GRETA
GREEN ENERGY TRANSITION ACTIONS

D5.4
Guidelines on Energy Citizenship Contracts – Definition and implementation

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Executive summary

The overall objective of WP5 is to investigate which are the main factors influencing the emergence and growth of energy citizenship and its relations with geographical levels, and to examine under what conditions energy citizenship conducts to reach broader decarbonization policy goals.

Following the definition of Community Transition Pathways (CTPs), Task 5.3 aims to design agreements (a general framework for all the case studies and three drafts for three cases) to successfully implement CTPs goals and for supporting energy citizenship (EC) across geographical levels. The Energy Citizenship Contracts (ECC) are voluntary agreements between different stakeholders aimed at addressing energy actions and promoting sustainable practices. They contain community-level goals, stakeholders, activities, resources designed to shift the community awareness level towards energy citizenship. The ECCs have been based on steps to define energy goals, strategies and enabling conditions for EC in relation to the geographical levels and related factors, as developed in the CTPs.

D5.4 is specifically dedicated to providing and illustrating ECCs Guidelines for implementation with relevant information on their purposes and on how to read and use them, while also explaining what benefits ECCs would carry. ECCs Guidelines intend to show the process of developing voluntary agreements in a fair and inclusive way by adopting a systemic and multiscale approach in different communities.

The deliverable is structured in three parts: a first part presenting the results of the literature and policy review on forms and benefits of Energy Citizenship Contracts and its links with the findings of WP3 and 5; the second part defines the guidelines for the ECCs implementation; the third part analyses the GRETA case studies and provides an empirical implementation of the tool.

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Summary (for dissemination)	GRETA aims to offer communities effective, reliable, tested instruments but also tailored and contextualized paths to establish and structure the relationship with all the stakeholders included in the transition process. The dedicated instruments to explicit, formalize and regulate mutual benefits, rights and duties, are identified in agreements called Energy Citizenship Contracts (ECCs). The GRETA ECCs are a specialisation of the forthcoming Climate City Contracts (CCCs) which form the basis of the "100 climate neutral and smart cities by 2030" mission, proposed by the European Commission. Energy Citizenship Contracts offer numerous benefits through their voluntary nature, even if they are non-binding for policy-makers and signatories. These contracts empower individuals and communities, foster public awareness and engagement, facilitate knowledge exchange, and influence policy-making processes. Furthermore, they create a solid foundation for future actions and the realization of sustainable energy goals. By embracing the voluntary character of Energy Citizenship Contracts, societies can accelerate their transition to clean and sustainable energy systems, achieving a more equitable and prosperous future for all. In detail, the GRETA communities will need to outline their own Energy Citizenship Contract. EECs will strengthen and regulate the relations among the parties involved in the energy system within its specific context.
Keywords	Energy citizenship, energy community, contracts, transition pathways

Version	Date	Description
0.1	2023-07-31	First draft
0.2	2023-08-17	Second draft
1	2023-08-31	Final draft for submission

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Abbreviations and acronyms

EC: Energy Citizenship

ECC: Energy Citizenship Contract

CCAM: Connected and Cooperative Automated Mobility

CCC: Climate City Contracts

CLI: Community Level Indicator

CTP: Community Transition Pathways

DHW: Domestic hot water

DoA: Description of Action

GCA: Green City Accord

GIS: Geographical Information Systems

EU: European Union

ICT: Information and communication technologies

LAU: Local administrative unit

NGO: Non-governmental organization

PACT: Participatory Agreement for the Climate Transition

PAW: Dutch national program on natural gas-free neighbourhoods

PV: Photovoltaic

REC: Renewable energy community

SME: Small and medium-sized enterprise

SSH: Social Sciences and Humanities

TMN: Transnational municipal network

WP: Work package

1 Introduction

1.1 Description of the deliverable

The call under which GRETA was funded — LC-SC3-CC-1-2018-2019-2020: Social Sciences and Humanities (SSH) aspects of the Clean-Energy Transition — mentioned the necessity "to understand in what kind of environments collaborative goal setting and commitment can take place, how relevant decisions are made and any trade-offs between competing goals are addressed". The DoA describes Task 5.3 as the place where engagement activities within GRETA case studies would take place. In particular, oriented to implement Community Transition Pathways (CTPs) for supporting Energy Citizenship emergence. As a result of the Task the Energy Citizenship Contracts (ECCs) are foreseen. These tools will *"strengthen and regulate the relations among the parties involved in the energy system within the different case studies context. The aim is to ensure energy justice and to balance inequality and exclusion through an energy welfare system. This instrument will be useful for policy makers as a way to better understand citizens specific needs, organization capability, actors to be involved, value redistribution schemes, to test specific policies in real-life context and to get feedbacks out of it"* (GRETA DoA). This deliverable is a guiding document on collaborative implementation of Energy Citizenship Contracts in each of the GRETA case studies. Based on the Community Transition Pathways roadmaps, it establishes and regulates the relations between the contract signatories/stakeholders, with goal of avoiding energy injustice and/or exclusion. It will provide guidelines for the implementation of ECCs as well as insights on their exploitation in different contexts.

1.2 Scope of the deliverable

Deliverable 5.4 is a direct result of the work performed in Task 5.3. This document aims at providing a framework that defines and characterizes aspects of agreements/contracts enabling energy citizenship to emerge and grow at different geographical levels.

The deliverable serves as a comprehensive guiding document focused on the collaborative implementation of ECC within the context of the GRETA case studies. It aims to facilitate the establishment and regulation of relations between the contract signatories and stakeholders involved in the GRETA case studies. The document is based on the Community Transition Pathways roadmaps, which provide a framework for achieving sustainable energy transitions.

Objectives of the deliverable are:

- Definition and Purpose: Providing a clear understanding of ECCs, their purpose, and the benefits they offer to communities and stakeholders.

- Establishing Collaborative Implementation: The deliverable aims to provide a roadmap for collaborative implementation of ECCs within the GRETA case studies, fostering cooperation and coordination among stakeholders.
- Avoiding Energy Injustice and Exclusion: The document seeks to address potential issues related to energy injustice and exclusion, ensuring that the implementation of ECCs is equitable and inclusive for all parties involved.
- Contextualizing ECCs: Relating ECCs to the GRETA case studies and explaining their significance within the project's objectives provides clear guidelines and instructions for the implementation of ECCs, ensuring that the contracts are effectively utilized as tools for promoting energy citizenship.
- Insights into Exploitation: The document also offers insights and recommendations on the exploitation of ECCs in different contexts, enabling stakeholders to leverage the full potential of these contracts.

This Deliverable follows closely the theoretical framework outlined in WP5, where the CTPs are developed and implemented in the case studies (D5.3). It is also linked with WP3 that deals with data gathering and background studies on the six case studies (T3.1) that the ECCs take as a knowledge baseline for their implementation; it identifies elements for energy citizenship emergence at a more general level (T3.2) as a first analysis that will lead to the definition of the survey (T3.3). Finally, in T3.4 it draws knowledge from the synthesis on case study results, including statistical elements and model validation. In Task 5.3, some selected GRETA case studies are identified as the pilots where ECCs are drafted as prototypes and, in some cases, signed after the project completion. For the other GRETA (or other) case studies, the Task provides the basis for the implementation of ECCs.

1.3 Methodology

Task 5.3 follows a mixed methodology approach composed of:

Theoretical background on social, climate/energy-related contracts. This analysis is based on academic and policy literature on climate and energy related agreements and contracts.

Purpose: this part of the work frames energy citizenship as differentiating phenomena occurring in different geographical domains. Drawing from literature on energy communities and behaviours, the review aims at highlighting deductions about geographical levels.

Empirical knowledge gained through the activities of WP5 and in particular the Community Transition Pathways workshops and activities.

Purpose: linking ECC to the CTPs, the geographical levels, their specific dimensions, the levels of engagement to the identified ontological categories from WP1 on energy citizenship.

Case study implementation, of the ECCs. A selection was made on the GRETA case studies, based on the relevance of the case study, the feasibility of the implementation, and the amount of information acquired by the partners at the time the deliverable was written.

Purpose: each ECCs scheme is described and adapted to case study, according to the levels of engagement, to the identified ontological categories on energy citizenship, linked to the geographical levels and their specific dimensions.

This theoretical and empirical basis is enriched with a clustering activity of the results of the brainstorming sessions among partners involved in WP5.

Purpose: having a recurring feedback loop on the work done and insights from different participants on the task.

2 Understanding Energy Citizenship Contracts

2.1 Key Findings from GRETA

This part summarizes the preliminary knowledge acquired in WP5 linking it as preliminary knowledge for the work in D5.4.

2.1.1 GRETA CTPs and the relationship with ECCs

The core focus of GRETA's WP5 lies in the examination of community transition pathways. Specifically, GRETA utilizes case studies featuring diverse energy communities situated in various geographic locations and contexts. This methodology enables the project to understand the current conditions under which energy citizenship emerges and to develop and test mechanisms for inducing change. The mechanisms investigated within GRETA are known as Community Transition Pathways (CTPs), which represent the routes for individual and community transitions between different levels of citizenship engagement (see D5.3 Roadmap for Community Transition Pathways - guidelines).

On a broader scale, CTPs establish roadmaps for decarbonization by exploring and promoting efficient energy citizenship behaviors across different geographic levels. CTPs outline a series of collaborative actions that a community can undertake to facilitate the transition toward greener energy systems. They describe the community's level of preparedness for decarbonization and incorporate key steps to enable and strengthen energy citizenship. Moreover, CTPs serve as essential instruments for policymakers and communities to devise strategies and establish mutually beneficial relationships. In essence, CTPs are regarded as relational roadmaps, providing descriptions and considerations of the relationships between different actors and stakeholders, socio-technical innovations, and the contexts in which they occur (across various geographic levels).

ECCs, as outcome of GRETA CTPs (Community Transition Pathways), are packaged policy instruments embedding local goals and targets as well as broader – regional and interregional – strategies and plans: they support communities in achieving fair agreement guidelines for implementing energy citizenship. The development of CTPs ultimately leads to the co-creation of Energy Citizenship Contracts (ECCs), which formalize the relationships among the actors involved in the transition. ECCs draw inspiration from forthcoming climate city contracts, which form the foundation for the "100 climate-neutral cities by 2030" mission and are considered crucial interventions in the pursuit of citizen-centered and climate-neutral cities (Roversi et al., 2022, p. 298).

Similarly, ECCs, as the practical outcome of CTPs, serve as policy instruments integrating local visions, goals, targets, broader strategies, and plans. ECCs ultimately support communities in establishing equitable guidelines for energy citizenship. They

encompass tailored agreements driven by commitments, shared responsibilities and roles, legal frameworks, business and financial orientations, and time-bound implementation steps aligned with the goals set throughout the CTPs.

Moreover, ECCs are particularly significant as they address a gap in the existing literature, where energy contracts at the community level have received limited attention. In the context of GRETA, ECCs are seen as innovative tools that facilitate the realization of CTPs' ambitions. CTPs and ECCs are interconnected instruments and represent key outputs of the project.

2.1.2 Energy citizenship and energy justice

In line with GRETA's commitment to social justice in energy transitions, where energy is viewed as a social necessity and practice, ECCs are guided by a justice framework to mitigate unfair processes and outcomes across different levels and spatial scales. Similar to CTPs, ECCs are instruments that not only delineate responsibilities, duties, and rights but also address the distribution of benefits, thereby reframing energy as a component of citizenship. Notably, ECCs are characterized by a practical orientation.

A key challenge of energy transition is to ensure that this transformation is fair and equitable. In this context, energy policies must aim not only to manage the transition but also to improve the quality of life of people, especially the most vulnerable ones. According to the concept of energy justice, “safe, affordable and sustainable energy should be available to all people, regardless of gender, class and race” (McCauley et al., 2013). In this regard, the D1.2 (Vision document on energy citizenship-based Energy Union: persons, essays, scenarios, winners and losers of energy transitions) clarified the theoretical framework through which GRETA stresses the relevance of the concept of energy justice both for the analysis of energy transition policies and for the assessment of drivers and barriers to the emergence of energy citizenship. In that context, energy justice is both an analytical framework and a process. As a framework, energy justice allows to consider where unjust energy systems take place, who is affected and how to implement fairer decision-making processes. The framework is based on three pillars: distributional, procedural and recognition justice (ibid., 2013). Distributional justice concerns the equal distribution of energy benefits and harms. Procedural justice means that everyone should have an equal opportunity to participate in energy decision-making. Recognition justice requires identifying those marginalised because of social, cultural, racial and gender bias (Simcock et al., 2021; Bouzarovski, 2018). This means considering who is being disadvantaged by both the previous and new energy systems.

As valuable as this framework is, recent studies have highlighted the need to go beyond it to capture the complexity of energy justice and get a deeper understanding of the energy system. Lee and Byrne (2019), for example, call for an expansion of the energy justice research agenda by looking at the structural and ideological pillars of the problem that work together to habitually (re)produce energy injustice.

According to the second understanding of energy justice, it could be conceived as "an ongoing process and a social movement driving the process forward" (Szulecki and Overland, 2020, p. 4). Based on Szulecki and Overland's notion of energy democracy, energy justice can indeed represent an “emerging social movement advancing renewable energy transition” in a fair, equitable and just way (ibid.). Like energy democracy, energy justice includes efforts to resist, reclaim and restructure energy systems (ibid). Furthermore, rather than constituting a fixed or predetermined category, energy justice is continually made and remade through the performance of social material practices (Chilvers and Pallett, 2018). Moreover, it is also important to consider how different forms of knowledge and experience feed into decisions on energy issues.

