected organizations. The first was a renewable energy development company, Site à Watts, that would also serve as a sort of in-house engineering consultancy for CREPs, particularly wind-farms, associated with EPV (though it would later expand its activities outside of the boundaries of the group). Creating their own development company allowed EPV to maintain independence from major for-profit developer who were interested in partnering with citizens in the financing of new installations but were insisting on holding majority shares in the resulting project corporations (Interview 32). This independence put EPV in a good position to evolve and take on new challenges.

In 2009, the ADEME mandated EPV to organize a seminary on citizen wind farms, bringing together a variety of actors from the Bretagne region and across France (Energie Partagée, 2017). The result of this seminary was the creation of Energie Partagée (both the Association and Investment branches) and the founding of the Taranis network, an initiative supported by the ADEME and the Bretagne region and managed by EPV to provide support and training to new CREPs in Bretagne. Finally, after over 10 years of preparation, struggle, and organization building, this phase saw the installation of two wind farms in the area around the Redon intermunicipality beginning in 2014.

With this major milestone achieved, EPV (now Energies Citoyennes en Pays de Vilaine) entered its third (and current) phase of development, in which the group once again expanded its ambitions. This time, rather than growing territorially, the group expanded transversally to include a wider variety of activities than just the development of wind farms and a broader vision of the ecological transition (Interview 32). In addition to using a portion of the revenues from its wind farms to fund public education programs on energy-saving techniques and eco-renovation, EPV has also begun to support the development of other forms of renewable energy. The association Etoile Solaire was founded in 2016 in Redon by early investors in the wind farm projects with the aim of developing clusters of rooftop solar photovoltaic installations. In 2020, the solar dimension of the group's activities grew again with the creation of Kerwatt, a regional-level structure to mutualize different costs and administrative work at the regional level, explicitly inspired by Cowatt (Interview 10). The EPV group is now made up of 9 organizations or initiatives at the local, departmental, and regional levels (plus deep involvement in Energie Partagée at the national level), each operating independently, with no shared binding decision-making structure. The culture of cooperation inside the group means that resources (human, financial, and informational) are freely shared and help is given when needed (Interview 32). This formally loose but practically tight cluster of organizations serves as a citizen-led space for coordination and cooperation among a diverse caste of actors.

If we look at the experience of EPV through the lens of territorial governance, we see how a small citizen project in the town of Redon grew up into a series of organizations that participate actively in the development of renewable energies in Bretagne and elsewhere. Starting from the identification of unexploited territorial resources (wind & citizen

engagement), the group gradually grew to encompass While the involvement of public actors has been important to its growth and evolution, the genesis of the project was clearly outside of the public sphere. In fact, many of the early experiences which shaped the group and its ambitions were moments when their projects where frustrated by various government agencies and by their intermunicipality. The mode of governance that EPV has contributed to building may now be closer to a Partnership based one, with the group co-creating new projects and new organizations with public actors and traditional developers alike, but the genesis and the current motor of the dynamic is clearly led by citizens and their organizations directly. Their ability to play such a central role in their territories may owe a lot to the large amount of resources that they were able to mobilize, from public aid to revenues from energy sales to the activity of Site à Watts development company, giving them the freedom and the economic weight to influence the trajectory of their territory. EPV is one prime example of a CREPs becoming an essential actor for the governance of renewable energy development and in their area, and was one of the most important factors in helping Citizen Energy grow from a set of citizen initiatives into a movement proposing a different approach the territorial governance of renewable energy.

2.2.2. Partnership Based: Monts Energie

In 2013, and intermunicipal syndicate covering the territory that would later become the Monts du Lyonnais intermunicipality joined the Positive Energy Territories (TEPOS) network. This network, created in 2012 by the CLER association for the energy transition, is for territories that commit to reducing their energy usage as much as possible and covering their remaining needs with renewable energy (Interview 25). This is where their slogan "100% renewable and then some" comes from (TEPOS, 2020). The network provides visibility for territories that make this commitment but more than anything gives them the ability to communicate with others who have started down the same path, to share experiences, and to learn new approached. The intermunicipal syndicate set the goal of becoming a Positive Energy Territory by 2050, and each of its member intermunicipalities followed along enthusiastically.

This shared project for their territory, easily understandable by citizens and elected officials, formed the basis of a process of co-construction and of partnership with the population, according to an employee of the intermunicipality responsible for the development of renewable energy (Interview 17). During this period, the territory voluntarily took on the formulation of a Territorial Climate and Energy Plan (PCET), identifying the specific roadmap that would get them from where they were to reaching their goal of being a TEPOS by 2050. This opened the period in which the territory has taken an active role in promoting the energy transition through public education to fight common misconceptions, preventing developers from engaging in extractive or speculative practices, and building partnerships. An eco-habitat center, originally built in 2010, was a key player in this by providing both information and, later, funding to inhabitants to help them renovate their homes for energy savings. With the creation of the Monts du Lyonnais intermunicipality in 2017 from the fusion of two older intermunicipalities, the territory opened a period of public consultation to update their PCET

into a new PCAET. During these meetings, the citizens of the territory expressed their desire to participate more directly in the energy transition, as they were already active on the subject.

The Monts du Lyonnais has a strong ecosystem of associations and engaged residents, a *"good soil"* for new citizen projects (Interview 34). For many years, the associations of the area would come together for a sort of Social Forum in which they could get their messages out, exchange information with each other, and build a shared sense of community. Many of these associations were already focused on questions of ecology. Out of this well-networked and dynamic associative scene grew a citizen collective focused on the energy transition that would eventually come to make up a significant part of the Core Project Group for the CREP that was to emerge from the territory (Interview 34). Here we see another example of the power of organized proximity of both kinds working in concert, in which people gather together around their shared values and conceptions of a better future for the world (and territory), creating tight social networks that are able to mobilize their members to action. Initially, this collective didn't have a clear set of goals or a fixed idea of how exactly they would participate in the transition, which is one of the reasons that they were enthusiastic to participate when the intermunicipality put on a series of public information meetings trying to solicit citizen enthusiasm to create a CREP to develop rooftop solar PV installations (Interview 17).

With this citizen collective identified, the intermunicipality then helped them significantly through the early stages of emergence and creation of a CREP. First, they hired Coopawatt to help them through the process of constituting their initial group of participants (around 50) and their Core Project Group (around 20) made up of citizens from every one of the 32 municipalities in their territory (Interview 34). In addition to paying for the services of Coopawatt, the intermunicipality has committed to providing the CREP with 1.5 days per week of work time from two of its public employees. These labor hours help the CREP with administrative tasks, grant applications, legal questions, learning how to organize their fundraising campaigns, and mobilizing the mayors of the municipalities. In addition, there is a municipal elected official among the most active members of their group who has played an important role in helping them to structure their governance and motivate their volunteers.

The legal entity SAS Monts Energies was created in 2018, and very quickly began raising the money needed to reach their ambitious first goal of 1 MWp of solar installations. As of this year, they have over 500 kWp of capacity installed or in development, and over 170,000€ of citizen and public actor investment raised (Interviews 17 & 34). These rooves have been provided by private citizens and municipal governments convinced of the importance of the imitative, and the group plans to install many more. For the intermunicipality, their attempt to help a CREP to emerge in their territory has certainly been a success.

This Partnership based approach has struck a balance between public and citizen initiative. From the original TEPOS commitment onward, the initiative has grown in a dialectic back-and-forth with the citizens expressing a desire for more involvement during the PCAET consultation period, then the intermunicipality inviting them to create a CREP, and the citizen collective on the energy transition responded to the call. As the current president of SAS Monts

Energies said: *"The intermunicipality wanted to make this happen, but they definitely also needed motivated citizens across the table from them.[26]"* (Interview 34). This partnership is based on a shared idea of the future development of renewable energy for the territory, TEPOS, that has been critical for mobilizing the population, according to the employee in charge of public participation and education in renewable energy (Interview 17). The intermingling of public employee and volunteer labor, as well as the presence of elected officials in the Core Project Group of Monts Energies is yet more proof that the public and citizen components of this project, and their fruitful relationship, are crucial to its success. With that said, evolutions in such organizations are always possible.

In the future, the President of Monts Energies sees the possibility of joining together with other nearby CREPs to mutualize some services and reduce their costs (there are several in the region immediately west of Lyon). This could take a number of forms, from negotiating together with suppliers to get better prices on solar PV hardware, to pooling their resources to take on larger installations such as shade-rooves for parking lots, even going as far as sharing a salaried employee among them for administrative or technical work. Given that the formal partnership by which the intermunicipality provides them with work time will expire after 3 years, Monts Energies could very well evolve in the direction of being more exclusively Citizen led than it is today. Whatever the future holds, it is clear that both the citizens and the public actors of this territory are deeply motivated to find a path toward a TEPOS future together.

2.2.3. Public Led: The SEM Nièvre Energies

Created in 2012, the Mixed Economy Company (SEM) Nièvre Energies was the first "citizen" SEM created in the energy sector in France (Energie Partagée, 2017). This CREP was born in the aftermath of a failed attempt by a group assembled around the ecological association le Varne to create a wind-farm. This project began at the initiative of a private developer that wanted to involve citizens and thus make it a "participatory" project to gain a bonus on the sale price of the electricity produced. Unfortunately, the initial viability studies provided by this developer were less than reliable and the citizen capital raised by the SEM could not be invested, leaving a bad impression on the territory (the Nièvre department) with regards to wind turbine development (Interview 30). The local SDE, the SIEEEN, was enthusiastic about future collaborations with residents, and especially with the citizen collective that had grown up around the failed project. All of which resulted in the creation of the SEM Nièvre Energies. While the SIEEEN could statutorily only do work directly for its municipality and intermunicipality members, the new SEM was able to be involved in any kind of renewable energy development inside of its department or beyond it. In addition, the capital of the SEM was opened up to investment by residents of the Nièvre department via a citizen investment cooperative called Bourgogne Citizen Energy Cooperative (CBEC), which holds 9% of the capital of the SEM (Energie Partagée, 2017). For a CREP, the SEM has a significant ability to

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[26] Translated from French by this author.

raise funds, including a total capital of 1,740,000€, which allows it to act at a much larger territorial scale (the department) than most CREPs. These resources permit it to work on many fronts at the same time, as represented by its 4 "levers of action" as described by their Head of Renewable Energy Development (Interview 30).

First, Nièvre Energies can develop its own large-scale installations form start to finish, creating the Project Corporations (PC) and financing them from their own capital and from funds raised from citizens and local and regional public actors. This approach allows them the greatest ability to shape the project from the beginning to ensure that it retains its public interest character (Interview 30). When developing their own projects, they are able to consistently involve local governments, facilitate the acceptance from residents of the zone around the installation, and ensure that public concerns about aesthetics and safety are taken into account. Second, and more frequently, the SEM will co-develop a project by investing in a PC that is majority held by another entity. They prefer to work with other SEMs, rather than traditional private developers, as Nièvre Energies finds them to be more reliable partners in pursuing their public interest mission, but they will also invest in PCs in which private for-profit actors are in the majority. One interesting, and somewhat unexpected, fact is that some of the projects they invest in are outside of the Nièvre department; this is part of a growing movement among SDEs and their SEMs toward crossing borders and working as networks to attempt to reach the size necessary to effectively regulate the activities of private developers that are often financed by massive hedge and pension funds. Third, and more rarely, Nièvre Energies will purchase preexisting large-scale installations when they get the opportunity, although they prefer being involved at the earliest stages of a project. Finally, the SEM can be brought in by the SIEEEN to help intermunicipalities during the PCAET planning process, or when they are contacted by outside developers. In this last case, it is generally to help the intermunicipalities decide whether to get involved with the developers, how to manage that relationship, or how to create a public bidding system. Nièvre Energies has even helped to set up a methodology for municipal elected officials to follow when they are contacted by a private developer, including a committee made up of experts, representatives of local and national government agencies, and elected officials to help them come to a common decision.

We have chosen to classify this SEM as a Public led initiative mainly based on its effective control, its funding structure, and the concrete roles it takes on in the territory. In practical terms, public actors such as the SIEEEN, the intermunicipality, and other municipalities control a super-majority of the votes within the organization, as they provide most of the capital and the voting system is proportional to shares held. While decision making in those entities are linked to the results of municipal elections, the selection of the SEM's Board of Directors from among the City Councilors of participating municipalities is very indirectly democratic from the perspective of average voters, with most of the choices being made among the elected officials themselves. In addition, the actual roles that Nièvre Energies plays in the territory are weighted toward services to public actors, from advising to co-developing projects with municipalities and other SEMs. Citizens hold an important place in

the organization through the CBEC through both the capital and legitimacy it brings to their actions, but the core of this action remains public. This is not necessarily a bad thing, as with the resources at its disposal and the non-economic ways that it intervenes in the territory the SEM is able to occupy a central place in its department.