This approach helps to visualise energy justice in its relational and performative dimensions, as a continuously evolving movement rooted in people's demands for environmental justice, rather than as a natural, predetermined or unitary category. As a process, energy justice is therefore closely linked to the emergence of energy citizenship. ‘Citizenship’, in a broader sense than its formal status, is also a performative outcome of acts and practices.

As ECCs aim to promote social and energy justice by facilitating meaningful engagement of citizens in energy transitions, trust and transparency become fundamental principles that underpin the success and effectiveness of the contract-based approach. Energy justice, as defined by the framework mentioned, emphasizes distributional justice, which concerns the equitable allocation of energy benefits and harms. Transparent processes are crucial to ensuring that energy interventions and benefits are distributed fairly across the community, without favouring specific groups or individuals. Transparent decision-making mechanisms build confidence in the community that their interests are being considered and respected. Trust and transparency also extend to accountability and oversight. Transparent reporting and monitoring mechanisms could enable stakeholders to track progress, assess the impact of interventions, and hold relevant parties accountable for their commitments. This accountability fosters confidence in the contract's implementation and ensures that stakeholders uphold their responsibilities.

2.2 Definition and Concept of Energy Citizenship Contracts

The GRETA project encompasses multiple objectives, including the development of an operational tool aimed at facilitating energy citizenship within the communities. This tool serves as a means to promote social and energy justice by providing a pathway for citizens to engage in meaningful ways. Following these premises, the Energy Citizenship Contracts were envisioned as operational energy citizenship facilitators with specific objectives, engaging various stakeholders and citizens on a voluntary basis.

The ECCs serve as a framework for fostering collaboration between stakeholders, allowing for the facilitation of energy interventions such as the formation of self-producing energy groups, associations of self-consumers, energy communities, and the establishment of other services and activities related to energy and resource conservation (e.g., sustainable mobility, green community services, sharing and co-design activities, among others). The construction of the ECC and the identification of its constituent elements are open to participation from all interested individuals and groups.

The primary aim of the ECC is to establish a mutually beneficial context that enables activities related to energy sustainability and community well-being proposed and implemented by citizens, associations, businesses, and other interested parties on a specific context.

Energy citizenship goes beyond the passive role of energy consumers; it involves active engagement, empowerment, and participation in energy-related decisions. ECCs provide a framework where citizens' rights and responsibilities are explicitly outlined, ensuring that citizens have a meaningful role in governance and energy-related matters.

These rights can include the right to access safe, affordable, and sustainable energy, the right to participate in decision-making processes related to energy interventions, and the right to have their concerns and needs considered by energy policymakers and stakeholders. ECCs can explicitly recognize and protect these rights, ensuring that citizens' interests and well-being are central to the energy transition process. Citizens can also have the right to access accurate and transparent information about energy-related matters. ECCs can stipulate that relevant data, plans, and decisions related to energy interventions are made available to the public.

Alongside rights, energy citizenship also entails responsibilities. Citizens are expected to actively engage in energy-related matters, contribute to energy conservation efforts, adopt energy sobriety attitudes and support the community's transition to sustainable energy practices. ECCs can establish a system of mutual accountability, where all parties involved are accountable for their commitments and contributions to the contract's objectives. This includes holding citizens accountable for their responsibilities, ensuring that they actively engage in energy conservation and sustainable practices.

While adhering to relevant regulations, ECCs may later define specific annexes for each type of subscriber, outlining precise roles and objectives tailored to their needs. The ultimate objective is to engage all necessary actors who can genuinely contribute to the creation of a conducive context that facilitates the emergence and practical implementation of energy citizenship practices. This dynamic process is intended to evolve and progress over time, fostering a virtuous path toward sustainable energy practices.

2.3 Overview of form of climate/energy-related contracts

This section aims to provide an overview of the forms of contracts that inspired the definition of the Energy Citizenship Contracts by drawing from the origins of social contracts and then addressing the main features of the climate/energy-related ones.

It is well known that the concept of the social contract constitutes the foundation of Western political philosophy. Through the works and reflections of authors such as Locke, Hobbes and Rousseau, among others, the discussion on the legitimacy of state power and the organization of society has been enriching the political debate on the functioning of our collective life to this day. The idea that the coexistence between members of society is contractual in nature implies, on the one hand, an obligation to act within the rules prescribed by the contract and, on the other, that the state is politically bound to keep those rules in force. However, since such agreement assumes, as a contractor, individuals motivated by an abstract and rational interests, it does not challenge power relations and inequalities as well as the consequences on the environment and non-human species (Perry and Villamizar-Duarte 2016). Indeed, according to Michel Serres (1995), the primary social contract was endorsed by forgetting the 'world', that is, the set of interdependent relations between nature and all species on the planet. Thus, it is necessary to imagine a new natural and social contract, capable of looking at society as a socio-ecological system, in which people are not just individuals but both part of a community and a natural ecosystem (Huntjens, 2021). A new social contract that incorporates the ecological issue must then also tackle the overall objective of welfare state, starting with broadening the public allocation of primary goods and services while providing them in more sustainable way. Concerning energy issues, the social contract should evolve from one that entitles energy utilities and corporations to one that empowers final users and citizens.

Climate/energy contracts can be described as voluntary agreements between different stakeholders (private, public or third sector) aimed at addressing climate change and promoting sustainable practices on a community, neighbourhood, city level. Their introduction can be dated back to the late 20th century, when scientific research began highlighting the risks and impacts of anthropogenic climate change. International negotiations, such as the United Nations Framework Convention on Climate Change (UNFCCC) established in 1992, aimed to address climate challenges through global cooperation, commitments, and agreements. For instance, the Kyoto Protocol, adopted in 1997, introduced legally binding emission reduction commitments for developed countries. The protocol marked an early form of climate contract, with countries committing to specific targets and timelines for reducing greenhouse gas emissions. On a similar note, years later, the Paris Agreement, adopted in 2015, marked a significant milestone in global climate governance. The agreement emphasized the voluntary nature of climate action and introduced the concept of Nationally Determined Contributions (NDCs), which are voluntary targets and actions set by each country to mitigate climate change.

As concerns about climate change grew, voluntary climate initiatives started gaining momentum. The formation of various non-state actors, including businesses, NGOs, and local governments, led to the development of voluntary agreements and collaborations to address climate challenges. Following this, multi-stakeholder collaborations, such as the C40 Cities Climate Leadership Group, European Energy Award, etc. and regulations like EMAS or ISO (14001, 50001…) started focusing on voluntary commitments and initiatives at the local level.

Contracts included public-private partnerships, sector-specific initiatives, and multi-stakeholder agreements aimed at advancing climate action and sustainability. These contracts can take various forms, including:

- Voluntary agreements between governments and industries: these agreements set targets and commitments for reducing greenhouse gas emissions and transitioning to low-carbon practices (Blok et al., 2020).
- Multi-stakeholder agreements: these involve collaboration among governments, businesses, NGOs, and communities to address climate-related challenges (Chan et al., 2019).
- Public-private partnerships: these partnerships aim to mobilize resources and expertise from both public and private sectors to implement climate initiatives (Meckling, 2019).

Beside the importance of mobilising private sector in the mitigation of climate change (public sector weights 5% maximum in a municipal emission inventory), the benefits of adopting such a commitment with citizens are multiple:

- Raise awareness and provide clear understandings of the problem.
- Improve relationships and build trust.
- Exploit synergies among cross-cutting sectors
- Exchange experience and take opportunity for capacity building.
- Empower stakeholders and understand deeply their needs, therewith improving the outcomes.
- Identify opportunities and barriers.
- Enhance transparency in decision making and improve communication channels.
- Facilitate access to data and information.
- Improve risk management and anchor targets into public strategies to overcome possible problems due to political changes.
- Validate the outcomes.

Moreover, EIP-SCC has identified the following list of principles and enablers for citizen engagement that can be applied to ECC development.

- **Simple** | Aim to facilitate understanding and usage
- **Reciprocal** | 'Give for getting' to create fair and lasting relationships
- **Participative, balanced with representative** | Understand benefits and limits of approaches
- **Inclusiveness** | Ensure solutions that are representative of the whole population
- **Push approach not pull** | Go where people are instead of assuming they will come to you
- **Online – Offline balanced interventions** | Understand benefits and limits of different settings
- **Conscious of privacy and rights** | Build trust from the start
- **Conscious of citizens' emotions** |Understand the feelings that flow on or under the surface
- **Change-enablers with city stakeholders** | Make the municipality a partner
- **Wallet-savvy** | Use citizens' own funds in smart ways that benefit citizens

Figure 1 – Principles and enablers for citizen engagement (Marketplace of the EIP-SCC, 2015)

To define the main features and distinctive elements of GRETA's Energy Citizenship Contracts, an overview of existing forms of energy/climate-related contracts and their evolution is provided.

One example is the Local Pact for Transition. The Local Pact for Transition, also known as Participatory Agreement for the Climate Transition (PACT), is a strategic framework developed by municipalities to translate the objectives and principles of the Paris Agreement into actionable plans at the local level. The primary purpose of the PACT is to set a precise strategy and roadmap for the municipality to achieve carbon neutrality by 2050, considering both the municipality's competencies and the climate footprint of local activities. Through a participatory approach, the PACT engages stakeholders, sets ambitious targets, identifies sectoral strategies, and establishes a framework for monitoring and review. The PACT establishes specific goals and targets for the municipality's transition to carbon neutrality. These targets may include reducing greenhouse gas emissions, increasing renewable energy generation, improving energy efficiency, and promoting sustainable practices across various sectors. Collaboration and partnerships are crucial for successful implementation, fostering a collective effort towards a sustainable and low-carbon future at the local level.

Another initiative targeting municipalities of any size is the European Energy Award, started in the 90's in Switzerland ("Energiestadt") and soon extended to Austria ("e5") and Germany, is now widespread in Europe with more than 1600 municipalities participating in the program. The methodology has been built as a Total Quality Management System aimed at continuous improvement on climate issues with 7 areas of influence (planning, buildings, urban services and grids, mobility, internal organization, cooperation, adaptation) and more than 90 standard measures that can be compared and transferred among member cities. The procedure foresees the set-up of an interdisciplinary team and the active involvement of stakeholders and citizens in the definition and monitoring of the targets. In this case, the participation is long

lasting collaboration that, especially in small towns, has brought significant results. The approach is now nationally supported by France and Luxembourg (Climate Pact) to achieve national goals.

In 2008 the EU launched the Covenant of Mayors initiative to mobilize European citizens from the bottom of the institutional structure towards more ambitious climate targets. The CoM has developed in years, involving more than 11.000 municipalities, improving the minimum requirements (from 20% at 2020 to 55% at 2030 and climate neutrality at 2050) and also including adaptation (Mayors Adapt) and energy poverty themes.

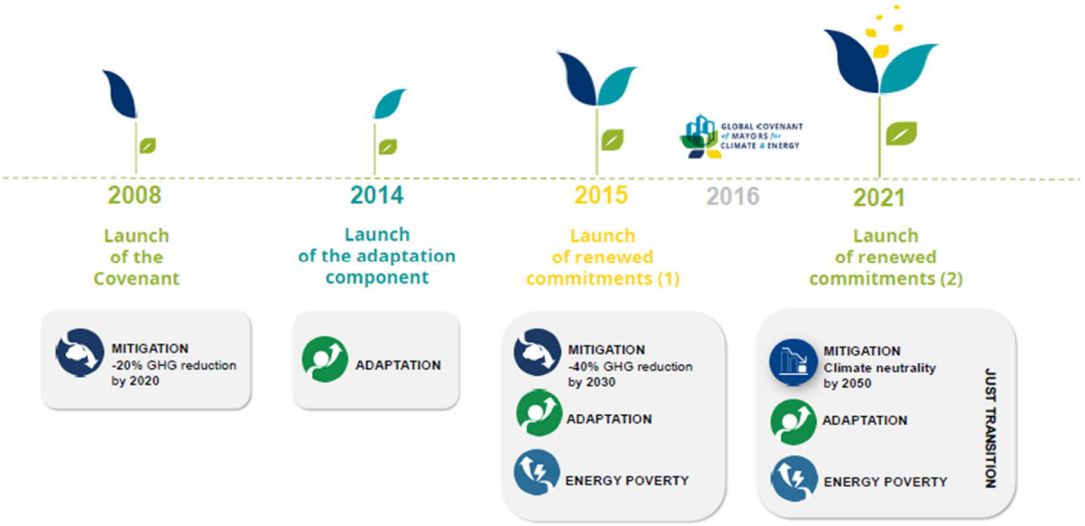


Figure 3 - Pathway of development of the Covenant of Mayors initiative. Source: CoM

Figure 2 - Data on the participation to the Global Covenant of Mayors. Source: CoM

In 2016, the Global Covenant of Mayors (GCoM) has been launched as an international initiative bringing together cities and local authorities of all around the world willing to promote and support voluntary action against climate change. The GCoM merges the European initiative CoM for Climate and Energy with the Compact of Mayors, a global network of city leaders fighting Climate Change, founded in 2014 by UN Secretary-General Ban Ki-moon and Michael Bloomberg, former New York City Mayor. In 2022, the EU has launched a similar commitment dedicated to private sectors (the Covenant of Companies for Climate and Energy - CCCE).