The SEM Nièvre Energies appears here as a tool for the territorial governance of renewable energy in its department. This organization not only participates in development but creates and helps apply tools for mediation between private and public actors. And it is in a particularly good position to do so, as it occupies a strategic location between traditional developers, organized civil society, and the public sphere in terms of its position in the network of organizational relationships. It may also be seen by inhabitants and public actors as a credible arbiter, given the visible participation of relatively financially disinterested citizen parties such as the CBEC. As a result, the development of new large-scale renewable energies in the department is now in large part conditioned on the ability of the project to align itself with the values of the Citizen Energy movement, either through the direct participation of the SEM or simply by being amenable to the processes it has helped to build. In sum, this organization provides us with an example of a Citizen Energy becoming the dominant logic for the development of renewable energy in a territory through its adoption by the public sphere.

2.2.4. Degrees of Integration of Citizen Energy into Territorial Governance

As a provisional synthesis of our observations so far in this study, we propose to represent the degree to which Citizen Energy is a part of the territorial governance of renewable energy in a given place as existing on a scale. The interest of this proposed tool is to describe how the progression from one level to another represents a cumulative process and thus structure a narrative about how a CREP can move from one level to another. It also provides the necessary structure for our discussion in Chapter 3 of the specific factors that lead to a territory and its CREP advancing up the scale.
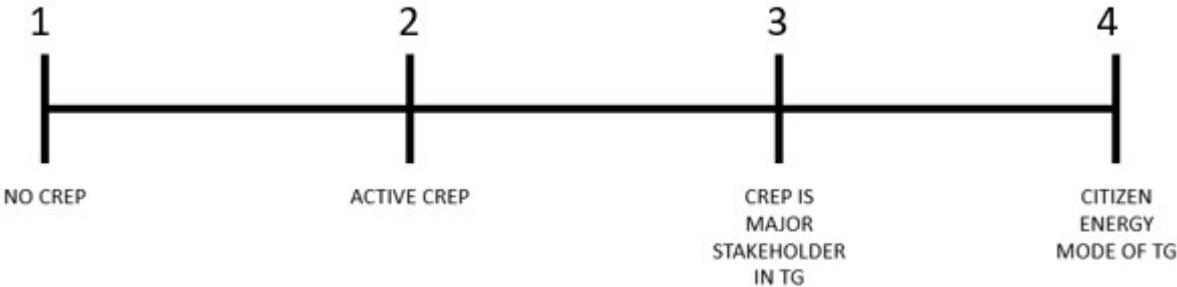

Figure 1. A Scale of Integration of Citizen Energy into Territorial Governance

At the first level of this scale, no initiatives that meet the definition of Citizen Energy laid out in section 2.1 exist and thus cannot be called upon to be involved to participate in discussions about the development of renewable energy. Development of renewables is either not pursued or is pursued without any significant citizen participation in governance, though some participatory projects may exist. The profits from commercial-scale installations tend to

flow out of the territory to the degree that they are built by non-local actors, and local public authorities' role in decision-making is limited, mostly choosing whether to block, encourage, or remain neutral on new development. Citizens have almost no positive role to play in this development, which can contribute to opposition movements for large installations, in particular wind-farms and biogas facilities. This state of affairs corresponds to the reality across most of France before the beginnings of the Citizen Energy movement around 2010, and is what some territories have reacted against when seeking to put in place systems of citizen involvement and developer regulation (Interview 7).

As we move up the scale, the territory fosters the creation and growth of a CREP that takes on the development of (more or less) small-scale installations. This organization can take a variety of forms, but the common thread at this point on the scale is that the CREP is mostly concentrated with the relatively limited activity of building renewable energy projects. These organizations are almost always focused on rooftop solar PV, as this is both the least controversial and the least capital-intensive option. An individual CREP will generally not have more than 50 active members who volunteer in the organization, and most often 10 to 20 (Interviews 4 & 23), which makes taking on the financial and political challenges involved in developing wind or biogas, for example, out of reach for most groups. This level on the scale does not assume any level of public actor support, or even a great deal of buy-in from the general population, although both can be present. As was the case with many of the earliest CREPs in France, a motivated core project group plus a wider circle of 50 to 100 supporters and investors are sufficient to get the initiative off the ground (Interviews 21 & 32).

While at this stage the CREP is involved in the development of renewable energy, the very small scale makes it difficult to conceive of this participation as forming an important part of the territorial governance of that topic. For example, the environmental planning document recently approved for Mond'Arverne Communauté calls for the amount of solar PV electricity produced to increase from barely a single GWh to nearly 40 GWh in 2050 (PCAET: Plan d'Actions, 2019). By comparison, a moderately sized CREP such as the Centrale Villageois des Vallons du Lyonnais (Interview 35) might produce around 0.3 GWh annually from all of their solar PV installations. While this would contribute to the attainment of their goals, the CREP would rightly be understood as not a decisive actor for the productive capacity they bring to the table and are thus not systematically involved in decisions impacting the territory in this domain. Barring significant public actor financing, the CREP at this stage is an all-volunteer operation, as the margins on these small production units are too thin to support an employee.

At level 3, the CREP goes from being a small project-based to an important stakeholder in the process of determining the future course of renewable energy development. The organization is invited to participate in larger-scale projects, such as wind-farms, ground-based solar plants and significant rooftop installations. The CREP can develop even them in their own right if they partner with either developers, EPCIs, or major actors in the Citizen Energy movement, as in the case of the Min-à-Watt rooftop solar PV plant co-developed by the CREP Cowatt, Energie Partagée Investment, the Nantes metropolis (Interview 33). Often, this can

mean that the organization be able to create one or more paid positions, avoiding some of the pitfalls of long-term all-volunteer management, though not without the risks that come with professionalization (banalization, separation from the volunteer base, etc.). However, the key difference between level 2 on the scale and level 3 is that now the CREP is being treated as a stakeholder in the development of renewable energy by the other actors in the territory.

When discussions occur and decisions are made, the actors around the table include the CREP, which is taken to represent the interests of the population more generally. Having this specific citizen organization involved in the process of coordination gives a broader halo of legitimacy to the development of renewable energies in the territory. This is what is meant when proponents of Participatory and Citizen models of energy development talk about such approaches increasing the *acceptability* of new installations (Rüdinger, 2019). One interesting thing to note is that this effect is understood to extend beyond the relatively limited circle of actual investors in the Participatory project or CREP; while there are generally not more than a few hundred investors in such a project, the acceptability of the new development is assumed to be increased for most or all of the inhabitants of the territory. What accounts for this? In broad terms, it seems likely that the residents increase their esteem of the project if they believe that it will have some concrete financial benefits for their communities, which these projects do in fact create (Pernot Du Breuil & Zambeaux, 2019). Also, the non-investors may assume that a cooperative type project willing to open its capital to citizens has little to hide. Finally, and this applies best to projects in which actual CREPs are involved, non-investor residents may take the fact that such organizations are not primarily engaged profit-seeking as a guarantee of their trustworthiness (Huybrechts and Mertens, 2014). This ability of Citizen Energy based organizations to lend their *imprimatur* to projects that they are involved in creates a very real risk of instrumentalization by the larger organizations (private and public) that they partner with. This risk is unavoidable, however, as the relationships with these organizations, and the material resources they bring, are essential for a CREP to play this role.

Being that the major difference at this level is its relationships with the other important stakeholders, it seems natural that the capacity for a CREP to reach this status would be contingent upon outside support. In each of the cases we have studied of these groups taking on such a major role, this shift was preceded by resources flowing into the organization from public actors. These contributions to its growth generally took the form of subsidies (either for investment or operations), but could also be direct capital investment in the company, technical and administrative assistance, donating the use of public property such as rooftops, or the use of Civic Service workers, who are supported in part by public funds. As we saw in section 2.2.1, the growth of one of the first CREPs, Eoliennes en Pays de Vilaine (EPV) from a small and very local organization was actively supported by departmental and regional governments. In fact, the series of meetings organized by EPV that started the Citizen Energy movement as we know it in France, were financed by the ADEME (Interview 32).

This need for public support to grow beyond a certain level points to a common problem among many cooperatives and other not-primarily-lucrative enterprises: the difficulty of access

to capital (Huybrechts and Mertens, 2014). This low level of capitalization leads to an inability to invest in higher margin, capital intensive means of production and thus less ease in financing their own growth through reinvestment or professionalizing their organization to increase efficiency and render it more sustainable over the long term. However, importantly, the objective is not to create a dependent entity that cannot survive without a constant influx of outside support. These organizations are businesses whose purpose is to produce and sell and must at least cover their costs once they have reached a stable stage of their development (Interview 16). Public actor aid helps to overcome growing pains and get the CREP to a point where it can be self-sustaining at each new major point in its organizational evolution

The final level on this scale is not so much a smooth outgrowth of the previous one as it is a true state change. Here, the focus shifts from a single organization to the system as a whole, which goes on to adopt the core tenets of Citizen Energy in the ways that it charts the path of development of renewable energy. In practice, what this means is that renewable energy development is actively and more or less exclusively pursued by a combination of local citizen groups, small businesses, and public actors, with possible participation by large for-profit developers as a minority partner. These partnerships would be chosen carefully, with preference given to outside actors whose busines practices are in line with the values being advanced by the territory. Both the ownership and the governance of any new development would be controlled by citizens and local governments, and the majority of the economic benefits would accrue within the territory. In addition, and in support of these dynamics, the CREP would most likely branch out into other activities, taking in larger parts of the value chain of renewable energy such as installation engineering and perhaps also offering related services such as energy saving consulting. Property speculation for renewable energy development would be rendered difficult and speculators would be unwelcome. Traditional bank loans would still be an important part of the funding of new development, but efforts would be made to move as much of the mass of lending as possible to local branches of cooperative and mutualist banks. Transparency would be the rule and would include not only the investors and direct stakeholders in the project but the population more generally, who would have the opportunity to weigh in on major strategic decisions. The process of planning projects would be collaborative, allowing significant input from the actors likely to be impacted by the new development and seeking to reduce identified downsides as much as possible. Finally, the whole system would follow the logic of the Négawatt scenarios, working to reduce energy consumption, increase energy justice, and reduce dependence on energy imports as a wholistic approach to the energy transition. In short, the Energy Partagée charter as applied to a whole territory.

The transition from one level of this scale to the next is a cumulative process, with each step building on the last one. The territory must actually have a CREP operating within it before the organization can become a significant actor in the territorial governance arrangement. And a territory where there is no important CREP would not be able to transition to using Citizen Energy as its governing logic, as it would lack an institution implanted locally that was capable of either being the champion or the privileged partner in this shift. Indeed, for territories that

appear to want to move toward this style of governance, such as Ouest Aveyron Communauté (Interview 16), the creation of a strong CREP is seen as a necessary step. This process should also be viewed as cumulative in the sense that each of the characteristics that allows us to call a governance Citizen comes about in a piecemeal fashion, rather than all at once.

It would be a mistake to think of every CREP as project whose final goal to transform the way that renewable energy is developed in their area. Some citizen groups are simply interested in doing their small part in an overall process of ecological transition. Similarly, some territories that have a strong and active CREP in them very often see a significant number of developer or public led renewable energy projects, either with or without the participation of the citizen group. There does not appear to be a "slippery slope" leading from the creation of a citizen cooperative to the transformation of a territorial governance system; the former certainly participates in the latter, but it seems just as likely that a given territory would "stop" at one of the two previous levels before arriving at the end of the scale. However, given the relative newness of Citizen Energy in France, we do not have enough accumulated experience at this point to say with confidence.

In summary, many different factors must be aligned for a territory to make such a state change. First and foremost, the adoption of Citizen Energy as the governing logic for renewable energy development must emerge from the engagement of the full slate of actors involved in the topic: public, private, and civil society. While each of these sectors have different roles in this process, all are necessary. Second, these actors must have the ability to share information, discuss and debate desirable outcomes, and then coordinate their actions in pursuit of those goals. Without coordination, at best, development will take place in a siloed manner with each set of actors working separately, and at worst foster an environment of competition rather than cooperation; a process in which the winners will almost inevitably be the actors with the greatest access to capital. Third, the proximities present in the territory must be configured in such a way as to make it possible for citizen groups to not only form, but gain sufficient size and buy-in from the rest of the population to play a major role. The territory must be close enough to itself (i.e. not too geographically dispersed) and potential installation sites must be far enough away from *blocking factors* that would prevent their creation. Also, there must be a relatively high degree of identification with the territory for the general population to come to place importance on the specific mode of renewable energy development; there must be a sense that "this is how we do things here", with the words *we* and *here* having particular psychological weight to them. There also cannot be large incompatibilities within the population with regard to their norms on potentially contentious subjects of ecology. If the area has too large an opposition to renewable installations, or fervent supporters of nuclear energy, or too few who defend local action on climate change, the splits within the community are likely to prevent a stable consensus (politically, socially, in the media) around the logic of Citizen Energy. We discuss all of these factors in more detail in Chapter 3, supporting them with observations and theoretical arguments before using them to construct a framework to analyze the fit between a territory and this mode of renewable energy governance.

3. Factors and Fit of Citizen Energy as a Tool for Territorial Governance

In this chapter, we investigate the factors influencing the emergence of Citizen Energy as a mechanism for territorial governance of renewable energy development and apply those factors to the case of an intermunicipality that may be at the beginning stages of this process.

In section 3.1, we lay out 9 factors that our research suggests are critical for the emergence of a CREP and its movement up the scale of integration into the territorial governance system that was laid out in the previous section. The factors we choose to examine are broken down into two large categories: spheres of actors on the one hand, and different geographic and socio-economic proximities on the other, and then combined in a proposed framework for evaluating a territory. As such, we begin section 3.1.1. by describing the roles played in the emergence of Citizen Energy by public, private for profit, and civil society actors. Section 3.1.2. moves on to cover the specific ways in which different forms of proximity can favor the emergence of Citizen Energy. While defining each type of proximity, we highlight the importance of six specific examples. Section 3.1.3. brings the discussion of these factors together into a proposition for a framework for evaluating the ability of a Territory to see Citizen Energy emerge and take on importance in the governance of renewable energy development.

In section 3.2, we take this framework and apply it to the case of Mond'Arverne Community, an intermunicipality that is currently considering whether and how to actively support the emergence of a CREP within its borders. Section 3.2.1. briefly presents the territory of Mond'Arverne, section 3.2.2. is dedicated to the first group of three actor-related factors, and section 3.2.3. treats the second group of six proximity-related factors. Throughout both, we go factor by factor providing supporting arguments and examples for our chosen scores.

The first step in our investigation of the relationships between these factors and Citizen Energy is to describe the most important factors influencing its emergence and success.

3.1. What makes a Fertile Ground for Citizen Energy?

3.1.1. The Roles of the Major Actors

As discussed in section 1.1, a territory is defined in large part by the actors that make it up and various relationships and forms of coordination that they share between them. The distinction between the public sphere, the private for-profit sphere, and the organized civil society sphere is a classic one and seems to fit the realities observed, so we choose to use it here. We recognize that there is some degree of overlap or confusion possible around the edges of each of these categories, but as a robust definition of the distinction between these sectors is not the aim of this study we will accept that risk and move on. In practice, the distinction between these categories is generally uncontroversial, especially in the case of public actors.

As we have seen throughout this study, the emergence of Citizen Energy within a territory often depends heavily on the participation of local and regional public actors (Energie Partagée, 2017). When help is forthcoming from this sphere, it is generally because a process of concertation, evaluation, and strategy has already taken place with respect to the local development of renewable energies (Interviews 7, 17, 34 & 35). The form and extent of this process varies widely from place to place and between organization, but very frequently it involves joining the Positive Energy Territories (TEPOS) network mentioned in section 2.2.2. The other major driver of local evaluation, public discussion, and planning around issues of renewable energy development is the obligation for intermunicipalities above 20,000 inhabitants to create their own Territorial Plans for Climate, Air and Energy (PCAET). And one can lead to the other, as in the case of West Aveyron Community, an intermunicipality that decided to join the TEPOS movement as a result of the process of reflection and public discussion involved in building their PCAET (Interview 16).

As a part of this dynamic, West Aveyron has, along with other local public actors, put significant resources into the process of helping the SCIC EnerCOA to take shape. The PCAET for West Aveyron Community made two strong commitments: first, that they would achieve the TEPOS goal of 100% (or more) local renewable energy by 2050; and second, that there would be no development of renewable energy within their borders without citizen participation. The goal of creating a Citizen Energy cooperative flowed naturally from those choices (Interview 16). Financially, the local SDE also got involved through a program which matched public investments in renewable energy (48,000€ in this case) on a one-to-one basis. While this level of financial support is definitely on the extreme high end for a single CREP, it does illustrate the degree to which public enthusiasm for RE development can be decisive. Despite the very active participation of other public actors such as the ADEME and the Occitanie region, there is an actor that is commonly associated with these sorts of projects that is absent in the case of EnerCOA: the Local Environmental and Climate Agency. These non-profits constituted and governed by their local government members play an important and flexible role in mobilizing local elected officials, giving technical advice to citizen groups, and even in promoting the Citizen Energy approach (as we will see in section 3.2.1). While public participation in renewable energy planning and development seems to be a clearly positive thing for the growth of Citizen Energy, the role of private for-profit actors is more complex.

The relationship between large scale, for-profit developers and Citizen Energy is a paradoxical one marked by both oppositions and coordination. The initial motivation for the creation of Citizen Energy structures can be in part the result of local opposition to large-scale renewables development projects, in particular wind turbines (Interview 30). Grassroots campaigns opposing new installations can be motivated by a number of factors, from simple Not-in-my-Backyard-ism (NIMBYism), to aesthetic concerns, to a desire for environmental protection, to fears about the impacts of sound and electromagnetic waves given off by these structures (Interview 7). These are examples of what Torre (2019) calls *unwanted geographic proximity,* referring to the situation in which the negative externalities of proximity to

something overwhelm its positive externalities. While some of these objections may solicit more sympathy than others, the reality of the conflict that they can create between the local population and the developers is a major cause of delays and blockages in the creation of new renewable energy production facilities (Rüdinger, 2019). In this context, the involvement of CREPs in the development process, either as principals or as participants, is seen as a way of increasing the acceptability of renewable energy (Bauwens & Devine-Wright, 2018). In addition, the local implantation and transparency that are core parts of the definition of a CREP means that they are more likely to be known and trusted by the population that would otherwise oppose the project. As a result, Citizen Energy and other modes of territorial governance in areas where renewable energy development is financially attractive but socially controversial can grow up to provide an alternative to the extractive and untrusted model of traditional developers (Bourdin, 2020). One good example is Montcel Durable in the Puy-de-Dome, and in particular their efforts to reassure the population with regard to the different objections they could have to the proposed wind-turbine installation[27]. Instead of this oppositional dynamic it is possible for the presence of large for-profit developers to result in a form of cooperation.

Some territories find themselves frequently solicited by developers because of their natural endowments in sun, wind, or biomass. The public actors in charge of land-use and ecology, very often intermunicipalities or PNR, have a great deal of leeway to either allow or prevent these projects and some choose to use this power to actively shape the nature and scope of this development. This was the case in the PNR des Grandes Causses, an area rich in renewable energy resources that was the site of many developer-led projects before 2009 (Interview 7). Similar to the case of West Aveyron Community, while going through a PCET process to establish its official position on wind-farms on its territory, the PNR decided that they would only support and approve new projects in which citizens and collectivities held at least 35% of the capital. A frequent objection to private development is the way in which it tends to be extractive, coming in with large amounts of outside capital and causing the value created by the exploitation of local energy resources to leak out of the territory. Keeping that value is a major motivation for the Citizen Energy movement in general (see: non-speculative commitment in Energie Partagée charter), and the PNR des Grandes Causses in particular.

Under these constraints, developers and citizen actors are brought together in cooperation by public authorities to shape the trajectory of development in the PNR. While many of the resulting projects will merely be Participatory, rather than truly Citizen, the private developer activity in this zone was still a major source of motivation for the creation of a citizen cooperative, which is currently in the process of becoming a formal organization with the help of the PNR (Interview 7). This process of building Citizen Energy as a tool for the territorial governance of renewables is not limited to the interplay between the public sector and for-profit developers; smaller private for-profit actors such as solar panel installers, wind-turbine construction companies, engineering consultancies, and others are critical to the operation of a

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[27] Montcel Durable's wind-turbine fear debunking page: https://www.montcel-durable.fr/fausses-idees-eolien/

CREP. The last category of actors whose impact we will examine here is no less significant: organized civil society.

As we have discussed throughout this study, organized civil society, and in particular the hundreds of informal citizen collectives and small and medium non-profit associations in every department in France, very often form the substrate out of which CREPs grow. We posit a strong local civil society active on issues of the environment plays a significant role in whether and how Citizen Energy emerges and grows into a tool for territorial governance.

According the president of Monts Energies (Interview 34), the role of local associations in spreading information and building local enthusiasm on the topic was decisive, even if those associations were not involved directly with energy issues. *"Each with their own angle of attack, all of them want the same thing.[28]"* (Interview 34). These organizations, and similar ones in other areas, are the *relay actors* (or *influencers*) that consultancies like Coopawatt, specialized in Citizen Energy, will rely on when hired by a public actor to aid in the emergence of a CREP (Interview 23). When planning the public information sessions that often lead to the constitution of a Core Project Group, Coopawatt first identifies the different actors in the territory that are influential and have the potential to mobilize a large number of people to attend these public meetings (Interview 23). More often than not, the most important of these *relay actors* are local associations whose membership or contact lists are likely to be interested in a project combining local economic development and ecology. They could be actual ecological associations, promoters of direct democracy, or simply groups of engaged local citizens that are searching for a way to put their talents to good use for the benefit of the territory and the planet. Of course, a territory with a CREP that is nearby enough to aid a potential new group with advice and experience or even to collaborate with them on projects will have an easier time creating a successful CREP itself.

The other six factors we use in our 9-factor framework emerge from a recognition of the importance of the different types of proximity to our understanding of territorial systems.

3.1.2. The Roles of Territorial Proximities

The specific instances of geographic, organized-belonging, and organized-similarity proximities at work in a given territory are somewhere close to infinite. With that said, it is possible to pull out certain forms of these proximities that are more impactful than others in a given situation. We choose to focus on 6 examples that emerged as relevant throughout the interviews and documentary research that have led to the construction of this framework. The first example is very concrete: geographic proximity between zones of a territory.

As we have seen in previous sections, geographic proximity captures not only distance as the crow flies, but the time and cost of bringing actors into contact. A territory with high quality and extensive road and public transit infrastructure between all of the residential areas within it places its residents into closer geographic proximity with one another. In addition, the

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[28] Translated from French by this author.

ability of residents to travel from one end of the territory to the other is conditioned by the relationship between the average income of the area and the costs of making that trip (fuel, bus tickets, trains, etc.). Finally, a geographic area that is tightly circumscribed takes less time to traverse, either east-west or north-south. These factors all influence the ability of a CREP to forms and to extend over the entire territory, as they will particularly influence the activities of an all-volunteer Core Project Group (see section 2.1.2).

The second form of geographic proximity that we choose to highlight as a factor is the proximity of attractive sites for a renewable energy installation to what we call *blocking factors*. These are the various geographically situated factors that can prevent the development of renewable energy projects, the formation of a new CREP, or the use of a CREP as a tool for territorial governance. The list of *blocking factors* will be different depending on which form of renewable energy is being discussed; there are more different factors which can block a biogas or wind-turbine installation than those that will block rooftop solar PV, for example. The following table summarizes the most common *blocking factors* observed throughout the study, but is by no means an exhaustive list:

Blocking Factor	Reason for Blockage
Historical or architecturally protected area	Architects of Buildings of France prevent visible installations near monuments zones of architectural value.
Protected scenic area	Natural park or other government agency prevents visible installations to protect the view.
Protected natural site	Environmental protection agency or natural park prevents installations to protect ecosystems or endangered species.
Anti-renewable energy development groups	Associations and collectives that strongly oppose the development of new renewable energy infrastructure.
Other CREP at different scale	The presence of a CREP whose territory covers or overlaps with the imagined territory for the new CREP can reduce the motivation and resources for that project.

Table 3. Blocking Factors for Citizen Energy

Moving on from geographic proximity, the two instances of organized-similarity proximity that we include in our framework attempt to convey the importance of shared norms and representations to the emergence of Citizen Energy. First, the compatibility of certain ecological norms among the population of the territory and second, an attachment of importance to a shared representation of that territory.

Ecological norms are here meant to include the degree to which fighting climate change or preserving biodiversity are viewed as priorities, the relative preference for imperfect action versus inaction, the perception of urgency for ecological issues, and the preference for decentralized solutions over centralized ones. These norms can be measured in the population of a geographic area using sets of scales reflecting arbitrages between the opposing values mentioned above. This way, the degree of variation between people can be represented as a

form of organized-similarity proximity (or distance). Intuitively, the proximity between two people on a scale measuring given norm will make it easier for them to agree on a specific policy or action and thus to work together on a project. Around their specific position on the scale, there is a zone in which they will be willing to accept a specific arbitrage as acceptable. This is their *zone of possible agreement,* a concept borrowed from management theory and microeconomics (Sebenius, 1992), and will vary in size from person to person. We can imagine this dynamic being scaled up to the territory: the greater the average proximity on a given norm or set of norms, the more likely people are to meet others with whom they can collaborate successfully. Furthermore, this proximity of norms will also reduce the degree of opposition and increase the public support for a new CREP. While a small group of citizens can come together around shared ecological norms and work on a few localized projects, for an initiative to participate in the territorial governance of renewable energy it must be relatively well received by the population in general. The other form of organized-similarity proximity that is important here is the attachment of importance to the territory and what it means to belong.

As discussed in section 1.1.2, the definition of the territory, from its geographic boundaries to the culture, history, and rules of belonging that go along with it, can be conceived of as an example of organized-similarity proximity. Given that multiple territories at different scales overlap in all geographic areas, the question of the significance that the population attaches to each one becomes important. Does an inhabitant of a small town not far from a metropolis attach importance to a sense of belonging to their town, their intermunicipality, the general metropolitan area, their bioregion, their department, their region, their country, or Europe? Each of those are valid territorial levels for action, though some are better adapted to CREPs than others. Depending on the answers to this question, the person will find themselves in proximity with a different set of other people who also attach importance to the same territory and share a similar conception of what that means. Uniting people around a common vision for development is made simpler if the majority of the population holds the territory in question as being important to their identity, and there is no conflict present between coherent competing visions of what the territory signifies and over who does not belong. In addition, the presence of a widely shared vision for the future of the territory increases the likelihood of a CREP emerging spontaneously, gaining public support, and even becoming the primary tool for territorial governance of renewable energy (Interviews 10 & 17). The final two factors that we integrate into our framework are both forms of organized-belonging proximity.