Another city-level agreement is the Green City Accord (GCA), a European initiative, which aims to foster the implementation of sustainable actions in five key areas of

environmental management, namely air quality, water management, nature conservation and biodiversity, circular economy and waste management, and noise reduction. The Accord represents a commitment by cities to address these environmental challenges. Furthermore, the Green City Accord sets ambitious targets for the participating cities. In fact, the selected cities are expected to achieve climate neutrality 20 years ahead of the designated timeline, thereby necessitating robust planning and implementation measures. Achieving climate neutrality requires substantial efforts and collaboration from all relevant parties involved. As such, the successful realization of the Green City Accord requires the active involvement and collaboration of cities, stakeholders, and community members.

Finally, the main reference for the ECC is the Mission's Climate City Contract (CCC). The definition of the Climate City Contract is situated within the broader context of the Cities Mission, which serves as a "novel mechanism for delivering EU support to cities through enhanced innovation, improved regulation, and integrated financing" (European Commission - Directorate-General for Research and Innovation, p. 7). The emergence of this contract stems from the recognition of the active role citizens can play, facilitated by dedicated platforms and funding. The signatories of the contract encompass the local government, represented by the city mayor, local stakeholders, national or regional authorities, and the EU Commission as an official witness. By formalizing the commitment of all participating parties, the Climate City Contract empowers citizens and enables their active involvement in the energy transition process. Further elucidation of the Climate City Contract concept can be found in the "Info kit for Cities" published by the European Union in October 2021 to provide guidance for interested cities participating in the call for expression of interest (EOI) to be included in the Cities Mission. The Climate City Contract serves as the central focus and core element of the mission. According to the "Info Kit for Cities," the planning for achieving net-zero emissions by 2030 encompasses several key actions, including building blocks, governance and stakeholder engagement, the Climate Neutrality planning process, greenhouse gas (GHG) emissions accounting and target setting, accounting for residual emissions, and GHG emissions roadmaps.

The CCC is made of three parts:

- the commitment signed by the municipality, the stakeholders and the EU.
- the action plan with the details of the pathways to achieve Climate Neutrality in 2030
- the investment plan, highlighting the costs to realize the pathways.

Like several other EU initiatives, it is an iterative process aimed at structuring the cooperation among cities-stakeholders-citizens to steer the implementation of local strategies until 2030 or the achievement of Climate Neutrality.

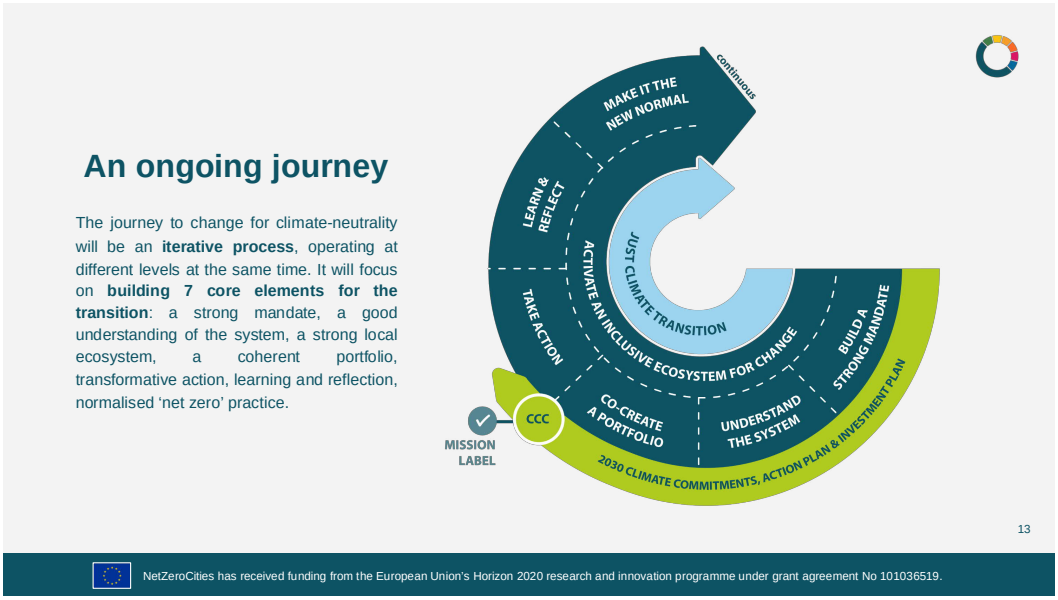


Figure 4 - Scheme of the Climate City Contract development process. Source: NetZeroCities

2.4 Lessons Learned from Climate/Energy-related Contracts

The review presented highlights the variety and different nature of climate/energy-related contracts that have been implemented over time. Some lessons can be learned from the different models, and some critical points can be highlighted.

The different contracts share the importance of effective implementation, governance, and stakeholder engagement in maximizing the impact of climate/energy contracts. Additionally, CCCs, GCA and PACT share the characteristics of being bureaucratic mechanism for delivering EU support to cities through innovation, regulation, and financing. The main interesting point is the recognition of the active role of citizens in driving change towards better energy and climate-responsive actions. However, the access of citizens to operative action is still to be verified.

Designing governance frameworks that facilitate collaboration, accountability, and monitoring of commitments (van Asselt et al., 2018) to energy justice and climate action goals allows to effectively engage stakeholders and communities. These frameworks though, when engaging citizenship, should also allow access of information and transparency of mechanisms to track progress, verify emissions reductions, and ensure compliance (Mace et al., 2019). This contributes to opening up and providing access to decision making concerning energy while also establishing shared rules, responsibilities and roles.

Ensuring compliance with contractual commitments and addressing enforcement challenges remains a key issue (Ostrom et al., 2017). For instance, Climate City Contracts serve as a policy instrument for driving climate action at the local level

within the framework of the Cities Mission. However, if not included in an adaptive policy context the risk is for them to remain only declarations lacking operations.

Moreover, although these tools recognize the active role of citizens and provide a platform for their engagement in the energy transition process, they should address distributional impacts and avoid exacerbating inequalities in vulnerable communities (Ayers et al., 2021). The PACT seems to enable a broader diversification of actors involved, without providing clear mechanisms for engagement and commitment to the shared goals.
In this regard, maintaining momentum and commitment to such contracts over the long term is crucial for sustained impact (Chan et al., 2019).

2.4.1 Keys for the development of GRETA ECCs and gaps filled

Following these observations, it was possible to address how the ECC is configuring thanks to the lessons learned from the other contracts and how it differs from them.

Energy Citizenship Contracts should be founded on the principle of voluntarism, allowing individuals, communities, and organizations as well as institutions to willingly engage in activities that promote community-based energy practices (Betsill & Bulkeley, 2006). The voluntary nature of Energy Citizenship Contracts empowers individuals and communities by giving them a voice and a sense of ownership in shaping their energy future. By willingly participating in the ECC, citizens become key stakeholders, contributing their unique perspectives, knowledge, and skills to drive sustainable energy initiatives.

The non-binding nature of these agreements does not undermine their potential impact but rather strengthens their value through alternative mechanisms. For instance, it serves as powerful tools to raise public awareness and engagement in sustainable energy practices. By voluntarily signing the contract, individuals and communities publicly demonstrate their commitment to a clean energy future. This visible commitment can inspire others and create a ripple effect, encouraging wider participation and collective action.

While ECCs are voluntary and non-legally binding for both policy-makers and signatories, they still offer substantial benefits. By adopting an Energy Citizenship Contract, participants can become active agents in the energy transition, assuming responsibility and committing to specific actions (Reckien et al., 2019) aligned with clean energy goals which are localized but whose effect would resonate at different levels. At the same time, by adhering to the framework and goals provided by ECC, participants would have a value reward, being included in a collective effort of reaching energy transition. This inclusiveness fosters a stronger sense of community and encourages further collaborative efforts towards common goals.

ECC should recognize the diversity of energy needs and challenges across different geographical levels and communities. This allows for flexibility in tailoring solutions to the specific context of each signatory and enables local stakeholders and citizens to identify and implement energy strategies that best suit their socio-economic, environmental, and cultural circumstances.

Furthermore, ECC should encourage open dialogue, knowledge exchange, and collaboration among stakeholders, citizens and policy makers. Without rigid obligations, signatories can freely share experiences, best practices, and innovative solutions. This exchange of ideas possesses significant soft power to influence decision-making processes and accelerate the implementation of sustainable energy projects, benefiting all participants.

By demonstrating strong public support for clean energy initiatives, ECCs can send a clear message to policymakers about the aspirations and expectations of the citizenry. They lay the groundwork for stronger collaborations, trust-building, and the establishment of networks of committed individuals and communities. As momentum builds, the voluntary commitments made through these contracts can evolve into more binding agreements or serve as the basis for policy development, amplifying their impact over time.

3 Developing an Enabling Tool for Energy Citizenship

3.1 The ECC as an Operational Tool: possible typologies

The selection of the ECC type underwent careful deliberation, taking into account multiple factors to ensure optimal alignment with project objectives.

- Inclusivity of Stakeholders: Chief among these factors was the aim to maximize the participation of a wide spectrum of stakeholders. The chosen ECC type needed to facilitate the involvement of as many stakeholders as possible.
- Facilitators and Promoters: Additionally, the decision process considered the incorporation of contract facilitators and promoters. These roles encompass the diverse configurations being explored within the GRETA project's case studies.
- Guaranteed Outcomes: Another pivotal factor was the anticipated outcomes that the selected contract format could ensure. It was imperative to determine how the chosen ECC type would effectively deliver on its intended goals.

The "Manifesto" (or Memorandum of understanding / Climate pact / Chart) seemed to be the best option to fit the project requirements of having the feature of a "legal contract" and at the same time to have the flexibility to suit different pilot actions and different engagement levels/steps. Moreover, it is an internationally and community-recognized standard and easy to adopt and execute even in the case of public sponsoring entities. Its versatility allows it to function as a unifying "umbrella," linking and endorsing supplementary contracts and implementation endeavors across different levels.

Each case study willing to implement forward the ECC will have the chance to tailor the typology selected according to the level of engagement and of interest of the community.

The following table summarizes the different possible typologies of contracts.

Table 1 Summary of possible typologies of energy/climate-related contracts

TYPE	ACTORS	FACILITATORS	OUTCOMES
Memorandum of understanding/ Climate pact / Chart / Manifesto	any	Public authority, associations	Engagement, cooperation, feed backs, data

Voluntary plan/standards adoption (CoM, European Energy Award, ISO standards, Bcorp…)	Public sector and companies	EU, different ertification bodies (CoM, European Energy Award, ISO, Bcorp…)	Virtuous continuous process, third party check, marketing
ENERGY COMMUNITY/ SELF CONSUMERS contracts	Energy prosumers)	Public body or academia, consultancy companies	Energy community set up
CHALLENGE for gamification	Citizens	public authority, academia & research	Engagement/awareness, data

3.1.1 Preliminary form of the ECC

Following the research on typologies and forms that this contract can take, a preliminary structure of the ECC is provided as summarized in the following table:

Table 2 Schematic framework for the ECC

PREMISES
The Framework on climate and energy transition: reference to the state of the art, existing agreements/commitments at various levels. EU -> National -> Local -> GRETA project -> the case study
The vision
MANIFESTO
The promoters: First group of "Parties" to commit, support and promote the Manifesto
The aim: Co-creation of general criteria and objectives of the document
The signatories/target groups: Co-creation of stakeholders list to be engaged
The activities: Commitments and future initiatives
The annexes: Definition of specific annex for each stakeholders' type to set benefits and commitments

3.1.2 Making Achievements Available to Energy Citizens

ECCs enable individuals and communities to actively contribute to and benefit from the energy transition. By voluntarily signing ECCs, citizens gain access to information, resources, and opportunities that can help them adopt sustainable energy practices, ultimately leading to tangible energy achievements. Research by Sovacool and Dworkin (2015) highlights the importance of citizen participation in the energy sector and emphasizes the role of energy citizenship contracts in democratizing access to clean energy solutions. The ECC aims to empower citizens by enabling them to have a stake in decision-making processes, fostering a sense of ownership, and ensuring that energy achievements are distributed more equitably among communities. Energy citizenship contracts thus act as a mechanism for bridging the gap between energy policies and the active involvement of citizens, making energy achievements more accessible and inclusive for all.

To facilitate the effective use of ECCs by both communities and policymakers, it is crucial to establish supportive frameworks and mechanisms. For communities, providing accessible information and resources about energy citizenship contracts is essential. This can include educational campaigns, workshops, and online platforms that explain the purpose, benefits, and steps involved in signing and implementing these contracts. Additionally, fostering collaboration and networking opportunities among community members can enhance their understanding and utilization potential. Involving community leaders and organizations as champions of energy citizenship can also help build trust and encourage participation.

For policymakers, creating clear guidelines and procedures for recognizing and engaging with energy citizenship contracts can involve developing policy frameworks that align with the principles of energy citizenship, acknowledging and leveraging the voluntary commitments made by citizens and communities. Establishing mechanisms for monitoring and evaluating the progress and impact of energy citizenship initiatives can also provide policymakers with valuable insights for future decision-making. By facilitating the community and policymakers' understanding and utilization of ECCs, the potential for collaborative and effective action towards sustainable energy goals can be maximized.