The importance of the relative positions of actors in social networks, the coordination they both foster and result from, and of the shapes of those networks, is a rich field of study within the socioeconomics of networks (Granovetter, 2005). First, we will examine the importance of coordination between the 3 different spheres of actors described in the previous section, focusing on the connections that bridge the gaps between what can otherwise be siloed domains. Second, we have chosen to combine two relatively classic measures from the *embeddedness* and *social capital* traditions: the presence of dense networks filled with strong ties, and the presence of connections between those dense networks.

The first of the two organized-belonging factors is gets at the heart of the question of territorial governance itself: coordination between spheres. The ability of a territory to not simply aid the emergence of a small-scale local CREP but to bring that organization into their governance toolbox is in part conditioned by the preexisting coordination between different actors, in other words the organized-belonging proximities at the organizational level. As such, in this factor, we seek to highlight the importance of tools such as cross-sphere committees and working groups on renewable energy; active collaboration between public, private, and civil society groups in renewable energy projects; and a history of such collaborations in the territory. In addition to relationships and experiences specific to the energy domain, the simple existence of widespread institutional relationships between spheres would seem to contribute to the chances of new territorial governance initiatives growing there (Chevalier, 2016). Some evidence for this dynamic can be inferred from the frequent references to the "fertile soil for cooperation" in the Bretagne region (Interviews 10, 32, & 34), which is credited with a long history of cooperation and direct citizen involvement in shaping the destiny of their territories. Actors there know one another and are accustomed to working together on new projects of whatever kind. Furthermore, although this crosses somewhat back into the realm of organized-similarity proximity, the presence of well-connected actors in each of the spheres that share a common, citizen-compatible vision for territorial development can be of crucial importance to the ability of a CREP to mobilize resources and take on more importance over time. The last factor we investigate is the structure of the social network between individuals in the territory.

Finally, developing on and generalizing the discussion of word-of-mouth spread of information in section 2.1.2, we posit here that the ideal network structure to foster Citizen Energy is a series of densely clustered networks with connections between them. A family or close friend group would be the classic examples, but places of work and volunteer sports clubs illustrate the idea equally well. Ties between members of the group tend to be strong. The distance between those people, in an organized-belonging sense, is quite short and the paths along with a given piece of information can travel are numerous, meaning that the same person is likely to hear the same information many times. As strength of ties is also a measure of trust, people linked by those ties will more easily coordinate their actions and recommendations passing from one person to another will be followed more readily (Burt, 1993).

Once the idea for the CREP makes its way into the dense network, it can quickly spread to every member and become a topic of repeated discussion. Those people are then able to get involved together in a long-term project involving significant investments of time and money, confident in the other members of that network. The more of these networks there are in a territory, the more likely it is that one of them will come around to the idea of creating a CREP, in particular if the people in those networks are already involved in other organized civil society activities such as ecological associations. However, dense networks are relatively small and as such cannot generally undertake the communications and fund-raising tasks needed to create a thriving CREP on their own. For that, the dense networks need ties between them.

Links between otherwise unconnected networks, called either nonredundant or *bridging ties* in the literature, are important in that they are the means by which information is communicated between actors most efficiently throughout an overall social network (Burt, 1993). Thanks to the "echo chamber" effect of dense social networks described above, the arrival of a new piece of information in a group is likely to be followed quickly by its diffusion within its bounds. Once it has reached someone in the group who has a sufficiently strong tie to another dense social network, they will transmit it and the process will begin again. The combination of dense social networks that reinforce norms and motivate action with *bridging ties* linking those groups is an ideal arrangement for both building a CREP and propagating its message. Considering the importance of word of mouth spread of information in both forming the core group and raising money for installations, the ability for a CREP to go from a small initiative of a close-knit group of friends in a single village to taking on a major role in determining the course of the energy transition in a territory is largely conditioned by its ability to expand its base of support into different close groups. This expansion can be stymied, however, if the connection between two groups passes through a person who has little or no interest in Citizen Energy or in the territory in question (non-residents, for example), as will tend to stop the spread of information.

With these 9 factors described and their importance explained, we will now briefly present the framework as a whole before moving on to apply it to a specific territory.

3.1.3. Proposing a 9-Factor Framework for Evaluating a Territory

Based on the discussion in the previous two sections, we propose a 9-Factor qualitative framework for rigorously posing the question: "Is the territory in question well suited for the development of a CREP and its use as major element of territorial governance of renewable energy development?" The objective is to assist in predicting whether, and to what degree, these initiatives are likely to take root in a territory and the importance they will then play in regulating renewable energy development in that territory. Implicitly, the framework should also suggest strategies to improve the viability of Citizen Energy that can be pursued by interested public and civil society actors.

The scoring of this framework is based on 5 qualitative indicators that have been grouped together under the factors presented in the previous section (see Appendix 3). Conceptually, an area with high scores in all categories should be more likely to see a CREP emerge and quickly evolve into an important actor or even represent the generally accepted logic for territorial development in the area. Also, a high score in one factor can compensate for a low score in another, but only to a point. In most cases, the indicators refer to the presence/absence or rarity/frequency of some object of interest, implying the need for detailed information gathering which was outside of the scope of this study. That being the case, and before moving on to describe the proposed framework, several notes of caution are warranted.

This framework is the fruit of a back-and-forth process between semi-directive interviews, documentary research, and continual hypothesizing through which certain traits of territories rose to the top. Some factors have been directly observed or described, others brought

up in the literature, and some others inferred. In addition, the measurement scales proposed here have not yet gone through testing or validation through further interviews, questionnaires, and statistical analysis. While we have a high degree of confidence that the factors presented are all centrally important, it is possible that some factors are more or less determinant of outcomes than others, and thus should be given different weights. It is also possible that some critical factors are missing, or that testing would allow others to be combined. With that in mind, we invite the reader to take what follows as a proposition for a first step towards a tool to provide insight into the relationship between territory and a specific mode of territorial governance.

The table below summarizes the factors we propose (see Appendix 3 for full descriptions of the scales):

Factor	Description
Involvement of Public Actors in RE	The degree to which public actors of all levels are actively involved in the promotion and structuring of renewable energy development in the territory
Involvement of For-Profit Actors in RE	The degree to which for profit entities, in particular large-scale developers, are actively involved of renewable energy
Strength of Civil Society in ecology	The number and influence of associations, certain cooperatives, and organized citizen groups whose positions on ecological and local democracy topics aid Citizen Energy
Residential Geographic Proximity	The degree to which living areas in the territory are quick to travel between, mediated by infrastructure and income.
Geographic Distance from Blocking Factors	The geographic distance from various factors which could constrain the development of renewable energy projects
Compatibility of Ecological Values in Population	The degree to which the populations' preferences and norms on subjects of ecology are similar, or at least compatible
Population's Identification with the Same Territory	The average degree of psychological importance of the territory in question and its specific characteristics to the identities and priorities of the population
Inter-sphere Coordination on RE	The degree to which public, civil society, and private actors have interconnected relationships and a history of coordination on renewable energy topics.
Presence of Dense Interconnected Networks	The number and extent of distinct dense relational (individual and organizational) networks and the degree to which those networks are connected via *bridging ties*

Table 4. Summary of Factors for Territorial Evaluation Framework

Next, we use this framework to evaluate territory of Mond'Arverne Communauté, with the goal of assessing the likelihood that a CREP will emerge and take on a significant place in the development of renewable energy in the area.

3.2. The Emergence of Citizen Energy: The case of Mond'Arverne Community

Here, we apply the framework developed throughout the previous section to the case of Mond'Arverne Communauté (MAC). This specific territory was chosen because it is the one for which we have the most robust information, but that information is still far from complete and for some factors is lacking entirely. What material we do have on the territory stems from interviews, diagnostic documents produced by MAC, data provided by the National Institute of Statistics and Economic Studies (INSEE), and direct experiences over the course of the internship which underlies this study. The overall result will be a far more qualitative, and to some extent intuitive, approach to evaluating the territory than would be desirable. A more robust data-gathering approach, along with further development of the tool itself, should be undertaken before any conclusions or recommendations for actions are seriously taken on. In this sense, the ambition of the framework exceeds the resources available for this study; no such surveys were possible within the time constraints and without significant institutional support. Nonetheless, the following section should allow us to begin to test the tool being proposed here and to make some interesting observations on the territorial preconditions for Citizen Energy.

3.2.1. Applying the Framework to Mond'Arverne Communauté

3.2.1.1. A Brief Presentation of the Territory

Mond'Arverne Communauté (MAC) is an intermunicipality of approximately 40 000 inhabitants located just south of the Clermont-Ferrand metropolitan area, in the Puy-de-Dôme department of the Auvergne-Rhône-Alpes region. As an administrative entity, MAC is the result of the merger of three old intermunicipalities (Les Cheires, Gergovie-Val-d'Allier, and Allier-Comté Communauté) in 2017. The result is a semi-rural zone stretching over 50km from east to west, between the two regional natural parks of the department: the PNR Livradois-Forez and the PNR des Volcans d'Auvergne. Because of its unusual shape, MAC is a very heterogenous territory: the forested and hilltop towns of the former Cheires intermunicipality are visually distinct from the low hills and large corn and wheat fields of the former Gergovie Gergovie-Val-d'Allier that are cut through by major transit corridors, which are themselves different from the mix of farming, forestry, and former industrial towns of Allier-Comté Communauté. The economic activities of the area are similarly varied.
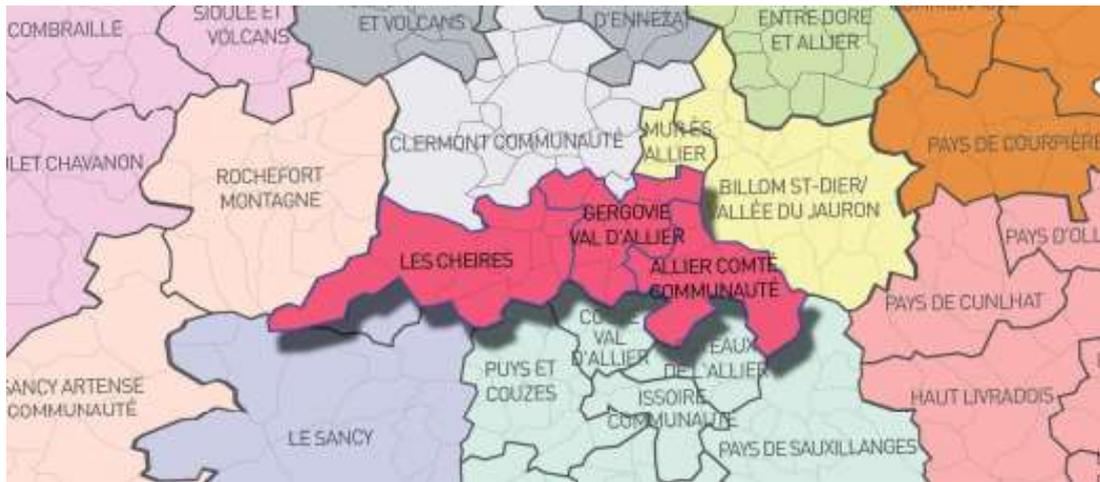
Figure 2. Mond'Arverne Communauté (red) and its old intermunicipalities

According to INSEE statistics from 2015 (the most recent year available), there were 5,447 working positions in MAC at that time. 38% of those were in public administration, teaching, health, and social action; 33% in commerce, transport, and services; 15% in construction; 13% in industry; and 1% in agriculture, silviculture, and fishing. While 77.3% of the population was active in 2017 (working or looking for work), only 20% of the population works within the borders of the intermunicipality, with a large number of the rest commuting into Clermont-Ferrand daily. In addition, this area is relatively comfortable, economically speaking, with an average net hourly salary for residents between 26 and 50 years old of 14.7€ in 2016, compared to the national average of 12.7€ per hour. Of course, financial resources are not the only ones important to our analysis; we must also consider the renewable energy potential of MAC.
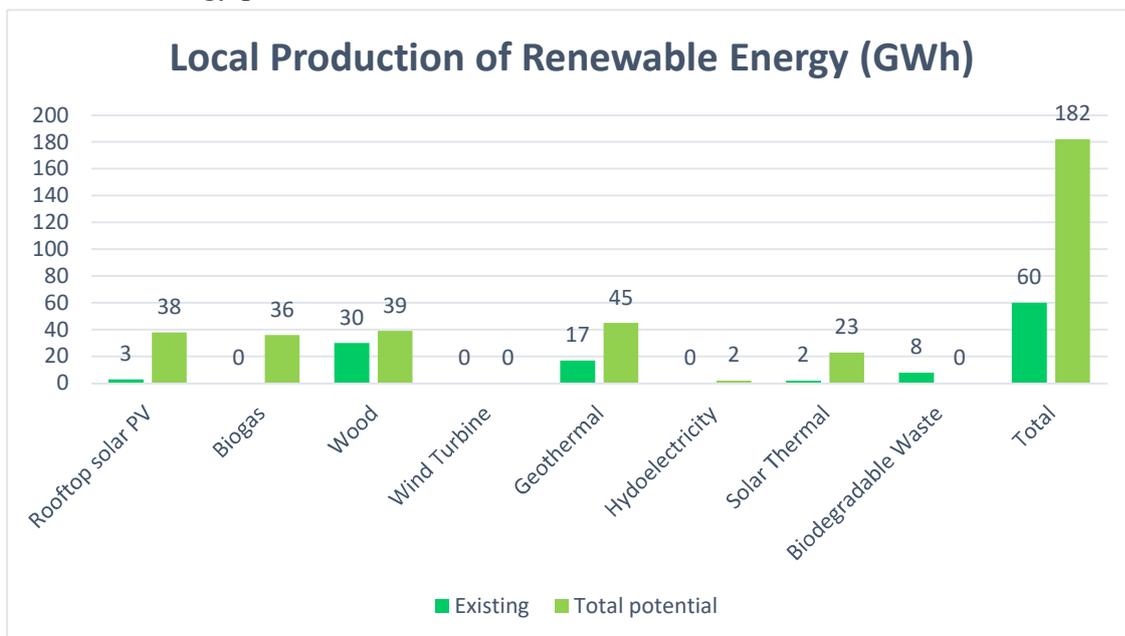
Figure 3. Local Production of Renewable Energy in MAC, Source: PCAET Diagnostique, 2019.

According to a diagnostic of the territory performed for the recent PCAET creation process (PCAET: Diagnostique, 2019), MAC currently produces 60 GWh of renewable energy within its borders each year, broken down by technology as shown on the above table. The diagnostic mentions that the total potential of 182 GWh is only *"equal to 20% of present consumption"* and later recommends identifying new sources of renewable energy in the territory, such as ground-based solar farms (PCAET: Diagnostique, 2019).

With those core statistics laid out, we now move on to analyzing our 9 proposed factors within the territory of Mond'Arverne Communauté. The detail of the scores given can be found in Appendix 4.

3.2.1.2. *The Roles of the Major Actors in MAC*

As in any place in France, public actors play a critical role in the development of renewable energies. There are three main public structures that are regularly involved in issues of energy in MAC: the intermunicipal government itself, the departmental environmental agency (ADUHME), and the departmental electricity and gas syndicate (SDE).

The member municipalities that make up MAC have decided to transfer the competency for environmental protection to the intermunicipal government, making it the main public authority on the topic of renewable energy in its geographic area. As an intermunicipality of 20,000 or more inhabitants, MAC is required to create a PCAET and did so throughout 2019, voting it into effect on January 23, 2020. On the topic of renewable energy, the PCAET begins by evaluating the current production of renewable energy within its borders, analyzes the potential level of production that could be reached with significant investment, sets its targets, and then puts an action plan in place for the realization of that action plan. Among many other things, the action plan calls for MAC to promote the creation of a CREP, to develop solar thermal and photovoltaic installations, to study the topics of geothermal energy and biogas, as well as other actions to be undertaken if the opportunity presents itself. Also, without making firm commitments, the PCAET evokes the possibility of becoming a TEPOS by 2050, though this possibility have been met with some skepticism internally due to the low level of identified renewable energy production potential and the refusal to consider wind-turbine development (PCAET: Plan d'Actions, 2019). This PCAET process is laudable in its own right, involving as it has a public consultation process which also included local associations and an informal citizen ecology collective in the town of Aydat (which will become important later in this section). However, the net budget allocated to renewable energy development is 0€, meaning that MAC only plans to make investments that will pay for themselves, through power bill reductions or energy sales, over the 30 years covered by the PCAET. Add to this the less than 1 equivalent full time (EFT) of labor hours dedicated to these portions of the action plan and it is clear that the resources needed to achieve the ambitious goal of 180 GWh of total renewables production by 2030 are not being mobilized at the intermunicipal level. Action 6.1 of the action plan does explicitly call for the mobilization of citizens to create a SCIC dedicating to producing rooftop solar PV, which is encouraging, and it is possible for MAC to choose to dedicate more resources to this goal in the future if presented with a good opportunity. One other sign of the

intermunicipality's commitment: they are members of the association that plays the role of an environmental agency for the Puy-de-Dôme, the ADUHME.

The ADUHME is a non-profit association formed by local governments and public sector structures in the department that acts as an environmental agency for its members. This means that they perform studies on ways to reduce energy consumption, propose initiatives to pursue environmental goals, and generally serve as a mutualized source of expertise and for their members as well as other public actors who request their services (Interviews 3 & 22). In this role, the ADUHME was involved in the creation of the PCAET and advises MAC and its municipalities on how best to meet the goals they set out.

Their most recent significant involvement in the development of renewable energies was the Solaire Dôme initiative, which sought to identify all of the public buildings in participating areas of the department where a rooftop solar installation is possible. In 2019, the ADUHME undertook a survey of all public rooftops of the municipalities and EPCIs that wished to participate, selected those that had a significant potential for solar photovoltaic production, and checked with the Architects of Buildings of France (ABF) to find out if each site had any historical monument or architectural preservation restrictions. They then proposed that the municipalities invest directly in the 9 kWp rooftops, as those represented only a modest investment of about 20,000€ and come in standard, easy-to-install kits. The ADUHME then mobilized its staff to bring the municipalities on board (Interview 22). For the larger sites that could hold a 36 kWp installation, the Director of the ADUHME (Interview 3) suggested that MAC help a CREP to emerge and then provide those rooftops to the it to develop and exploit. Whether through their advising and advocacy towards their members on environmental issues, the programs they initiate, or as a source of expertise, the ADUHME is a significant public force in favor of renewable energy development in MAC. The final public actor whose role we will evaluate is the SIEG63, the departmental electricity and gas syndicate (SDE).

The SIEG63 is an SDE of the sort that we discussed in section 1.2.1.2. It is an EPCI to which the municipalities of the Puy-de-Dôme have transferred the competency of electricity distribution as well as maintenance of the low-tension grid. Like 95% of SDEs in France, the SIEG63 does not manage the majority of these responsibilities directly, but instead contracts with Enedis to ensure distribution and the management of the grid. Like any organization of this type, it can be granted a number of different competencies to manage by its members but compared to SDEs in other departments, the SIEG63's list of competencies is relatively limited and notably, while 66% of SDEs take on a significant role in the development of renewable energies (Boyer, 2019), the governing committee of the SIEG63, composed of elected officials from the member municipalities and intermunicipalities, has chosen not to (Interview 36). From observations made during official meetings as well as in informal conversations, it would appear that the SIEG63 is convinced of the merits of the present centralized model of electricity production and governance and their preference for continuing to work with EDF and Enedis whenever possible is relatively clear. While a full-throated defense of a public service of electricity is an understandable position, the fact that the department, and more specifically

MAC, does not have an SDE that is involved in this domain is likely to hinder the eventual growth of any CREP that should emerge for lack of a major potential funding source.

Taking all of this together and comparing it to the scale for this factor in Appendix 3, the involvement of public actors in renewable energy is at a 2 out of 5 for the moment. Next, the involvement of for-profit actors in renewable energy is discussed.

Because of the numerous *blocking factors* present in MAC, which we address later in this section, development of renewable energy installations by for-profit actors has been slow and limited. Nonetheless, some projects are at least in discussion. Source of some controversy, there is a small-scale (65 kW with cogeneration of electricity) methanization installation in the works on a farm in the small town of Authezat in the southeast of MAC (ADUHME, 2016). There are also sites being studied by major developers for possible ground-based solar farms that could coexist with continued use of the land as grazing pasture, but which are encountering opposition from state agencies who are general unfavorable towards any project that would take agricultural land away from its primary purpose of production (Interview 9). Although the subject seems to have been dropped, judging by the assessment of 0 GWh of potential wind power in the MAC PCAET, there was an organized opposition to a project for six wind-turbines near the village of Olloix in 2017 (Jousserand, 2017). Finally, there are three different companies in MAC specialized in solar installations, either in the agricultural, residential, or industrial sectors. These companies can serve as contractors or even partners for eventual CREPs that may seek to develop solar photovoltaic installations in the territory and help to ensure that many of the economic benefits of such activity will remain in the area.

Some of the indicators that could lead this factor to contribute positively to the emergence of a CREP and its future importance are present, resulting in a score of 3 out of 5. However, these are relatively recent developments in the territory and their impact has not necessarily been felt yet. It is likely, given the financial incentives and increased acceptability involved, that future large-scale projects will seek participatory funding, or even a partnership with a future CREP, which would help it to gain quickly in size and influence. Finishing out this section, the strength of civil society in ecology is explored.

Organized civil society is active on questions of ecology in Mond'Arverne Communauté. Being a semi-rural zone, agriculture is naturally a central theme and multiple associations are engaged in the promotion of either organic farming, ecologically responsible gardening practices, or the creation and maintenance of shared beehives. Interestingly, the president of the Nature and Progress federation, a peer-based labeling scheme that takes social as well as ecological factors into consideration, lives and is involved in ecological activism in MAC as well. The Alternatiba social and ecological transformation movementhas active members within MAC, as does the GREFFE association for environmental research and education, the president of which is involved in several of these associations (Interview 1). There are also several explicitly environmentalist organizations based in MAC, such as the Green Link, as well as different citizen collectives that have emerged as proponents of public

action in the fight against climate change. One example of such a group serves as a demonstration of how organized civil society, and dense networks, can give rise to CREPs.

In spring 2019, a group of inhabitants of the town of Aydat (a municipality of MAC), who were all a part of the same Assosication for the Maintenance of Traditional Farming (AMAP), formed a collective to fight for the ecological transition on a very local scale. The GIEC advocates for participatory democratic processes and direct citizen involvement in the development of their territory and contributed suggestions during the PCAET process. After the elections passed, the focus of this group shifted to more concrete actions and public education on the issues they cared about, including the development of renewable energy and several of their members have since begun discussions aimed at the creation of a citizen renewable energy cooperative, including with the employees and elected officials of MAC.

Finally, there are two other CREPs in the Puy-de-Dôme department that could aid a new citizen collective. The first, Combrailles Durables, was one of the first solar PV based CREPs in France, founded in 2011 (Interview 21). Their accumulated experience would be invaluable in both advising and motivating a new CREP for MAC. They have offered to assist in public meetings, partner on projects, and even do some consulting work for the Core Project Group if needed. The other is the more recently formed (2019) SCIC Toi & Toits that, while it has not built any installations, is enthusiastic to help a CREP in MAC, which borders their chosen territory of the Livradois-Forez (Interview 8). In the future, it may be possible for these three nearby CREPs, along with others that may emerge, to mutualize their resources or otherwise work together to shape the future of renewable energy in the department.

The strong and deeply anchored nature of ecological involvement in the associations of MAC, as well as its proximity to other CREPs that could serve as helpers and collaboration partners, lead to a score of 5 out of 5 for this factor. Now, shifting focus, we move on to a discussion of the different factors related to proximity.

3.2.1.3. The Roles of Territorial Proximities in MAC

The residential geographic proximity factor of MAC appears as a countervailing force against Citizen Energy. First of all, while the municipalities that make up Mond'Arverne Communauté stretch from east to west, the vast majority of public transit is oriented north-south for travel to and from Clermont-Ferrand in the north and Issoire in the south (PCAET : Diagnostique, 2019). A high-quality train line does exist, but like the free autoroute A75 it only passes through the center of the territory. Inhabitants of the east and west of the zone are forced to rely on automobiles for transport. Due to the hilly topography and indirect routes through villages, travel along the east-west axis is generally slower and less convenient, meaning that while the intermunicipality is relatively well connected to its neighboring larger cities it is not so well connected to itself (Projet de Territoire, 2018). The territory is relatively compact in the north-south direction, but its east-west extent is significant (over 45 minutes by car from one end to the other). The one aspect that mitigates the impact of this difficult picture is the lower unemployment and higher average individual revenue of the area, meaning that travel costs will make up a lower portion of the disposable incomes of the inhabitants on average.

This information leads to a score of 2 out of 5 on this factor. As our discussions of the role of geographic proximity in territorial formation would lead us to expect, the territory being separated from itself also has downstream effects. Continuing the discussion of geographic proximities, we now move on to the nature and presence of blocking factors in MAC.

The presence of two types of blocking factors in the territory of MAC are powerful obstacles to the growth of CREPs in the area, though not necessarily the emergence of a small one. The first is the overlap between the Regional Natural Park of the Volcanoes of Auvergne and five municipalities in the west MAC. For certain types of installations, such as biomass and methanization, the PNR and the local office of the Regional Direction of Agriculture, Food, and Forests (DRAAF) have adopted a supportive posture and even advanced some funding possibilities (Interview 29). But when an installation would impact the scenic value of the landscape or the natural habitats there, the park has generally been opposed to it (Interview 12). This means that wind-farms and larger ground-based solar installations are rendered difficult or impossible to develop within the borders of the park. While this is not a problem for smaller-scale rooftop solar production, it does take some of the more economically attractive forms of renewable energy such as wind-farms and ground-based solar off the table in that zone and thus render more difficult certain development pathways for CREPs in the area.