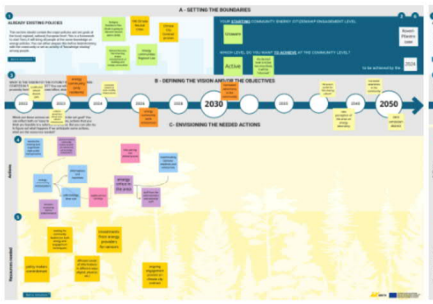
3.2 Feedback Loops on ECCs

3.2.1 Technical Workshop Results

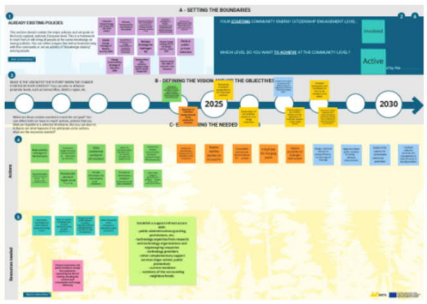
On March 23rd 2023 a technical workshop on Energy Citizenship Contracts (with GRETA partners) was held to verify the first draft of the ECCs and their possible implementation in the six GRETA case studies.

The workshop started with a general introduction of the Energy Citizenship Contract description and eventually moved on to summarize the status of work on the Community Transition Pathways in the six case studies.

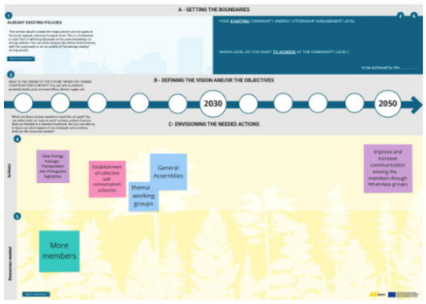
Previously on the Pathways



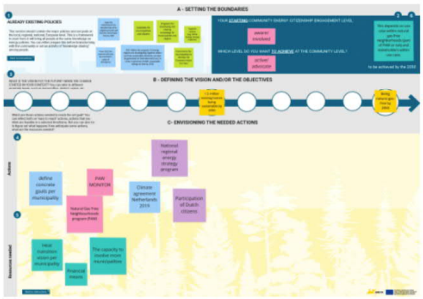
Pilastro-Roveri



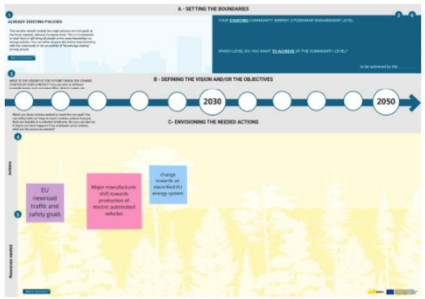
UR Beroa



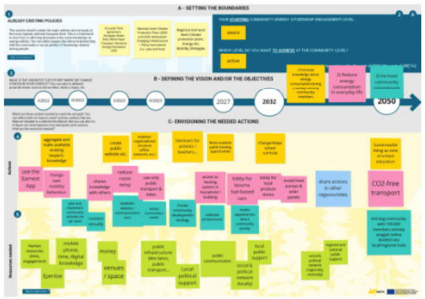
Coopernico



Natural gas free neighbourhoods

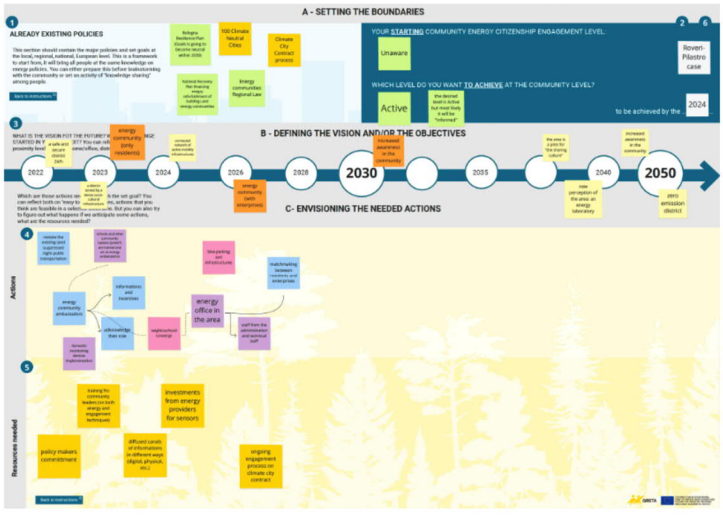


Electric autonomous and connected automobility



Earnest App

A specific focus was given to the case of Pilastro-Roveri in Bologna, as an example on how to kickstart the activities for the ECC definition and development.



Goals and vision:

- Energy community by 2030
- Social awareness and energy justice

Actions:

- Energy office creation
- Self-consumption establishment
- Awareness raising
- Private engagement
- Data-led transition

During the workshop an interactive session was organized on the Miro board.

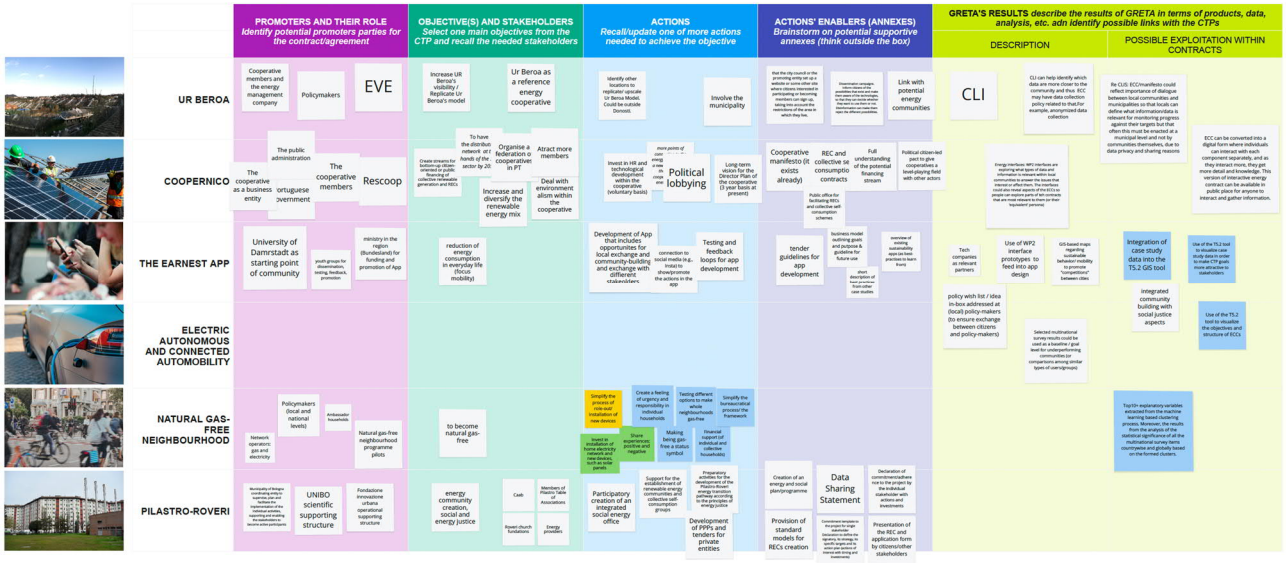


Figure 5 - Miro board from the ECCs workshop

Case study leaders were asked to brainstorm on the following items:

Promoters and their role: Identify potential promoters parties for the contract/agreement.

Objective(s) and stakeholders: Select one main objectives from the CTP and recall the needed stakeholders.

Actions: Recall/update one of more actions needed to achieve the objective(s).

Actions' enablers: Brainstorm on potential supportive annexes.

Moreover, non-case study leaders' partners were asked to brainstorm about the GRETA's results in terms of products, data, analysis, etc. and identify possible links with the ECCs.

The results of the brainstorming with case study leaders are summarized in the Table 3 while the possible links with GRETA results and the ECCs are summarized in paragraph 4.2 of this document.

Table 3 – Synthesis of GRETA's ECC technical workshop

PROMOTERS AND ROLE	OBJECTIVE(S)	STAKEHOLDERS	ACTIONS	ACTIONS' ENABLERS (ANNEXES)
UR BEROA				
Policymakers Cooperative members and the energy management company	Increase UR Beroa's visibility / Replicate Ur Beroa's model. Ur Beroa as a reference energy cooperative	Municipality	Identify other locations to replicate/ upscale Ur Beroa Model. Could be outside Donosti. Involve the municipality	The city council or the promoting entity set up a website or some other site where citizens interested in participating or becoming members can sign up, taking into account the restrictions of the area in which they live. Dissemination campaigns. Inform citizens of the possibilities that exist and make them aware of the technologies, so that they can decide whether they want to use them or not. Disinformation can make them reject the different possibilities. Link with potential energy communities
COOPERNICO				
The cooperative as a business entity The public administration The Portuguese government The cooperative members Rescoop	Create streams for bottom- up citizen-oriented or public financing of collective renewable generation and RECs To have the distribution network at the hands of the 3rd sector by 2050 Increase and diversify the Renewable energy mix Attract more members of the cooperative Deal with environmentalism within the cooperative		Invest in HR and technological development within the cooperative (voluntary basis) more points of connection to the energy network, and a new paradigm for the access of cooperatives to the energy auctions Political lobbying Longer- term vision for the Director Plan of the cooperative (3 year basis at present)	Cooperative manifesto (it exists already) REC and collective self-consumption contracts Full understanding of the potential financing stream Public office for facilitating RECs and collective self-consumption schemes Political citizen-led pact to give cooperatives a level-playing field with other actors
EARNEST APP				

PROMOTERS AND ROLE	OBJECTIVE(S)	STAKEHOLDERS	ACTIONS	ACTIONS' ENABLERS (ANNEXES)
Political citizen-led pact to give cooperatives a level- playing field with other actors youth groups for dissemination, testing, feedback, promotion ministry in the region (Bundesland) for funding and promotion of App City (in interaction with Bundesland)	Reduction of energy consumption in everyday life (focus mobility)		Development of App that includes opportunities for local exchange and community- building and exchange with different stakeholders Connection to social media (e.g., Insta) to show/promote the actions in the app Testing and feedback loop for app development	Tender guidelines for app development Business model outlining goals and purpose & guideline for future use. Short description of best practices from other case studies Overview of existing sustainability apps (as best-practices to learn from)
NATURAL GAS-FREE NEIGHBOURHOOD				
Network operators: gas and electricity Policymakers (local and national levels) Homeowners Local energy initiatives	To become natural gas-free		Simplify the process of role- out/ installation of new devices Invest in installation of home electricity network and new devices, such as solar panels. Share experiences: positive and negative. Create a feeling of urgency and responsibility in individual households. Making being gas free a status symbol Testing different options to make whole Neighborhoods gas-free Financial support (of individual and collective households) Simplify the bureaucratical process/framework	
PILASTRO-ROVERI				
Municipality of Bologna coordinating entity	Energy community creation Social and energy justice	Caab (agricultural centre of Bologna)	Participatory creation of an integrated social energy office	Creation of an energy and social plan/programme Provision of standard models for RECs creation

PROMOTERS AND ROLE	OBJECTIVE(S)	STAKEHOLDERS	ACTIONS	ACTIONS' ENABLERS (ANNEXES)
UNIBO scientific supporting structure Fondazione Innovazione Urbana operational supporting structure		Members of Pilastro Table of Associations Roveri church foundation Energy providers	Support for the establishment of renewable energy communities and collective self-consumption groups Preparatory activities for the development of the Pilastro-Roveri energy transition pathway according to the principles of energy justice Development of PPPs and tenders for private entities	Data Sharing Statement Declaration of commitment/adherence to the project by the individual stakeholder with actions and investments Commitment template to the project for single stakeholder Declaration to define the signatory, its strategy, its specific targets and its action plan (actions of interest with timing and investments) Presentation of the REC and application form by citizens/other stakeholders

4 Guidelines for Implementing Energy Citizenship Contracts

4.1 Framework for Guidance and Direction

The construction of ECCs derives its premises from the work performed in the construction of the Community Transition Pathways but also in the different processed of co-creation that involve the communities.

As a general suggestion, the following steps are mentioned as guidelines for the development of the ECCs:

1. Identification of parties interested in Energy Citizenship Contracts
2. Brainstorming on possible hierarchy of objectives from the CTPs or additional ones
3. Alignment with the community on the possible actions identified, if something is missing.
4. Definition of the annexes including executing/implementing actions involving interested players and citizens.
5. Integration of some of the GRETA results for the contract to be further exploited.

Finalization of the Contract using both the template and the guidelines for completion.

4.1.1 Preliminary step: ECC typology selection

As mentioned in par. 3.1 of this document, the "Manifesto/Memorandum of understanding / Climate pact / Chart" was selected as the best option to fit the project requirements of having the feature of a "legal contract" and at the same time to have the flexibility to suit different actions and engagement levels.

Moreover, it is an internationally and community-recognized standard and easy to adopt and execute even in the case of public sponsoring entities and it can link and promote additional contracts and initiatives at various levels. Between these typologies, the partners are asked to choose the best naming and typology option. This selection should involve previously engaged members of the community and potential promoting parties.