What does create barriers to rooftop PV development is the number of architecturally protected zones and historical monuments found in MAC. If a roof is within an area whose visual and historical character are protected because of the historical value of the buildings or the proximity, the Architects of Buildings of France (ABF) must be consulted before any aesthetically significant alteration can be made. While this institution differs in its posture from department to department, it would seem that the ABF for the Puy-de-Dôme tends towards a relatively restrictive stance according to a consultant that is involved in PCAET processes throughout the country (Interview 2). For example, when the ADUMHE presented them with the entire set of all rooftops that were prospected in the Solaire Dôme program, 85% of the roofs were eliminated from consideration (Interview 3).

We have chosen to assign two scores for this factor, the first one for large-scale installations such as wind-farms and ground based solar installations, and the second for rooftop solar PV. The factors blocking the installation of wind turbines are much more common and widespread, leading to a score of 2, while the only factor that blocks the development of rooftop solar PV is the ABF, giving a score of 4. While restrictive, this blocking factor still leaves sufficient rooves available to develop multiple megawatts of peak capacity and thus should not be seen as a strong restriction on the eventual growth of a solar PV based CREP. The next two factors are both forms of organized-similarity proximity.

As with any territory, the ecological values present in the population of Mond'Arverne are diverse and sometimes in contradiction with one another. We lack specific survey data for MAC, making the analysis of this factor even more uncertain than the others. With that said, from observations and interviews, there appear to be at least three major lines of division present within MAC that have the potential to impact the development of Citizen Energy.

First, as is so often the case in France, the debate between centralization and decentralization of energy governance is present in MAC as well. The support for centralization often accompanies a defense of the nuclear energy model still dominant in France, with a strong ideological attachment to the idea of energy being a public good and the importance of territorial equity. Perhaps unsurprisingly considering the history of EDF described in section 1.2.2, the defenders of this perspective often come from the Communist Party, certain elements of the Socialist Party, and the CGT trade union, all three of which have historically had a strong presence in the Puy-de-Dôme department thanks to its industrial past. In public debates, the defenders of a centralized, public, and nuclear energy can be hostile to renewable energy development and local small-scale production, as observed during public PCAET meetings by an employee of an intermunicipality near MAC (Interview 11).

Second, there is the ever-present conflict between those who are in favor of concretely developing renewable energy projects in the area, and those who are in favor in principle but would prefer it to be done elsewhere, the NIMBYs. For example, the methanization project in Authezat discussed earlier in this section has solicited backlash from neighbors who are concerned about odors and lower housing prices. And of course, there is the often very-significant oppositions that any discussion of wind-farms tends to solicit. The anticipation of public backlash is such that the PCAET for MAC does not include any estimates for the potential of wind power in the territory. In essence, this conflict is a disagreement over two things: on the one hand priorities, with the NIMBYs preferring comfort (and property values) over renewable energy development, and on the other hand aesthetics, with the NIMBYs considering that the renewable energy installations make the environment less enjoyable on some dimension (generally visual). This tendency seems to reflect a resistance to prioritizing ecology and the rapid implementation of new initiatives in this domain, though Bourdin (2020) suggests that some underlying motivations for what may at first glance appear to be simple NIMBYism can in fact be a desire for local control and justice that would be amenable to the Citizen Energy approach. It is difficult to tell without more information.

Finally, there is also a split among people in MAC who view the dominant capitalist mode of production as being perfectly compatible with a transition to a sustainable society and those who believe that the two are fundamentally irreconcilable and that transitioning to a different economic system is necessary. This division is most evident in the relatively strong presence of anti-capitalist, or at least capitalism-skeptic, civil society groups in the territory (Alternatiba, Nature & Progress, GIEC of Aydat, etc.) People who take this position tend to place a significant amount of importance on the way in which renewable energy development is done, rather than simply the amount of capacity installed. They have a somewhat greater focus on changing the system of production, not just its outputs. On the other hand, informal conversations with elected officials and public sector workers have made it clear that for some significant portion of the population, development of renewable energy under the current economic paradigm is a totally valid and achievable goal. The phrase "there is room for everybody", heard several times in different contexts, is emblematic of this way of viewing the

problem and leads to a greater degree of comfort in working with traditional large-scale developers, including those that are part of fossil-fuel company led groups.

As mentioned, this factor is very difficult to assess accurately, even if our research suggests that it is central to the ability of Citizen Energy to grow to something more than the activity of a small group of residents. We place this factor at somewhere between 0 and 2 but recognize that even the indicators marked with a "No" (see Appendix 4) may in fact be closer to "Yes" or easily flipped. What is clear, at least, is that there is not a broad consensus in the territory on the best way to pursue the ecological transition. The next factor we will examine in MAC is the population's identification with the territory.

While we do not have any survey data to rely on here either, we can relatively easily posit that the degree of identification with MAC would be very low. First of all, the territory as an administrative unit and a geographic designation only came into being from the fusion of the 3 previous intermunicipalities on January 1st, 2017. The population has not yet had the time to adopt this new territory as important to them. Indeed, in informal conversations we observed that while some inhabitants expressed an identification with one of the former intermunicipalities, they expressed that they did not feel that they "belonged" to the same territory as the people on the opposite side of the long east-west spread of MAC. This assessment was shared in interviews with people familiar with the territory (Interviews 1, 2, & 3). The geography, history, and culture were perceived as different and travel from one of the old zones to the other was described as rare. The second reason that we can assume a low degree of identification is the sub-urban or ex-urban relationship of many of the towns of MAC to the major nearby hub of economic activity: Clermont-Ferrand. Through informal conversations with elected officials and inhabitants of MAC, the observation was frequently made that towns in the zone were becoming "bedroom communities". One elected official expressed this concern explicitly, saying that there were many people in her town who had a "consumer" relationship with the place they lived, rather than viewing it as the community they belonged to and should spend their energy improving. She advanced the idea that these people identified more with Clermont-Ferrand, as a result of working there or in the immediate metropolitan area. While some inhabitants may hold a strong identification with their town (as in the case of the GIEC d'Aydat) or their smaller territory corresponding to the old intermunicipalities which had a greater degree of topographic and ecological coherence, MAC itself does not yet appear to be a territorial scale which solicits the interest of its citizens. This represents a barrier to the emergence of a CREP covering the whole geographic zone to the adoption of Citizen Energy as a major player in territorial governance at that scale.

The positive aspect of this relative absence of representation and emotional attachment to the territory is that there are no competing visions for the nature of the territory or for who belongs. In these first years after the fusion, it is possible to envision the creation of a shared idea of the territory that did not exist before, and nobody is likely to be excluded from any project on the basis of territorial belonging. Like many new systems, MAC is still a fluid entity that will only be able to define itself over time.

While the newness of the territory creates the possibility of shaping its identity and social borders going forward, the score of 2 on this factor represents the hypothesis that a lack of a territorial identity will likely serve to hinder the passage of a CREP from small citizen group to a significant actor in the field. We now move on to discuss the coordination between organizations on the topic of renewable energy, itself both a reflection and a generator of organized-belonging proximity.

Mond'Arverne Communauté is at the beginning stages of building the sorts of spaces and tools for inter-actor, relatively horizontal coordination that we would associate with territorial governance on the subject of renewable energy. During the process leading up to the creation of the PCAET, Mond'Arverne held a series of informational meetings on topics related to climate change, each with a different target (farmers, artisans, associations, and the general public). Out of these meetings, they helped a multi-stakeholder advisory body called the Climate Club take shape. This club was intended to provide feedback and suggestions for the PCAET, but, according to one of the public employees who worked on this process, the elected officials behind the initiative hoped that the group's engagement would continue over the long term. While PCAETs are non-binding planning documents, MAC wished to be held accountable by the citizens and civil society, and so intends for the Climate Club to participate in the performance evaluations programmed into the plan (PCAET : Plan d'actions, 2019). This is the sort of cross-sphere collaboration that can shape a territory if it continues. This is an example of the public actor playing the role of facilitatory rather than decider or doer, a transformation of the conception of public action described and predicted in the literature on territorial governance (Leloup et al., 2005). For the moment, this coordination remains nascent, but promising with the reactivation of the Climate Club now that the Coronavirus crisis has receded frequently discussed as a real goal.

The other major example of public coordination on this topic is the ADUHME itself, which devotes significant time and energy to advocating for more ambitious objectives in renewable energy development as well as to communicating with both public and private actors in the territory and outside of it (Interviews 2, 3 & 22). These inter-sphere relationships help to find opportunities for partnerships that would not be possible otherwise, even if not much is being done yet on this front to bring stakeholders into direct contact with one.

One result of this relatively new coordination is that the territory does not seem yet to have a shared vision of its future with regards to energy. One particularly striking example of this is the fact that the PCAET for Mond'Arverne includes the possibility of becoming a Positive Energy Territory by 2050, but that the SIEG63 has made it clear that they don't believe this to be a possibility (or even necessarily a desirable goal to pursue). The SIEG63 is an emanation of the municipalities of the Puy-de-Dôme, but elected officials in the towns of MAC are not necessarily aware of the positions of town councilors or mayors in other towns on environmental issues. These elected officials must take the SIEG63 at their word when they say that no intermunicipality in the Puy-de-Dôme is as interested in advancing on issues of the energy transition as MAC. And, elsewhere in the territory, there are citizen groups like the

GIEC of Aydat that are pushing for a strongly sustainable vision of their town's future but are unaware of the initiatives being pursued by MAC or the ADUHME on the topic. Rather than a unified territorial project for the ecological transition, MAC has the beginnings of the coordination that could lead to one.

With nascent territorial governance on energy and ecology issues showing some promise but not very far advances as of yet, we place the inter-sphere coordination on renewable energy in MAC at 2. This number appears likely to increase rapidly, however, as the new dynamic begun in recent years enters into local practices and as department-level actors begin to coordinate their actions more frequently. Finally, this we close this section with observations about the network structure in MAC, as difficult as they may be.

The presence of dense, interconnected network is almost certainly the most challenging factor to provide robust quantitative analysis for, even in theory: the precise mapping of social networks on the scale of a 40,000 person territory is a task reserved for the largest research universities and technology companies. With that said, it is possible to infer from what we know about the territory whether or not it is likely that the network structure present is characterized by dense groups strung together by connections to each other.

First of all, the geographic arrangement of the territory would seem to favor such a structure. As a semi-rural territory composed of 27 small towns and villages (between 218 and 3976 inhabitants), most networks would naturally be of the small and dense variety typical of smaller municipalities and non-urban areas. Second, the presence of many associations in the territory means that most of these dense networks will be in organized-belonging proximity to them. Third, the lack of a comprehensive slate of basic services in any one of the towns (except perhaps for the 2 or 3 largest) would tend to create incentives for some members of each town to travel regularly into the other ones and thus end up creating bridging ties among what would otherwise be disconnected networks. Furthermore, the fact that only roughly 5,400 working positions exist for an active population of roughly 30,000 means that the majority of those active living in MAC work outside of it, which would also tend to spread bridging ties outward.

However, the fact that most active residents of MAC do not work within its boundaries also means that the aspects of village life which tend to create dense networks, such as a family being settled in a village for multiple generations or a person living near their coworkers, will be to some degree countered by the aspects of ex-urbanization that favor looser networks with fewer connections in the territory. When people live and work in different places, and especially when they are relatively recent arrivals to a territory, they tend to form weaker ties and not be connected to as many members of an otherwise dense group (Grossetti, 2006). This lack of a dense, locally implanted group then reduces the likelihood that they will be successfully motivated to action for the benefit of that territory through the echo-chamber mechanism described above, creating effective "dead zones" in the transmission of information. These people might have few real connections locally, choosing to spend their energy on building ties with coworkers instead. This is perhaps one explanation for the observation of the elected official who regretted the "consumer" relationship of newer residents to the place they lived.

In the end, most of what we can say about this factor is supposition and indirect observation. With that caveat in mind, the elements presented above suggest a 3 out of 5 the scale.

Now, we will take these scores and the indicators underlying them and use them to present one hypothetical scenario for the possibilities, conditions, and likely future extent of development of Citizen Energy in Mond'Arverne Communauté.