4.1.2 Parties Interested in Energy Citizenship Contracts

To effectively implement ECCs, the initial step involves recruiting suitable stakeholders and selecting ECCs promoters. Before initiating the recruitment process, it is essential to establish a clear strategy to identify potential stakeholders. This strategy should outline the objectives, target groups, and criteria for selecting participants. The following steps can help in formulating an effective recruitment strategy:

- identify relevant stakeholders: determine the key stakeholders who can contribute to the successful definition and implementation of ECCs and promoters who can effectively manage and advocate for the initiatives is crucial. This may include members of the communities, local residents, community organizations and leaders, energy experts and managers, climate activists or groups of activists, businesses, NGOs, and government representatives. Ensure that the selected ECCs promoters and stakeholders align with the overall GRETA objectives. Their vision, mission, and values should be compatible with the goals of fostering energy justice, community empowerment, and environmental stewardship.
- establish selection criteria: define the criteria that prospective stakeholders should meet to be considered for participation. These criteria may include capacity and resources of ECCs promoters to handle the responsibilities associated with managing ECCs like (non-exhaustive list) relevant expertise, commitment to sustainability and energy justice, proximity of goals and purposes, local presence, community engagement capabilities, and financial resources.
- outreach and awareness: develop a comprehensive communication strategy to reach out to potential stakeholders and create awareness about ECCs. Provide detailed information about ECCs, their objectives, benefits, and responsibilities. Furthermore, foster an environment where participants can network, share experiences, and develop synergies. Make sure interested parties have access to all relevant documents, including project plans, legal agreements, and financing options. The suggestion is to conduct information sessions, workshops, assemblies, focus groups to communicate the project and achieve interest and commitment.
- feedback mechanism: establish a feedback mechanism to gather input and suggestions from interested parties (both promoters and stakeholders). This activity is supported by the parallel process of CTP co-creation and implementation which actively receives feedback on the overall implementation of ECCs. This will help in continuous improvement and ensure the inclusivity of stakeholder perspectives.

4.1.3 Define a hierarchy of goals

The second step suggested, is the identification of the goals priorities for each case study, together with the promoters of the contract and the stakeholders. This activity is performed by the case study leaders within the consortium, but it will need to be verified with the case study participants themselves.

The hierarchy of goals are selected starting from the baseline identified in the CTPs process in all the case studies. After the first selection of the goals in the framework of process of CTPs implementation, the ECC visions are identified and organised by the partners together with the case studies' participants.

The process of establishing the goal hierarchy begins by referencing the baseline identified during the CTPs process across all the case studies. The baseline serves as a starting point and provides valuable insights into the existing conditions, challenges, and potential opportunities. Once the baseline is established, the next step involves

selecting the goals within the framework of CTPs implementation. This selection is made by carefully considering the specific requirements and aspirations of each case study with a special focus on the policy context and perspective. The case study leaders work collaboratively with the partners and participants to identify goals that will drive the desired outcomes and facilitate the successful implementation of the contract.

Furthermore, as part of this process, the partners and case study participants come together to identify and organize the ECC's visions that represent the overarching aspirations and shared vision of all involved parties. These visions play a vital role in guiding the case study activities, ensuring alignment, and fostering a collective commitment towards achieving the desired outcomes. By defining a clear and comprehensive hierarchy of goals, taking into account the inputs of all relevant stakeholders, and aligning them with the ECC visions, the case study consortium can enhance the effectiveness and efficiency of the contract implementation process. This collaborative approach helps to ensure that the goals set are realistic, achievable, and reflective of the collective vision for success.

4.1.4 Actions and Technical and Financial Instruments

The most critical step concerns the selection of actions on the basis of which stakeholders express their commitment and which promoters accompany and facilitate. This section is aimed at providing a preliminary list of the main actions defined in the CTPs and selected for their urgency to be realised. Each action will be then supported by annexes, as knowledge, bureaucratic, legal resources to make the actions immediately operational. Each action description should clearly state the aim.

This selection should follow the following criteria:

- be based on the mapping of needs constructed in the process of defining the CTPs in each case study. This step enables the accompaniment tool of the CTPs to be further anchored with the facilitation tool of the ECCs. It also makes it possible to verify the feasibility of actions over time, based on scenarios constructed in the CTPs. Assess the potential impact of each action on the desired outcomes and objectives.
- identify actions that are feasible, impactful and relevant to the context in which they will be implemented. This is a criterion that has to do with the credibility not only of the GRETA project in the case studies, but also of the promoters and stakeholders involved. Verify the long-term feasibility of the selected actions by considering the scenarios constructed in the CTPs to assess whether the chosen technical resources can be sustained and scaled over time. Concerning this, take into account potential future challenges, resource availability, and changing circumstances.
- define actions relevant to the interests of stakeholders and promoters. This will allow for greater adherence not only of the stakeholders involved but also of additional actors to be involved through the implementation of the actions. Look for actions that have the potential to create a snowball effect, where the success of

one action encourages the implementation of others. Identify actions that can be easily connected or anchored to each other, forming a coherent and comprehensive approach.

4.1.5 Annexes definition

Following the definition and selection of objectives, priority actions and actors involved, the contract will define annexes. These are operational documents built on the basis of the actions and stakeholders involved, to set benefits and commitments and make the actions feasible.

They will, among other things, support the operationalisation and implementation of actions through the provision of support tools for data retrieval, documentation to kick-start the construction of energy communities, and operational information on calls for tenders to raise funds to support actions.

The annexes are to be defined on the basis of the actions selected as priorities. For each of them, the question will be asked as to the steps (technical, bureaucratic, administrative) to be taken to make them effective, the actors to be involved in order to get them started, and the financial instruments to maintain them over time. An attempt will be made to answer these questions by offering tools, standard documentation (templates) and precise guidelines on how to proceed in order to resolve the blockages, get the implementation of the actions started, and implement and maintain them over time.

4.2 Key Points for integration of the GRETA results in the ECCs

The Energy Citizenship Contract (ECC) not only aspires to be an enabling tool for the energy citizenship of the diverse involved communities but also a potential aggregator of various outcomes arising from the GRETA project. To achieve this, a workshop was conducted during the project's General Assembly, with the aim of identifying connections and potential relationships between the tools and outcomes developed within the project and the ECCs. The results are summarized in the table below.

Table 4 integration of ECCs and GRETA's results

GRETA'S RESULTS and possible links with the ECCs	
DESCRIPTION	POSSIBLE EXPLOITATION WITHIN ECCs
Community Level Indicators (CLIs, WP2)	CLI can help identify which data are closer to the community and thus ECC may have data collection policy related to that. For example, anonymized data collection ECC/manifesto could reflect importance of dialogue between local communities and municipalities so that locals can define what information/data is relevant for monitoring progress against their targets but that often this must be enacted at a

	municipal level and not by communities themselves, due to data privacy and sharing reasons.
Energy interfaces (WP2)	WP2 interfaces are exploring what types of data and information is relevant within local communities to answer the issues that interest or affect them. The interfaces could also reveal aspects of the ECCs so people can explore parts of the contracts that are most relevant to them (or their 'equivalent' persona) Use of WP2 interface prototypes to feed into app design
Tech implementation (WP5)	GIS- based maps regarding sustainable behavior/ mobility to promote "competitions" between cities ECC can be converted into a digital form where individuals can interact with each component separately, and as they interact more, they get more detail and knowledge. This version of interactive energy contract can be available in public place for anyone to interact and gather information.
GIS tool (WP5)	Integration of case study data into the T5.2 GIS tool Use of the T5.2 tool to visualize case study data in order to make CTP and ECCs goals more attractive to stakeholders Use of the T5.2 tool to visualize the objectives and structure of ECCs
Policies (WP6)	Policy wish list / idea in- box addressed at (local) policy-makers (to ensure exchange between citizens and policy-makers) Integrated community building with social justice aspects
Multinational survey (WP4)	Selected multinational survey results could be used as a baseline / goal level for underperforming communities (or comparisons among similar types of users/groups) Top10+ explanatory variables extracted from the machine learning based clustering process. Moreover, the results from the analysis of the statistical significance of all the multinational survey items country wise and globally based on the formed clusters.

The workshop effectively sought to establish synergies between the ECC and the various tools and outcomes emerging from the GRETA project. This integration enhances the ECC's role as a cohesive force, capable of uniting and aggregating diverse project results for the benefit of the involved communities.

CLIs can play a crucial role in determining data relevant to ECCs. ECCs can include provisions to highlight the significance of collaboration between communities and municipalities, addressing data privacy concerns and ensuring community-driven progress monitoring. Moreover, energy interfaces can inform ECCs by pinpointing essential data. ECCs can integrate elements that align with interface-exposed contract

sections, enhancing user engagement and understanding. The interfaces' insights can aid in designing ECC-related applications.

Multinational survey results provide benchmarks for ECC performance. Machine learning insights can refine ECC design based on explanatory variables. Statistical analysis enhances ECC customization according to regional and global perspectives.

GIS maps, can complement ECCs by fostering community involvement through competitions. The GIS tool's incorporation of case study data can aid ECCs by providing visual context for goals and objectives. Stakeholders can better relate to ECCs through visualization, which enhances comprehension and engagement with community transition plans (CTPs) and ECCs.

Transforming ECCs into interactive digital formats enhances accessibility and public awareness, promoting transparency and understanding.

Finally, policy initiatives can connect ECCs with local policy-makers, facilitating a two-way exchange. Integrating community building and social justice within ECCs reinforces their role as instruments for inclusive, community-driven energy practices.

5 GRETA Case Studies: Applying ECC in Different Contexts

5.1 Case Studies selection and prototype testing of ECCs

The development of the Energy Citizenship Contract form was carried out in cooperation with all the case studies of the GRETA project. However, as stipulated in the DoA, three case studies were selected as recipients of the virtual testing of the possible implementation of ECCs.

The selected cases are UR BEROA, Pilastro-Roveri and Coopérnico. The choice of cases in which to implement ECCs was based on 3 criteria:

- Comparability: the selection was first based on the comparability of the characteristics. The cases all refer to a well-defined territorial dimension; their community have a relationship with policy makers; they all have to do with a precise energy citizenship objective, i.e. that of creating or consolidating energy communities.
- Community engagement: the possibility of receiving feedback in a rapid and stable manner was a further discriminating factor in the choice.
- Commitment and exploitation chances: the last discriminating element for the choice concerned the presence in the case studies of governance infrastructures capable on the one hand of managing and on the other of incorporating ECC into their instruments.

5.2 Overview of GRETA Case Studies and Possibilities for ECC implementation

5.2.1 Case Study 1 Pilastro-Roveri Renewable Energy Community District

Potential for application of ECC

The Pilastro-Roveri area demonstrates significant potential for the implementation of energy citizenship contracts. The formation of strong community ties based on shared existential conditions, values, beliefs, and trust provides a solid foundation for fostering collective action and engagement in sustainable energy practices. The "place-oriented" approach in Pilastro, where local physical proximity is the catalyst for community formation, creates a conducive environment for collaboration and cooperation. Additionally, in Roveri, the presence of informal relationships driven by rationality and functional interdependence opens up opportunities for collective decision-making and resource-sharing.

The active involvement of policy-makers at the municipal level, dedicating specific sectors to support and create energy communities, further strengthens the potential for successful implementation of ECCs. Local associations and city agencies, acting as gatekeepers, can facilitate the integration of energy citizenship initiatives and connect communities with necessary resources and expertise. The long-standing tradition of collaborating with third-sector associations in Bologna bodes well for the extensive application of energy citizenship contracts in addressing energy and climate change challenges. Overall, the unique characteristics and supportive ecosystem in Pilastro-Roveri lay a solid groundwork for the successful implementation of energy citizenship contracts and the realization of sustainable energy goals.

Despite its potential benefits, the ECC implementation in Pilastro-Roveri also poses certain risks that need to be addressed. One potential risk is the possibility of "community fatigue" where residents may become overwhelmed or disengaged due to the constant demands and commitments associated with civic participation in general and energy efficiency in this particular matter. To mitigate this risk, it is crucial to ensure that participation remains voluntary and that individuals are not burdened by excessive responsibilities in becoming signatories or simply participants in the pathways of development of the Manifesto.

Additionally, there may be a lack of intergenerational exchange, with younger and older community members having different perspectives and priorities regarding sustainable energy practices. Addressing the lack of digital literacy among certain segments of the community is important to ensure equal access to information and participation in digital platforms that support energy citizenship initiatives. Additionally, meeting the basic needs of residents, especially in Pilastro where social housing is prevalent, should be prioritized to ensure that energy citizenship initiatives are not overshadowed by pressing concerns. Lastly, the industrial nature of Roveri and the residential nature of Pilastro may result in a distance of values and priorities between the two areas. Finding common ground and promoting mutual understanding can help overcome this challenge and foster collaboration towards shared energy goals. By addressing these potential risks proactively, the successful implementation of energy citizenship contracts in Pilastro-Roveri can be further supported while ensuring inclusivity and sustainability.

Lesson learned from the ECC implementation in the case study
One of the case studies where the ECC was tested, and a potential draft was developed is Pilastro-Roveri in Bologna.

The main purpose of the ECC in the case of Pilastro-Roveri is set in the territorial coordination of present and future energy citizenship initiatives in the area so that synergies between actors are better exploited, there is more transparency of data and information is more inclusive and accessible to all. It is a tool that has the ambition of bringing communities together around common values and actions that fall within the scope of energy justice.

The Pilastro-Roveri ECC in Bologna – thanks to an intense interaction with members of the Public Administration – is set to become part of a path that sees the entire city committed to accelerating the achievement of climate neutrality, with a 2030 horizon. Bologna is one of the 100 cities selected by the 'Mission 100 Climate Neutral Cities' to develop a Climate City Contract. In this context, the Energy Citizenship Contract is intended to become a codified instrument giving access to the Climate City Contract to aggregations of purpose (of citizens, businesses, institutions, etc.), formalising their commitment in particular in the field of energy citizenship actions.

Furthermore, following specific requests from the local community, the ECC can stand as a privileged container to collect and valorise the results obtained from previous programmes and projects in the area (e.g. GECO project), facilitating their use for the local community.

One critical point emerging from the implementation process concerned the participation of citizens and ways to engage with it. Eventually, it was established that participation in the Contract may take place through an expression of interest by proposing an action or collaborating in one already proposed or in existence. The expression of interest will guarantee adherence to the values set out in its Manifesto of Values of Energy Citizenship and recognition in a community that brings together different actors with the aim of achieving climate neutrality by committing to energy-just actions.

This way, participation in the Contract will also allow members to include their proposals in the Climate City Contract investment plan, recognising the members' commitment to the best use of energy as a collective good for the whole city.

5.2.2 Case Study 2 Natural Gas-free Neighbourhoods

Potential for application of ECC

To reduce CO2 emissions by at least 49% by 2030 and to decrease earthquakes near the Groningen gas field, the Netherlands has committed to be natural gas-free by 2050. The social challenge lies in engaging building owners and residents to accept and invest in the renovation of the built environment. Municipalities have been entrusted with the responsibility of facilitating this sustainability transition. In 2019, the Dutch national program on natural gas-free neighbourhoods (PAW) subsidized 27 pilot neighbourhoods to develop natural gas-free heat infrastructures, with the aim of applying the learnings nationwide. Additional pilots have commenced in 2020 and 2022, resulting in a total of 66 pilot neighbourhoods. These pilots often adopt a cooperative approach, involving homeowners, local energy initiatives, suppliers and municipal representatives in co-designing the transition, with technical and economic support from the municipality.

This case study exemplifies a national-level political will to enable energy citizenship, while emphasizing the local emergence of energy citizenship through interactions among homeowners, local energy initiatives, and municipal members. In a potential

implementation of the ECCs, municipalities can reinforce their action as gatekeepers, playing a crucial role in the heat transition and serving even more as liaisons with the national government. The different levels of energy citizenship emergence include the national level, where decarbonization policies are implemented; the local dimension with pilot neighbourhoods managed by municipalities, responsible for the process's success and addressing challenges; and the virtual dimension through the online platform provided of PAW as well as the Expertise Centre for Heat (ECW) and the National Regional Energy Strategy Programme (RES), facilitating the sharing of knowledge, experiences, rivers and barriers. This last level can be supported (or incorporated in its structure) the ECC rationale, by also exploiting various data collection methods such as interviews, monitoring, and scientific analysis, on the neighbourhoods or active communities. While there are opportunities for energy citizenship contracts to be incorporated in natural gas-free neighbourhoods, challenges include effective engagement, coordination, and the successful integration of important stakeholders, such as homeowners, local energy initiatives, suppliers and municipalities in the transition process.

The implementation of the ECC was not pursued for this case study because it was considered too extensive in scope for practical implementation in the timeframe of the project.

5.2.3 Case Study 3 Coopérnico

Potential for application of ECC

As a cooperative/social enterprise, Coopérnico generates social, economic, and environmental benefits through the sales of renewable electricity, the promotion of collective investments in renewable energy projects, and the sharing of benefits between its members, investors, organizations operating in the social economy, the broader society, and the environment. The structure of the cooperative is polycentric and distributed, with members acting as gatekeepers to their communities. Energy citizenship operates and produces results from the local to the national level - from promoting the transition to a local sustainable economy and incentivizing decentralized renewable generation, to lobbying at the national level for a citizen-led restructuring of the energy system. Coopérnico can formalise and strengthen its commitment to the promotion of a citizen-led, bottom-up sustainable energy transition with Energy Citizenship Contracts in the form of a well-defined Manifesto, as it can provide a framework for transparent communication between the cooperative and its members, thus allowing a clearer understanding of how stakeholders can actively and effectively support achieving the cooperative goals at different levels.

Lesson learned from the ECC implementation in the case study

Coopérnico already has defined a Manifesto entitled “Manifesto Towards a Democratic Energy Transition”, which defines the cooperative’s vision, strategies, and measures for a democratic, ecologically and socially more sustainable energy transition, centered on civic participation and the involvement of all in building our future. Hence, it can be said that Coopérnico already laid the first foundational work towards defining an

Energy Citizenship Contract even prior to the GRETA project. Nonetheless, although the Manifesto defines objective goals in hierarchical order of importance, it still lacks a clearer definition of roles and responsibilities of the different parties involved with each goal – which can cause inertia in view of the lack of clarity. Hence, such definition represents the next step of the ECC implementation in this case study.

5.2.4 Case Study 4 UR BEROA

Potential for application of ECC

UR BEROA is a notable historical example of an energy community in Spain. At the local level, UR BEROA acts as a gatekeeper for residents, playing a crucial role in the community's engagement with energy issues. The neighborhood's high-income status, reduced social mix, and low unemployment suggest a population with higher educational and technical levels, creating a favorable environment for embracing climate-related challenges. The presence of renewable technologies within the neighborhood further indicates an openness to sustainable practices. Moreover, UR BEROA benefits from a strong tradition of associationism and participation in social and energy matters, reflected in the extensive presence of consumer groups and neighborhood associations. These legacy positions the neighborhood as a frontrunner in collaboration and cooperative investment, a filed in which the ECC can be proposed as a manifesto for declaring shared objectives and pathways. As it is essential to recognize the risks associated with focusing primarily on affluent communities, the ECC may increase the inclusivity and equitable distribution of benefits from energy citizenship initiatives. Moreover, while UR BEROA serves as a promising case study, there is a need to address the scalability and replicability of its success in other contexts. The engagement of supranational platforms and EU projects has contributed to strengthening UR BEROA's network, providing additional resources, connections, and knowledge. These potentialities and risks associated with energy citizenship contracts in UR BEROA, emphasize the importance of balancing inclusivity, scalability, and replicability in implementing such initiatives in diverse socio-cultural contexts.

Lesson learned from the ECC implementation in the case study

Several difficulties and challenges were experienced while designing and developing the ECC for the UR BEROA case study. Nevertheless, certain strengths were found along the process. The lessons learnt during this process can be applied to the future design and implementation of an ECC.

Initially, it was envisaged that the ECC of UR BEROA would take the form of an agreement between the cooperative and the public administration. Unfortunately, this was not possible in the time available and in the current political framework. Although the ECC is not legally binding, public administrations show concerns about signing this type of contracts with a private entity such as UR BEROA. Moreover, long lead times required by public institutions before deciding and signing a contract are also a barrier for their involvement in ECCs. Therefore, one of the lessons learnt from this process is that public administrations need to be involved in earlier stages of the ECC

or even in the GRETA project, either as a partner or as a member of some sort of working group, social lab, etc.

In UR BEROA particular case, several public administrations, such as the Gipuzkoa provincial council and the San Sebastian city council, were in the course of an election period, a time when it is difficult for them to make commitments.

In addition, the national, European, and global energy frameworks are very fluctuating, with numerous changes occurring at all levels (conflict in Ukraine, increase in energy costs, increase in inflation, adoption of new laws and regulations, etc.). The amount of time it takes to sign and carry out an agreement and the enduring nature of this agreement are challenges that must be tackled in these shifting contexts. During the 30 months of the project, this changeable context reflected in the case study of UR BEROA. As the global scenery has changed, the objectives, challenges, aims, barriers, and difficulties for UR BEROA have changed too. This led to the modification of the first drafts of the ECC.

Lastly, the strategic internal reflection that was done in the preparation of UR BEROA's Community Transition Pathway was an essential first step towards the definition of the ECC. This previous reflection is key to appropriately addressing and completing the ECC and therefore, both the process of the CTP and the ECC need to be closely interlinked.

5.2.5 Case Study 5 Earnest App

Potential for application of ECC

The Earnest App case study is unique in its approach as it centers around a virtual community that was specifically formed for the purpose of the GRETA project. Unlike traditional communities that exist independently of research projects, this virtual community was created solely to study the role of a mobile app in the context of energy citizenship emergence and development. The temporary nature of the virtual community allows researchers to closely observe how the Earnest App influences the behaviour of its members. Incorporating ECCs in this context could provide further insights into how contractual arrangements can motivate and guide individuals to make sustainable choices, leading to a better understanding of the factors that drive energy citizenship.

The concentrated exploration enabled by this case study could offer valuable insights into the effectiveness of ECCs as tools to drive behaviour change and promote a collective sense of ownership of sustainable energy practices. The implementation of energy citizenship contracts within virtual communities such as this one could enhance community engagement by providing a shared framework for collaboration and collective action. Contracts could establish common goals, promote transparent communication and foster a deeper sense of cohesion and purpose within the community. The findings could serve as a basis for designing and implementing similar initiatives in other virtual and physical communities.

The implementation of the ECC was not pursued for this case study, as it was deemed premature in the community's formation to initiate the process of developing a shared agreement.

5.2.6 Case Study 6 Connected and cooperative automated mobility

Potential for application of ECC

Connected and cooperative automated mobility (CCAM) refers to an infrastructure of transport whose individual vehicles or platooning vehicle units perform an autonomous “self-driving” without human intervention. As CCAM technology evolves, there will be a growing need to ensure that the transition towards autonomous vehicles aligns with sustainability goals.

GRETA Energy Citizenship Contracts could be used to incentivise and reward individuals and companies that adopt low-emission electric and autonomous vehicles, thus promoting the electrification of the vehicle fleet and contributing to zero CO2 emissions in road transport. With the CCAM enabling autonomous vehicles to communicate and coordinate their behaviour, users might be tempted to over-rely on these vehicles for personal mobility. In this case ECCs could include provisions encouraging responsible vehicle use, such as setting limits on vehicle kilometres travelled or prioritising public and shared transport options to minimise energy consumption and environmental impact. In this sense, the contracts could be designed to reward owners of autonomous vehicles who prioritise energy-efficient driving behaviour and choose routes that optimise energy consumption. Such contracts could also promote eco-driving techniques to minimise energy waste and encourage a more conscious approach to transport. Finally, as CCAM technology evolves, it is essential to address potential inequalities in access to autonomous vehicles and related services.

In this scenario, contracts could foster collaboration between stakeholders, including governments, vehicle manufacturers, mobility service providers and energy companies. By aligning their efforts through contracts, these entities can work towards common sustainability goals and drive innovation in the clean mobility space.

Similarly to the Earnest App case, the ECC implementation was not chosen for this case study, as it was regarded as premature to initiate a shared agreement development process due to the early stage of community formation and the relatively preliminar phase of the technology.

6 Conclusion

6.1 Summary of Key Findings and Recommendations

The success of ECCs rests on a multifaceted approach that embraces key principles for their design, implementation, and impact. By considering the unique characteristics and challenges of each case study, ECCs can be tailored to their contexts, enhancing community engagement, driving sustainable energy practices, and fostering collaboration among various stakeholders.

To ensure the successful adoption and effective operation of ECCs, a well-defined template was developed (Annex A) that serves as a comprehensive guide for their creation, utilization, and ongoing monitoring. This template will offer a structured framework for communities to tailor ECCs to their specific contexts while incorporating the key principles and insights outlined in the previous sections.

As ECCs are introduced, community stakeholders, ranging from residents to local authorities, come together to customize the ECC template to their distinct context, fostering a sense of ownership and inclusivity. Workshops, interactive meetings, and digital channels play pivotal roles in fostering active participation and garnering valuable insights during the development phase. This approach ensures that ECCs are seamlessly woven into the fabric of the community, aligning with policy frameworks and community visions. This relates also to a continuous monitoring and adaptation process that maintains the ECC's relevance and effectiveness over time. Regular assessment, data collection, and feedback mechanisms allow for real-time insights into energy consumption patterns, behavioral shifts, and collaboration levels. This dynamic monitoring approach enables communities to swiftly identify successes and challenges, fostering a culture of proactive response and evolution. Periodic reviews of ECC performance not only validate accomplishments but also serve as platforms to openly address areas for growth and improvement, ensuring that ECCs remain agile tools that actively drive positive change within communities.

Where communities have strong community ties, present high local cooperation, and engagement with policy-makers (e.g Pilastro-Roveri, UR BEROA, Coopernico), the ECC can create a conducive environment to drive sustainable energy practices, fostering a commitment to energy-just actions. ECCs can also be unique repositories where to address "community fatigue" avoiding past mistakes, repetitions and prevent further community burdening. Furthermore, their open form allows intergenerational differences, by providing digital literacy for diverse users, while also ensuring basic needs are met.

In processes where municipalities are the gatekeepers (Natural Gas-Free Neighbourhood), ECCs allows to informally engage homeowners, gather energy initiatives and suppliers to participate in energy transition. In this case, utilizing virtual

platforms for knowledge sharing and data collection can enhance the potentialities of this tool, by offering a framework for transparent communication and stakeholder support.