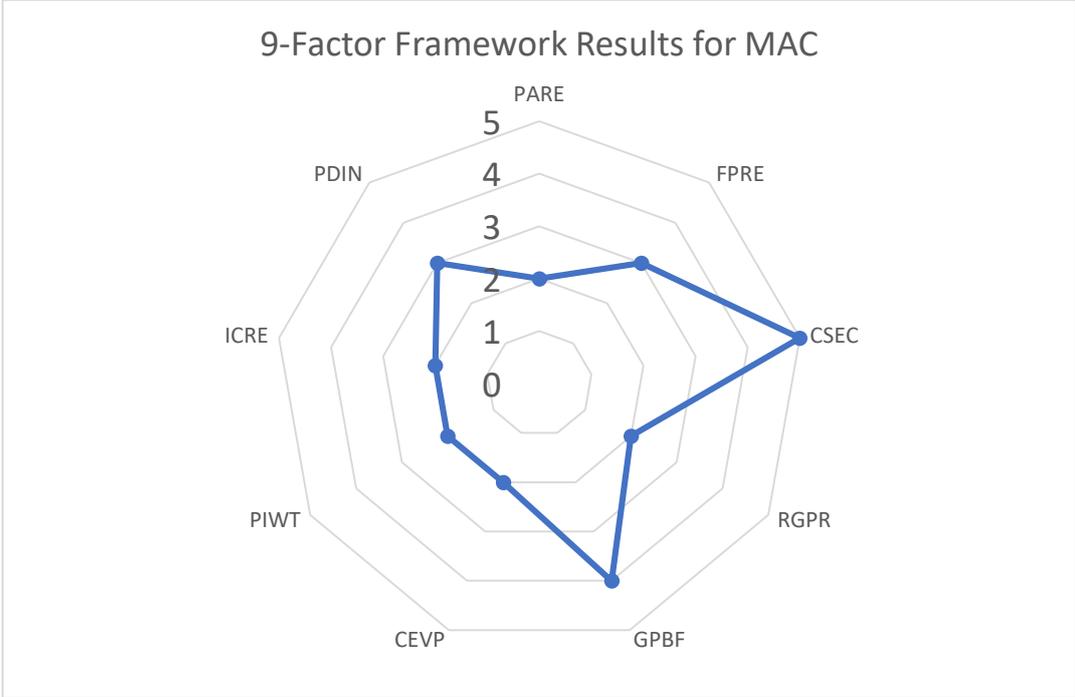### 3.2.2. What We can Learn from this Exercise: Outline of a Possible Future

Figure 4. Results of 9-Factor Analysis for Mond'Arverne Communauté

Through the use of our 9-factor framework, we are able to provide some initial observations as to the fit between the realities of Mond'Arvene Communauté and Citizen Energy. Returning to the scale of territorial integration of Citizen Energy proposed in section 2.2.4, we can safely place MAC at a 1 on the scale, as there is no CREP currently active there. The objective of this analysis is to speculate about how far up the scale the adoption of Citizen Energy MAC is likely to advance without a significant change in circumstances. We also intend to offer some potential avenues for change, should the most influential actors in the territory wish to move further up the scale. We will attempt to illustrate the impacts of the factors, as well as the obstacles to overcome, through a hypothetical narrative of one possible course that the development that a CREP could take in Mond'Arverne Communauté. This is an intentionally stylized description which, for purposes of illustration, oversimplifies some of the processes being described. Even so, its intent is to make clear how a social-economic-physical system as complex as a territory can both impact and be impacted by a citizen initiative.

Overall, Mond'Arverne appears have the capacity to foster the creation of a CREP that could work to develop small-scale renewable energy projects within its borders. The tight-knit

activist circles and densely interconnected communities of villages are ideal conditions for a core project group to emerge. Some number of those groups, such as the GIEC of Aydat, will certainly have sets of ecological values which are compatible with the premises of the Citizen Energy movement, and the connections between those networks will allow that core group to reach enough people to raise the modest amounts of capital needed to create a set of rooftop solar PV installations on public buildings whose rooves are graciously provided by the municipalities of MAC as a part of the Solaire Dôme initiative after encouragement from the ADUHME. These public actors will recognize their interest in helping to launch and then supporting this citizen initiative, as it allows them to leverage a modest fiscal contribution into significantly more progress toward their shared PCAET goals. The young CREP will be able to call on the help of a local civil society that is relatively active on ecological issues to spread the word, relying on the expertise provided by local installation companies. However, moving beyond the level of a small initiative run by a highly-local group of engaged citizens and supported by a few local actors will present some challenges.

The first issue to arise will be getting people from other areas in the intermunicipality to participate in the project. Ideally, the membership of this CREP would be relatively evenly distributed across the territory, but there are factors that push against such a distribution coming to pass organically. The lack of a shared sense of territorial belonging across the whole area of MAC will make participation in a project on the other side of the zone less motivating. This will be an even greater challenge considering the difficulty of travel between the west and the east of the territory. In addition, some number of the people who the core group manages to spread their information to will be the typical "bedroom community" resident, who might be favorable to the project and could even be convinced to invest money, but would not spend significant time or energy developing the initiative or reliably spread the word around them. For these reasons, the collective behind the CREP is unlikely to draw its members from the territory in a homogenous manner, and could very well remain clustered in one zone, for example in the west around Aydat. In that case, the ability and impulsion for the CREP to undertake projects outside of that zone would depend on the continued involvement and support of the government of MAC itself, which would use support and its own communication resources to make sure that the citizen group was able to cover the whole zone.

If the CREP did manage to anchor itself meaningfully across the entire territory, with not only citizen investors but also volunteers and core group participants, it would then face another difficult task: going from being a small project-oriented group to a participant in defining the future course of the energy transition locally (level 3 on the scale). For this to occur, the CREP would almost certainly need a significant and rapid infusion of public resources, as we saw in the example of Ouest Aveyron Communauté. The ability of a CREP to be an important actor in the territory is contingent on its capacity to take on new and more ambitious projects and involve itself in larger installations as something more than a junior partner brought in to lend credibility to it. This means financial and, for the largest organizations in the field, human resources. The low degree of engagement in renewable energy from the SIEG63 SDE

makes it unlikely that they would be a source of financial support, as similar structures are in other departments. The intermunicipality may choose to participate financially in such a structure, or even finance some degree of advising and technical assistance during the early stages of its creation (from Coopawatt or Combrailles Durables, for example), but MAC's budget for renewable energy related initiatives is very small, as we saw in the discussion of the PCAET. The most likely sources of the kind of resources that CREP would need to grow quickly are the AURA region and the ADEME, though neither have active requests for proposals or open grant applications that would cover operating expenses for this kind of initiative. It seems that finding the kind of public funding needed to help a CREP quickly emerge in MAC as not only a small citizen initiative but as a partner in the energy transition will require either evolutions in the positions of the important public actors or a good deal of creativity in searching for funds, possibly even at the European level.

Hypothetically, the CREP would be able to develop its own activities of renewable energy production and sale to a sufficient degree that they could fund their own expansion, as Combrailles Durables has done over the past 10 years. If the CREP remained in the field of rooftop solar PV and was able to find more large rooftops able to hold 100 kWp installations on business or agricultural buildings, they might be able to reach a sufficient scale to become self-sufficient without running into excessive problems with the ABF and other blocking factors. Alternatively, the opportunity to mutualize costs and services with other CREPs in the department could make them all collectively more significant actors in their areas of action.

Over this slow period of development, the CREP could participate in shifting the balance of ecological norms and values in the territory. Education and awareness raising are core aspects of the Citizen Energy movement, and simply by its normal activities of fundraising, installation inaugurations, and participation in public events the group would continue to spread their message. To the degree that this helped bring residents closer together on questions of the energy transition, the CREP would be sowing the seeds for its own future success.

Assuming that the CREP was able to overcome these obstacles and gain a seat at the table in determining the future course of renewable energy development in Mond'Arverne, the adoption Citizen Energy as the dominant logic of its territorial governance (level 4 on the scale) would still seem to be far out of reach, at least for the moment. The two major barriers to this transition identified here are, on the one hand, the lack of coordination among actors involved in renewable energy development in the territory, and on the other hand, the divisions present in the population on ecological norms.

The apparent divisions within the population on both the importance and the specific form of the energy transition means that the adoption of Citizen Energy as a wholistic approach is unlikely in the short term. First, people who don't consider action against climate change to be important enough to accept small amounts of aesthetic discomfort or effects on their property values are an obstacle. Second, the presence of a large contingent of defenders of a centralized, publicly owned, and generally nuclear-centric approach to energy production and distribution in the population has a doubly negative effect on the evolution towards a Citizen Energy

framework. It will both reduce the political pressure needed to overcome institutional inertia in organizations with a preference for the centralized model, such as the SIEG63, and render any kind of broad consensus among left-wing parts of the population and political system more difficult to achieve. Finally, the split between the anti-capitalist and capitalist-compatible visions of the energy transition will make it more difficult for a CREP to assemble a strong coalition, both activists and people who are more interested in local economic development. Through slow and steady work, not shying away from these conflicts and also not enflaming them, the CREP could work to bridge these divisions, but the road would certainly be long. The final factor acting against adopting Citizen Energy as the main logic of territorial governance of renewable energy is the newness and fragility of systems of coordination.

The coordination of key actors to both create and pursue common goals for development is the essence of territorial governance. While Mond'Arverne has begun to put systems of that type in place, in their current absence the status quo looks like different smaller groups of actors each working separately on their own plans toward their own ends. The newfound interest for Citizen Energy in the intermunicipality and its residents may be an opportunity to bring these new tools for collaboration online and begin the long and rewarding process of co-creating a path towards a better future, together.

Conclusion

To understand the arrival and evolution of the production, transport, distribution, and supply of electricity in France, we must take into account the reciprocal relationships that these activities have with the territories they are based in. How does Citizen Energy in France both emerge from and impact its territories and their systems of territorial governance of energy?

Territories are multifaceted things, integrating into a single concept the geography, history, administration, and social realities of a space whose nature is that of a constantly changing system. These systems made up of actors and the physical reality they inhabit together take root in the geographic space of the territory, but also in the organized social spaces presented by the networks of relationships and the different norms and ideas that make it easier or harder for actors to coordinate. These proximities, geographic or organized, provide a key to understanding the dynamics of a territory as it takes shape and evolves continually. However, this evolution is not a random process: systems of government and governance shape its development. Territorial governance can have many forms and be piloted by any number of actors, but at its purest it is a multi-stakeholder process in which the different spheres of socio-economic actors come together to shape of a common vision for their future and work to make it real

The governance of energy systems in France began at the very local level, moved towards a more territorial approach, became highly centralized at the national scale, and has recently moved back towards territorialization with the advent of renewable energies and the entrance into the European Union. The early days of electrification were made up of simple, direct relationships between producer-distributors and their clients, often cities. As the importance of the sector grew, these cities became the legal authorities over electricity distribution, and banded together in syndicates to better coordinate all of the diverse actors in this burgeoning new reality. This early example of public-led territorial governance would give way to a great centralization after WWII with the creation of EDF and the total nationalization of the sector. Surviving through a 45-year period of difficulty and marginalization, these local forms of power would begin to reemerge in the 1990s and especially the 2000s with the growth of departmental energy syndicates. As regions, departments, and especially intermunicipalities were more and more empowered to act on the issue of renewable energy, the opening of the French electricity market required by the entry into the European Union created the possibility for local-level alternatives to emerge, and in particular Citizen Energy. Centered around the Energie Partagée association, this movement seeks to anchor the development of renewable energy locally, with a democratic and partnership-based approach to governance and a commitment to justice. This local anchoring has already resulted in several institutional innovations, with territorially specific models for mutualization and collaboration already emerging in different parts of the country.

At the most concrete level, Citizen Renewable Energy Projects are defined by the four criteria in the Energie Partagée charter, but also by the legal forms and business models that

they tend to adopt. The charter requires that all such projects be locally anchored, have non-speculative ends, be governed democratically and transparently, and maintain respect for the environment. The common adherence to these values serves as the basis for the organized-similarity proximity, and specifically a shared vision for future of renewable energy, that brings citizens and public actors together in common purpose. But CREPs are also organizations run by people, especially the most dedicated members in the Core Project Group and the human side of the work cannot be neglected. The formation of a CREP depends in large part on the different forms of proximity in the territory that can bring people together, as does their ability to raise the funds they need to build installations. Each territory is unique, and the influential actors, social networks and widely held values within them shape any CREP that arises. The process of emergence of a CREP in turn creates positive impacts on the territory, moving it ever so slowly closer to the collaborative, engaged ideal represented by the movement.

The movement toward this ideal does not take place in the same way across all territories. In some, especially the earliest ones like the Eoliennes en Pays de Vilaine group, citizens take matters into their own hands. EPV is recognized as the first CREP in France, and from the beginning has been a citizen-led initiative. Despite obstacles from regulatory authorities and the initial indifference of their intermunicipality, the residents of the area around the town of Redon built a movement with a broad and deep enough base of support to attract the attention of higher level public actors, who helped them to launch the Citizen Energy Movement. The example of Monts Energie shows a CREP that was, from the very beginning, a partnership-based affair. As a part of a long-standing and widely held project for the territory, as crystalized in the TEPOS commitment, the intermunicipality and local civil society came together and formed a CREP that continues to this day to be a tight partnership, even if the size of the organization itself remains modest. Public initiative, as well as the power of scale, are on display in the SEM Nièvre Energies, resulting from an initial partnership with citizens and since evolving to a public-led but inclusive tool for regulating private developer activities and encouraging citizen led and public initiatives. This CREP is the one that appears the closest to becoming, in its own right, a space for the territorial governance of renewable energy. Each of these projects, as well as the other studied, seem to represent a progression for a given territory: from the absence of a CREP, to its existence as a humble initiative, to it taking an important seat around the table of territorial governance, to finally the territory fully adopting the logic of Citizen Energy.