When communities are already formed and thriving (e.g. Coopernico), ECCs can address potential emerging challenges, leverage further EU projects and funding and provide a platform for support. This is true in case of newly-formed communities of purpose (e.g Earnest App, CCAM) where ECCs can encourage eco-friendly behaviors, align stakeholders through contracts for sustainability goals, enhancing collaboration and guiding sustainable choices.

By considering the following insights, ECCs can become dynamic tools that drive positive change and foster sustainable energy practices within communities:

- Inclusivity: prioritize inclusivity by ensuring that ECCs are accessible to all, particularly emphasizing the involvement of marginalized communities and underrepresented groups. By engaging a diverse range of voices, ECCs can truly reflect the needs and aspirations of the entire community.
- Digital integration: explore the integration of digital technologies and platforms to elevate the efficacy and scalability of ECCs. Leveraging digital tools can enhance accessibility, streamline communication, and facilitate active participation, ultimately broadening the reach and impact of ECC initiatives.
- Policy support: strengthen policy frameworks at various levels to provide the necessary guidance, incentives, and support for energy citizenship. Clear and supportive policies can create an enabling environment, empowering communities and individuals to engage proactively in energy practices.
- International collaboration: foster a culture of collaboration and knowledge-sharing among countries and regions. By learning from each other's experiences, successes, and challenges, the international community can foster the widespread adoption and effectiveness of ECCs as catalysts for energy transition.
- Education and awareness: Place a strong emphasis on energy literacy, equipping individuals with the knowledge and skills needed to make informed energy-related decisions. Educational initiatives can elevate awareness about ECCs and their significance, inspiring active participation and a collective commitment to sustainable energy practices.

By weaving these insights into the structure of energy citizenship contracts, communities can embrace ECCs as powerful tools that empower citizens, drive positive change, and contribute to a more sustainable and resilient future. The journey towards energy citizenship is a collective endeavor, and with careful consideration of these key points, ECCs can serve as leverages of progress and transformation within our communities and beyond.

6.2 Future Directions for Energy Citizenship Contracts

As the development and implementation of Energy Citizenship Contracts (ECCs) continue to evolve within the framework of the GRETA project, it becomes imperative to consider the future directions that can further enhance their effectiveness, inclusivity, and impact. The journey towards enhancing the effectiveness and reach of ECCs is an ongoing process that draws valuable lessons also from existing climate and energy-related contracts.

One of the cornerstones of ECCs is the commitment to inclusivity and just transition. As ECCs expand their reach, future endeavors should prioritize innovative approaches to engage marginalized and vulnerable communities. This includes developing targeted outreach programs and financial incentives to ensure that ECCs resonate with diverse communities and their unique needs. Collaborations with local community organizations and advocacy groups can facilitate the meaningful integration of ECCs.

ECCs should not be isolated endeavors but intricately linked to policy frameworks at various levels. Moving forward, ECC proponents should actively engage with policymakers to integrate energy citizenship principles into existing policies. Collaboration among policymakers, stakeholders, and communities can ensure that ECCs align with broader sustainability goals, can provide incentives, regulatory support, and funding mechanisms that foster the growth and impact of ECCs.

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Annex A. Energy Citizenship Contract template

The annex presented below is the synthetic basis (template) on the basis of which three case studies have developed their own Energy Citizenship Contract scheme. Indications and guidelines for compilation are highlighted in yellow.

ENERGY CITIZENSHIP "MANIFESTO (CONTRACT / DECLARATION / PACT / PARTNERSHIP / FORUM / PANEL / CHART / PROGRAM)"

Promoted by H2020 GReen Energy Transition Action GRETA

draft

You have the option to choose the particular type of agreement that suits you, which serves as an EU-level framework with a moderate level of binding.

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Project information

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Full title	GReen Energy Transition Actions
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1 Premises

This part is aimed at broadly introducing the EU energy and climate efficiency framework without going too much into detail as the participants should be already well aware of many of these policy directions. It also introduced the general objectives of the GRETA project. Please feel free to point out any required change or to directly adjust the content according to your case study necessities. [please remove this text in case of dissemination of this document]

a) Climate change, which is increasingly evident, is a serious global threat that needs to be remedied, both in terms of mitigation and adaptation, by acting collectively and promptly to avoid devastating effects in the short to medium term.

b) Environmental degradation due to the use of fossil sources is a problem felt both globally and locally, with numerous significant direct and indirect impacts on the health, safety and well-being of citizens.

c) The geopolitical balance threatened by the distribution of fossil resources, that are also limited, and the economic impact deriving from energy consumption are critical issues for the development of a safe and inclusive society even with respect to the most vulnerable groups.

d) Among the 17 global goals of the United Nations (Sustainable Development Goals) defined in the 2030 Agenda, the following points are reported in relation to energy issues, in addition to the numerous indirect links (poverty, health and well-being, water, economic growth, responsible consumption and production, businesses and infrastructures, life on land and in water, peace and justice ...):

o Goal 7: clean and reliable energy for all

o Goal 11: sustainable cities and communities (inclusive, safe, lasting ...)

o Goal 13: fight against climate change

1.1 European Union

a) The EU and its Member States are promoting an ambitious program for the decarbonisation of the economy and the development of renewable energies, with objectives to reduce climate-altering gases by 2050, through the European Green Deal (Communication from the Commission of 11.12.2019 (COM (2019) 640 final) and the related proposals to amend the European Directives and Regulations on the environment, energy and sustainability.

b) Cities play a key role in achieving climate neutrality by 2050, the goal of the European Green Deal. They occupy only 4% of the EU land area, but host 75% of EU citizens. Furthermore, cities consume over 65% of the world's energy and account for over 70% of global CO_2 emissions.

c) The European Union in 2008 established the voluntary initiative "Covenant of Mayors" to promote the ecological transformation of cities from below through the reduction of consumption and climate-altering emissions, adaptation to climate change and the fight against energy poverty for safe, clean and available energy for all.

d) The Covenant of Mayors is based on three founding concepts:

o extended participation and co-definition of strategies, through citizens' empowerment

o continuous improvement and periodic adjustments of actions based on the results of monitoring and evaluation activities

o combined cooperation (among institutional levels).

e) The European Union promotes and supports scientific research and innovation by funding innovative and scalable research projects through the Horizon programs.

f) The European Union has established the "Missions" for the Horizon Europe 2021-27 program, a new way to bring concrete solutions to some of the most significant and current challenges. The missions have ambitious objectives and must produce tangible results by 2030 through the combination of research and innovation with new forms of governance and collaboration that provide for the direct involvement of citizens. In particular, the mission called "climate neutral and smart cities" provides support to 100 European municipalities to achieve the neutrality goal by 2030.

1.2 The H2020 GRETA project

a) In 2021, the Green Energy Transition Action ("GRETA") project obtained funding under the Horizon 2020 program; the project was born from the collaboration of the LOCAL PARTNER with other European research partners (www.projectgreta.eu) and aims to develop "energy citizenship", activating the direct participation of citizens, favouring the best conditions (technological and social) to achieve climate neutrality and community decarbonisation. The agreements for energy citizenship, such as this document, developed and promoted as part of the project and applied to local case studies, represent the operational tools to support the various energy sustainability actions from an organizational, technical, legal, financial point of view, etc. .

b) The local case studies identified by GRETA will be used to identify problems, solutions and reach a shared and scalable / replicable approach for the energy transition (Community Transition Pathway), formalized through Energy Citizenship Contracts such as this document, whose results will be used to inform and encourage local and international policy makers to support energy citizenship.

1.3 The NAME case study and its framework

GRETA selected as a case study ….. *please describe here briefly the case study and the reasons behind its selection for GRETA's purposes*

Please describe here (if relevant) related national policy/programs affecting the energy transition of the case study.

***

Considering this, the LOCAL PARTNER in agreement with Institutional and/or not supporting bodies (hereinafter, where jointly understood, the "Parties") deem it appropriate to draw up, promote, share and disseminate to stakeholders and citizens of the area/cooperative members/members of the energy community/residents of the city…[please select or add any possible option] this programmatic document (hereinafter "Manifesto" [or the name chosen]) with the following contents and objectives shared by the promoters.

2 Objectives

This section is aimed at sharing the main objectives that the case study defined as most urgent/necessary/useful during the GRETA project activities (pathways creation and so on); feel free to modify this section of cut some parts accordingly.

The Parties commit to favour and concretely pursue an active energy citizenship plan within the GRETA project, through coordination between citizens, institutions and businesses, for a just and right energy transition by leveraging on energy citizenship.

The concept of energy citizenship must be considered a priority for the achievement of the ecological transition. In fact, energy citizenship is the active participation of citizens in a new sustainable model of energy management that includes efficient use, with aware consumption behaviours and sustainable production - primarily from renewable sources - which are fundamental for the realization of local energy communities and climate-neutral districts. Social participation in the energy system, can and must take different forms, adapting to the potential of the subjects involved and the timing of implementation, and progressive steps of engagement (unaware, aware, interested, active, advocate).

In addition to the above objectives, the project expressess further aims, including:

• social and energy justice, to protect the most vulnerable and guarantee equal access to energy resources;

• the elevation of the principle of democracy through the involvement of citizens;

• the optimization of synergies between the various existing and future through close local coordination

• the validation of standard energy citizenship contracts for further extensions and replications

The following is the Bologna's Manifesto objective, adjust it according to your case or modify as much as necessary

The Pilastro-Roveri Manifesto seeks to harmonize and coordinate, at the district level, all existing, as well as future, activities related to the concepts of energy citizenship, energy justice, and citizen access to energy-conscious and responsible consumption with respect to climate change and social justice. The Pilastro-Roveri Manifesto stands as a privileged repository to be able to collect and build on the achievements of previous programs and projects, making them available to the citizens and facilitating their use for the local community.

The Parties are aware and commit to act towards addressing the impacts and outcomes emerged from the GRETA Community Transition Pathways in Pilastro-Roveri, such as:

These are generic outcomes emerging from the Bologna's CTPs, please adjust to your own case study and feel free to add

- Increased awareness of the citizen towards the energy issue;
- Increased confidence regarding the effectiveness and outcomes of the green transition pathway;
- Increased experiences and opportunities for knowledge, partly thanks to the support of universities, research institutions and professionals;
- Creation of opportunities for citizens/and local actors to express themselves in order to fully understand needs, thereby improving outcomes;
- Identification of technical and social opportunities and barriers;
- Ensuring transparency in decision-making and improving communication channels;
- Facilitation of access to data and information;
- Optimization of risk management;
- Validation of results;
- Promotion of social inclusion and support for vulnerable groups
- ….

3 Promoters and local stakeholders

3.1 The Coordinator

The coordinator of the manifesto/contract is *XXX*. Therefore, pursuant to this Manifesto, it acts as a facilitator and coordinator of the above actions and of those interventions necessary to coordinate and harmonize the results and actions promoted by other plans and programs, referred to in the premises.

As coordinator, *XXX* will supervise, plan and facilitate the execution of the individual activities with reference to the case study, supporting and enabling the interested parties to become an active part.

The coordinator will be assisted by one or more Parties, depending on the case, or will be available to them for the development of individual objectives or actions.

In particular …. (*list your core activities here: analysis, training / information ... ..)*

3.2 Promoting Parties

in the case of Pilastro-Roveri we distinguished institutional members (Parties) from the others or main signatories with stronger interests (Parties) from others

Name, aims and roles of main Parties [please add any possible main parties]:

- University of Bologna, High Education Institution.
  Energy culture facilitator and promoter. Activities of energy justice promotion, support on data gathering, organisation and literacy.

- Foundation for Urban Innovation, Urban Agency, with the participation of both the Municipality and the University.
  Community facilitator and gatekeeper, support on welfare and social vulnerability issues.

- …..

Name, aims and roles of promoters if any [*please add any possible supporter and promoter of the Manifesto actions. This list can be expanded through time*]:

3.3 Stakeholders

The Parties cooperate with each other to plan, define and promote the GRETA project values pursuant to this Manifesto.

The Parties favour and welcome the collaboration of any other subject, whether private and public, single or gathered in associations or groups, here defined as stakeholders.

The Parties commit to publicize and disseminate this Manifesto to all stakeholders in order to collect their requests, needs and contributions to integrate and implement the objectives and actions indicated in this Manifesto.

In the first analysis, a non-exhaustive list of possible stakeholders is provided, such as:

Please consider this as the reference for the Pilastro-Roveri case. Integrate it or modify it accordingly.

- Entities holding the concession for the distribution of energy and fuels at local level (DSO)
- Entities holding the concession for the provision of public services (lighting, water, waste, transport….)
- Territorial development, energy and environmental agencies
- Professional associations and research institutions
- Trade associations (owners, tenants, administrators, production sector…) and environmentalists
- Local industries and companies
- Credit institutions
- Neighborhood committees
- …

4 Commitment and future initiative

This section is aimed at providing a preliminary list of the main actions defined in the CTPs and selected for their urgency to be realised. Each action will be then supported by annexes, as knowledge, bureaucratic, legal resources to make the actions immediately operational.