We are still at the beginnings of the Citizen Energy movement, and the conditions for such an emergence and evolution are not yet well studied. However, it would seem that the interplay of the most important actors (public, private for-profit, and civil society) are critical factors in this process. Through the resources they bring to the table, the organized oppositions that they can create, or their ability to mobilize the population, these spheres working together and coordinating their actions can transform territorial governance in a Citizen direction. The proximities present between the actors in a territory are no less decisive, in many cases conditioning even the possibility of Citizen Energy emerging at all. These factors, when

assembled into a framework and applied to a specific territory can provide a way of assessing the fit between a territory and Citizen Energy as a tool for territorial governance and suggest ways to improve that fit. As a territory defined by a new intermunicipality taking on its first PCAET with an interest in Citizen Energy, the specific case of Mond'Arverne Commauté is instructive, appearing as a territory at the very beginning of building its systems of territorial governance of renewable energy.

At its most ambitious, the Citizen Energy movement is proposing a new form of territorial governance of energy for France. Following the Négawatt scenarios for the energy transition, with reduction in consumption making a rapid shift to 100% renewable production possible, centralized forms of generation become unnecessary and centralized forms of governance become inappropriate. One can begin to imagine how the model represented by the largest and most successful Citizen Energy initiatives (such as EPV or SEM Nièvre Energies) could be generalized to many other territories. By regulating renewable energy development so that it benefits both the fight against climate change and the population of the territory, by educating and mobilizing them, and by giving them the power to decide and to act, the public-civil society partnership that Citizen Energy represents is transforming the way that people view their relationship with the energy system. Without rejecting the involvement of for-profit developers out of hand, but not allowing them to dominate the process either, the Citizen Energy approach seeks a balance between the urgent need for investment in renewable energies and the equally urgent requirement to reinvigorate local civic life and democracy.

Citizen Energy, the territories it is changed by and changes, and the governance systems guiding that process are infinitely complex and multifaceted objects. This study was an introduction to the key concepts and actors that are at work in this interaction, along with initial attempts at creating some intellectual tools to understand it. To extend this research, further methodological work on the scale and framework proposed here, more systematic data gathering at the territorial level, and comparison studies with other areas would be important.

In addition, it would be interesting to broaden the field of study to consider how Citizen Energy can be a part of what Artis et al. (2009) call a *transversal mode of development*. Instead of remaining siloed in the energy sector, CREPs could integrate themselves into a broader ecosystem of SSE organizations, breaking down the barriers between traditionally separate activities and becoming a part of a system in which the territory determines and provides for its own future holistically. What role does Citizen Energy have to play in this kind of multidimensional development? The possibilities are positively electrifying.

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Appendix 1: Table of interviews performed

#	Organization	Nature of organization	Role
1	GREFFE & Collectif Climat 2020	2 Ecological advocacy non-profit associations	Volunteer & Administrator
2	B & L Evolution	Consulting firm	Consultant
3	ADUHME	Departmental level energy expertise non-profit agency made up of municipalities	Director
4	AURAEE	Regional environmental non-profit & coordinator of Energie Partagée network	Citizen Energy Specialist
5	Université Lyon 2	University	Researcher
6	Enercoop AURA	Regional branch of renewable energy distributor Enercoop	Producer Relations
7	PNR des Grandes Causses	Regional natural park	Renewable Energy Specialist
8	SCIC Toi et Toits	Citizen Renewable Energy Project	Founding member & administrator
9	DDT 63	Departemental branch of national government agency: management of land and natural resources	Employee
10	Val d'Ile-Aubigné	Intermunicipality	Employee
11	Billom Communauté	Intermunicipality	Employee
12	PNR des Volcans d'Auvergne	Regional natural park	Employee
13	Riom Limagne et Volcans Communauté	Intermunicipality	Employee
14	ADEME	National government agency for the ecological transition	Employee
15	CIGALES Cicada Club	A social and solidarity economy investment club	Administrator
16	Ouest Aveyron Communauté	Intermunicipality	Employee
17	Monts du Lyonnais Communauté	Intermunicipality	Employee
18	CIGALES AURA	Regional coordination non-profit association for CIGALES investment clubs	Employee
19	Crédit Agricole Centre France	Bank	Employee

20	Centrales Villageoises	Non-profit association network of CREPs	Employee
21	ADEME & Combrailles Durables	National government agency for the ecological transition & Longstanding Citizen Energy cooperative in the Puy-de-Dôme	Administrator
22	ADUHME	Departmental level energy expertise non-profit made up of of municipalities	Employee
23	Coopawatt	Consulting firm for Citizen Energy	Director
24	ADIL63	Departmental level non-profit aiding private individuals on housing and energy-saving topics	Director
25	CLER	National level network promoting renewable energy	
26	Terre de Liens Auvergne	Non-profit organization for the protection and promotion of small-scale farming	Administrator
27	URSCOP AURA	Regional-level non-profit association to promote and aid worker cooperatives.	Employee
28	Pays du Grand Clermont	Intermunicipal governmental structure	Employee
29	DRAAF63	Departmental branch of a national agency in charge of agriculture and forests	Employee
30	SEM Nièvre Energies	Mixed economy company involved in the Citizen Energy movement	Employee
31	Energie Partagée	Primary national network for Citizen Energy	Employee
32	Energies Citoyennes en Pays de Vilaine	Pioneering group of Citizen Renewable Energy Projects	Former President & current Administrator
33	Cowatt	Regional-level structure mutualizing services and costs between CREPs	Employee of member association
34	SAS Monts Energies	Citizen Renewable Energy Project	Administrator
35	CEVIVAL	Citizen Renewable Energy Project	Administrator
36	SEMELEC	Mixed economy company for the departmental electricity and gas syndicate	Director
37	DREAL AURA	Regional branch of a national agency in charge of environment, housing, and planning	Employee

Appendix 2: Semi-directive interview questions

Type of question	Examples of question as posed in interview
Introduction	• Would you please present yourself as well as the organization you work for? • Would you please present the organization you work for as well as your role within it?
Organization's role in energy	• What is the role of your organization in renewable energy? • What is the role of your organization in the energy transition? • How does your organization participate in the development of renewable energy in the territory? • How does your organization promote citizen renewable energy in the territory?
Questions about other actors	• What other actors does your organization work with to pursue its missions related to renewable energy? • What is another person or organization that I should speak with to better understand this topic? • What actors play a major role in the development of renewable energy in the territory?
Questions about the territory	• What are the most important issues relating to the energy transition in the territory? • Do you know of any citizen groups or non-profit associations who might have an interest for a project like this?
Citizen Energy	• Are you aware of other citizen energy projects taking place in the territory? • If you have an opinion on the topic, what are the most crucial conditions for the success of a citizen renewable energy project? • How does the initial core project group for a citizen renewable energy project generally form?
Role of an intermunicipality	• In your opinion, what role should an intermunicipality play in the process of emergence of a citizen renewable energy project? • How can an intermunicipality favor the emergence of a citizen renewable energy project in its territory? • What is the role of the intermunicipality once the project has emerged and is on solid footing?
Open-ended questions	• What have you learned during your experiences that you would want to pass along to a newly formed core project group? • What question should I have asked you that I didn't ask you, or what subject should we have covered in more detail?

Appendix 3: Scales for 9-Factor Framework

Factor	Code	Indicators
Involvement of Public Actors in RE	PARE	• Renewable energy SDE & SEM active in territory. • Planning document at this constructed via public process. • Dedicated funding for renewable energy development and public education from public actors in territory. • Territory is a part of the TEPOS network or similar. • Local energy and environment agencies participate in mobilizing Territorial Collectivities.
Involvement of For-Profit Actors in RE	FPRE	• One or more large-scale private for-profit projects in development. • Presence of organized public opposition to private for-profit projects. • Presence of private for-profit developers seeking to partner with citizens. • Highly visible preexisting for-profit projects. • Presence of renewable energy installation companies.
Strength of Civil Society in Ecology	CSEC	• Presence of multiple, independent ecologically focused associations in the territory. • Presence of informal citizen collectives dedicated to ecology in the territory. • Large volunteer base for these associations in the population. • Nearby CREP not in the territory able to collaborate with, provide aid to, and give advice to a newly forming group. • Presence of associations promoting participatory or direct democracy.
Residential Geographic Proximity	RGPR	• Presence of high-quality and extensive road infrastructure covering territory. • Presence of high-quality and extensive public transit services covering territory. • Limited north-south geographic scope. • Limited east-west geographic scope. • Transit costs low relative to average local income.
Geographic Distance from Blocking Factors	GPBF	• Potential installation sites mostly outside of historical or architectural protected zone perimeters. • Potentially installation sites do not interfere with protected landscapes.

		• Potential installation sites outside of natural zones. • Potential installation sites distant from anti renewable energy development groups' areas of intervention. • Potential installation sites distant from other CREPs relying on the same technology.
Compatibility of Ecological Values in Population	CEVP	• High degree of priority given to action on ecology. • Majority preference for immediate action on ecology. • Majority preference for decentralized solutions. • Majority preference for imperfect action over inaction. • Wide and overlapping zones of possible agreement on these issues.
Population's Identification with the Same Territory	PIWT	• Absence of a higher or lower order territory that is the subject of a high degree of identification. • Majority of population views the territory as part of its identity. • Absence of coherent, competing visions for the nature and significance of the territory. • Absence of public conflicts over who does or does not belong. • Presence of a widely shared vision for the future development of the territory.
Inter-Sphere Coordination on RE	ICRE	• Cross-sphere committees and working groups on renewable energy. • Active cross-sphere renewable energy projects. • History of cross-sphere collaboration in territory. • Widespread institutional relationships between spheres. • Well-connected actors in each sphere share a common, citizen-compatible, vision for territorial development.
Presence of Dense Interconnected Networks	PDIN	• Prevalence of dense networks in population of territory. • Frequent interconnections between networks. • Rare disinterested "dead zones" between networks. • Most dense networks are in close organized-belonging proximity to associations. • Most interconnections are between territory's residents.

Appendix 4: Detail on 9-Factor Framework for MAC

Indicators for Involvement of Public Actors in RE (PARE)	Yes/No
Renewable energy SDE & SEM active in territory.	No
Planning document at this scale constructed via public process.	Yes
Dedicated funding for renewable energy development and public education from public actors in territory.	No
Territory is a part of the TEPOS network or similar.	No
Local energy and environment agencies participate in mobilizing Territorial Collectivities.	Yes
Total:	**2**
Indicators for Involvement of Private, For-Profit Actors in RE (FPRE)	
One or more large-scale private for-profit projects in development.	Yes
Presence of organized public opposition to private for-profit projects.	Yes
Presence of private for-profit developers seeking to partner with citizens.	No
Highly visible preexisting for-profit projects.	No
Presence of renewable energy installation companies.	Yes
Total:	**3**
Indicators for Strength of Civil Society in Ecology (CSEC)	
Presence of multiple, independent ecologically focused associations in the territory.	Yes
Presence of informal citizen collectives dedicated to ecology in the territory.	Yes
Large volunteer base for these associations in the population.	Yes
Nearby CREP not in the territory able to collaborate with, provide aid to, and give advice to a newly forming group.	Yes
Presence of associations promoting participatory or direct democracy.	Yes
Total:	**5**
Indicators for Residential Geographic Proximity	
Presence of high-quality and extensive road infrastructure covering territory.	No
Presence of high-quality and extensive public transit services covering territory.	No
Limited north-south geographic scope.	Yes
Limited east-west geographic scope.	No
Transit costs low relative to average local income.	Yes
Total:	**2**
Indicators for Geographic Distance from Blocking Factors (GDBF)	
Potential installation sites mostly outside of historical or architectural protected zone perimeters.	Yes/No
Potentially installation sites do not interfere with protected landscapes.	No/Yes

Potential installation sites outside of natural zones.	No/Yes
Potential installation sites distant from anti renewable energy development groups' areas of intervention.	No/Yes
Potential installation sites distant from other CREPs relying on the same technology.	Yes/Yes
Total (wind/solar):	**2 /4**
Indicators for Compatibility of Ecological Values in Population (CEVP)	
High degree of priority given to action on ecology.	?
Majority preference for immediate action on ecology.	No
Majority preference for decentralized solutions.	No
Majority preference for imperfect action over inaction.	No
Wide and overlapping zones of possible agreement on these issues.	?
Total:	**0-2**
Indicators for Population's Identification with the Same Territory (PIWT)	
Absence of a higher or lower order territory that is the subject of a high degree of identification.	No
Majority of population views the territory as part of its identity.	No
Absence of coherent, competing visions for the nature and significance of the territory.	Yes
Absence of public conflicts over who does or does not belong.	Yes
Presence of a widely shared vision for the future development of the territory.	No
Total:	**2**
Indicators for Inter-Sphere Coordination on RE (ICRE)	
Cross-sphere committees and working groups on renewable energy.	Yes
Active cross-sphere renewable energy projects.	No
History of cross-sphere collaboration in territory.	No
Widespread institutional relationships between spheres.	Yes
Well-connected actors in each sphere share a common, citizen-compatible, vision for territorial development.	No
Total:	**2**
Indicators for Presence of Dense Interconnected Networks (PDIN)	
Prevalence of dense networks in population of territory.	Yes
Frequent interconnections between networks.	Yes
Rare disinterested "dead zones" between networks.	No
Most dense networks are in close organized-belonging proximity to associations.	Yes
Most interconnections are between territory's residents.	No
Total:	**3**

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