In order to promote the objectives of the GRETA project pursuant to this Manifesto, the Parties involved propose to develop and select, on the basis of specific local needs, one or more of the following programmatic and operational activities, aimed at *XXXXX please indicate here the main objective for your case study*, the spread of the concept of energy justice and innovation always aimed at the well-being of the citizen:

Table A1: List of the main Pilastro-Roveri actions

to be adjusted to you own case study

ACTIONS *if you need hints for possible actions to be proposed here, you can also refer to D4.2 in particular the Energy citizenship actions catalogue*	AIMS	MAIN OPERATIONAL ACTIVITIES	ANNEXES (*ENABLERS OF EACH ACTIVITY*)
Development of a District Energy Transition Plan according to the principles of energy justice.	Characterization of the area, evaluation of technical and economic feasibility of solutions, monitoring of results.	Data collection and sharing in compliance with the law	Data sharing statement commitment between the parties (ownership and roles) Privacy Statement
		Technical mapping and database creation	
		Thematic data collection and processing for the purpose of technical-economic evaluation of various scenarios and public sharing of results/maps	
		Stakeholder membership	Statement of commitment/engagement to the project by

			individual stakeholder with actions and investments
Support the establishment/development of energy communities (evaluation of standard contracts, etc.) and collective self-consumption groups.	Development of renewable energies and combating energy poverty.	Evaluation of REC contract, analysis of the legal entity, identification and recruitment of potential participants	Citizen guidelines on market opportunities and informational materials (presentation of RECs and template for citizens/other stakeholders to join...)
		Presentation of the new REC(s) with disclosure of objectives, benefits and membership rules	
Ongoing information, communication, training and updating activities (newsletters, events, website materials, App, information desk, etc.).	Design and promotion of permanent service activities in the area.	Support and guide citizens in choices and practices pertaining to energy justice and citizenship.	Support for actions and investments of different stakeholders for training/information/local counter activities

These actions will be developed using all the legal tools available in compliance with the provisions of this Manifesto, through programmatic agreements, shared actions, planning acts (with related environmental and social assessment procedures, where required), in compliance with the principles of law and the applicable rules and regulations.

5 Duration

This section provides a general idea of the steps, and the timing foresees by GRETA's pathways. It is modifiable according to your necessities and timing.

The GRETA project has a foreseen deadline set at October 2023.

During this period, the Parties hope to fully develop all the actions and activities envisaged by the same according to the needs that emerged in the case study, following the provisions contained in this Manifesto.

All possible activities will therefore be proposed, started, planned or carried out in the strictly necessary time frame, orienting the actions to the needs of the community and using all the legal instruments in their possession.

The Parties are aware that the objectives indicated in the GRETA project, and to be developed through the actions indicated in this Manifesto, are of medium and long term, therefore, they will commit to develop all the activities, programmatic or operational, referred to above, in the respect for them.

In the name of the principle of collaboration, the Parties undertake to present the pathways i.e. an illustration of the steps that will be carried out in the case study, in the following terms:

[please *list the main milestones of your local pathway and insert the image of the filled in template*]

6 Updates and costs

The Parties consider the Manifesto an important dissemination opportunity to express the principles and objectives of the GRETA project.

The activities indicated above are intended as examples and subject to possible additions, modifications or necessary practical adjustments.

For these reasons, the Parties acknowledge that the Manifesto may be supplemented by written agreement of the same, with the possibility of adding new signatory Parties according to requests and needs.

As this is a policy and policy document, it is understood that it does not provide for any expense or economic commitment on the part of any of the Parties.

***

The attachments and premises are an integral part of this Manifesto.

All of the above read, approved and signed.

Annexes

Here you can imagine some possible attachment (documents or templates to be made available to accelerate the actions' realization). You can also eliminate this part or simply provide a list of possible Annexes without the templates.

Annex B. Energy Citizenship Contract in Pilastro-Roveri, Bologna

ENERGY CITIZENSHIP "MANIFESTO and CONTRACT" Promoted by H2020 GReen Energy Transition Action GRETA

1 Premises

a) Climate change, which is increasingly evident, is a serious global threat that needs to be remedied, both in terms of mitigation and adaptation, by acting collectively and promptly to avoid devastating effects in the short to medium term.

b) Environmental degradation due to the use of fossil sources is a problem felt both globally and locally, with numerous significant direct and indirect impacts on the health, safety and well-being of citizens.

c) The geopolitical balance threatened by the distribution of fossil resources, that are also limited, and the economic impact deriving from energy consumption are critical issues for the development of a safe and inclusive society even with respect to the most vulnerable groups.

d) Among the 17 global goals of the United Nations (Sustainable Development Goals) defined in the 2030 Agenda, the following points are reported in relation to energy issues, in addition to the numerous indirect links (poverty, health and well-being, water, economic growth, responsible consumption and production, businesses and infrastructures, life on land and in water, peace and justice ...):

o Goal 7: clean and reliable energy for all

o Goal 11: sustainable cities and communities (inclusive, safe, lasting ...)

o Goal 13: fight against climate change

1.1 European Union

a) The EU and its Member States are promoting an ambitious program for the decarbonisation of the economy and the development of renewable energies, with objectives to reduce climate-altering gases by 2050, through the European Green Deal (Communication from the Commission of 11.12.2019 (COM (2019) 640 final) and the related proposals to amend the European Directives and Regulations on the environment, energy and sustainability.

b) Cities play a key role in achieving climate neutrality by 2050, the goal of the European Green Deal. They occupy only 4% of the EU land area, but host 75% of EU citizens. Furthermore, cities consume over 65% of the world's energy and account for over 70% of global CO_2 emissions.

c) The European Union in 2008 established the voluntary initiative "Covenant of Mayors" to promote the ecological transformation of cities from below through the

reduction of consumption and climate-altering emissions, adaptation to climate change and the fight against energy poverty for safe, clean and available energy for all.

d) The Covenant of Mayors is based on three founding concepts:

o extended participation and co-definition of strategies, through citizens' empowerment

o continuous improvement and periodic adjustments of actions based on the results of monitoring and evaluation activities

o combined cooperation (among institutional levels).

e) The European Union promotes and supports scientific research and innovation by funding innovative and scalable research projects through the Horizon programs.

f) The European Union has established the "Missions" for the Horizon Europe 2021-27 program, a new way to bring concrete solutions to some of the most significant and current challenges. The missions have ambitious objectives and must produce tangible results by 2030 through the combination of research and innovation with new forms of governance and collaboration that provide for the direct involvement of citizens. In particular, the mission called "climate neutral and smart cities" provides support to 100 European municipalities to achieve the neutrality goal by 2030. To achieve this goal, the selected cities will equip themselves with a tool, called a "Climate City Contract," which provides a master plan for climate neutrality in all sectors, such as energy, buildings, waste management and transport, and related investment plans. The "Contract" definition process will involve citizens, research organizations and the private sector through a dedicated Platform (currently managed by the NetZeroCities project). In the specific case of Bologna, a city selected among the 100 to achieve the 2030 climate neutrality goals, the participatory process will be ensured by the City Assemblies (established by an amendment to the Municipal Regulations on July 29, 2022).

1.2 The H2020 GRETA project

a) In 2021, the Green Energy Transition Action ("GRETA") project obtained funding under the Horizon 2020 program; the project was born from the collaboration of UNIBO with other European research partners (www.projectgreta.eu) and aims to develop "energy citizenship", activating the direct participation of citizens, favouring the best conditions (technological and social) to achieve climate neutrality and community decarbonisation. The agreements for energy citizenship, such as this document, developed and promoted as part of the project and applied to local case studies, represent the operational tools to support the various energy sustainability actions from an organizational, technical, legal, financial point of view, etc. .

b) The local case studies identified by GRETA will be used to identify problems, solutions and reach a shared and scalable / replicable approach for the energy transition (Community Transition Pathway), formalised through Energy Citizenship Contracts such as this document, whose results will be used to inform and encourage local and international policy makers to support energy citizenship.

1.3 The PIlastro-Roveri case study and its framework

l) GRETA experiments with processes and results in the local case-study of the Pilastro-Roveri district, a multifunctional area located in the northeastern outskirts of the city of Bologna, near CAAB, the largest rooftop photovoltaic plant in Europe. The area has ample potential and can be considered a pilot to see some of the resilience strategies envisaged by the PUG (General Urban Plan) materialized; a laboratory to access the conditions that will also be generated thanks to the new Regional Energy Plan; a place of learning to lay the groundwork for achieving the goals described in the Covenant for Jobs and For the Climate (carbon neutrality before 2050; 100% renewable energy by 2035; etc. .The strong presence of an associational fabric facilitates participatory processes and experimental applications of tools to support citizenship in order to make them active in the transition path to climate neutrality.

m) Previously, in the same pilot district of the city of Bologna, various projects aimed at sustainable development have been implemented, including the Climate-KIC project "GECO" (Green Energy Community, September 2019 - December 2022) aimed at the creation of local energy communities, promoted and coordinated by AESS together with the University of Bologna and ENEA, with the participation of CAAB / FICO and the Pilastro Local Development Agency - Northeast District. The implementation of the GRETA project, in synergy and continuation with its predecessor GECO, aims at the continuation of the experimentation by pursuing complementary and ambitious objectives.

n) The Municipality of Bologna, a signatory of the Covenant of Mayors since 2008 and which declared a climate emergency in October 2019, approved in April 2021 the new Sustainable Energy and Climate Action Plan (PAESC), whose strategy aims to achieve carbon neutrality before 2050, accelerating the ongoing reduction process at the regional, national and European levels. Bologna will become one of the pilot cities with respect to carbon neutrality actions, starting with the substantial reduction of building energy demand and the adoption of energy carriers from renewable energy sources, proceeding jointly at the urban scale on the two themes of mitigation and adaptation.

o) The Emilia-Romagna Region approved Regional Law No. 5 (May 27, 2022) on "Promotion and support of renewable energy communities and self-consumers of renewable energy acting collectively". The law identifies system actions and measures to support and promote collective self-consumption and energy communities, providing for the provision of grants and financial instruments that accompany communities from

establishment and planning to the purchase and installation of production and storage facilities. Also envisaged are: communication, information and citizen participation initiatives on renewable energy, self-consumption and energy sharing issues also in collaboration with energy agencies. The legislature identifies the Pilastro-Roveri area as a reference for experimentation due to the presence of ongoing European projects on the topic.

p) By virtue of its own PAESC and the initiatives already launched with the support of numerous actors in the area, the municipality of Bologna was selected in April 2022 among the 100 exemplary cities that the EU will support in the anticipation of achieving climate neutrality by 2030.

All this being said and done, the Municipality of Bologna with the Department of Architecture of the University of Bologna and the Urban Innovation Foundation (FIU) (hereafter, where jointly understood, the "Parties") deem it appropriate to draft, promote, share and disseminate to interested stakeholders and citizens of the area this programmatic document (henceforth "Values Manifesto and Energy Citizenship Contract") whose contents and objectives are shared by the promoting parties as a synthesis and outcome of the active participation path of the H2020-GRETA project and the actions of the Municipality and FIU on the territory and with the communities.

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2 The VALUE MANIFESTO

The concept of energy citizenship must be considered a priority for the fulfillment of the ecological transition. In fact, energy citizenship represents the active participation of every citizen and citizen in a new sustainable model of energy management, production and use with conscious consumption behaviors to contain direct and indirect impacts, sustainable production, priority from renewable sources. These are a key element in the development of local energy communities and a climate neutral neighborhood (Neutral or Positive Energy District).

This concept of participation in the energy system can and should take different forms, adapting to the potential of the stakeholders, the timing of implementation and progressive steps. The GRETA project summarizes these steps into different levels of involvement, from unawareness, through awareness (interest or indifference), involvement (adoption, unwillingness, adherence), activism (sponsorship, frontrunner, denial), and support (promotion, leadership, activism, NIMBYism).

The following points of the VALUE MANIFESTO are an expression of common intentions and horizons and the outcome of the community engagement journey that find such a tool useful:

- as a guarantee of social and energy justice, to protect the most vulnerable and ensure equal access to energy resources, data and information useful for more efficient behaviors;
- as an affirmation of the principle of democratization through the involvement of citizens and female citizens;
- to optimize synergies between different activities initiated and future activities through close local coordination;
- to validate energy citizenship contracts and assess the possible scalability and replicability of actions.

The vision: energy justice as a primary political action in city governance

The most recent European Union (EU) energy policy initiatives have been geared towards a rapid transition to a more sustainable and citizen-centred EU energy system. EU policies place a strong emphasis on the adoption of renewable energy technologies and a more efficient use of energy. At the same time, there has been an escalation of mobilisations by more or less organised citizens, who intervene in the socio-political debate on climate and energy transition, proposing changes at a global level on the one hand and the adoption of practical measures within communities and their own homes on the other. The potential collective effects of these expressions of interest could be very significant and households become an active player in the energy system, producing renewable energy, adjusting their consumption to more sustainable patterns and/or storing green electricity to be managed locally. This is supported by recent EU

legislation that gives communities and individuals the right to generate, store, consume and sell their own energy. These regulations have the merit of being a first step away from the conventional view of citizens as passive price takers or supposed recipients of technology. However, they do not fully recognise the social aspect of the energy transition. Top-down policies driven by technological evidence and markets alone are unlikely to spur citizens into action. Instead, climate action requires special alliances that make the role and concerns of citizens complement those of institutions.

The neutral city

Urbanised areas, due to their high concentration of population, industries and infrastructure, constitute areas of high risk concentration, more vulnerable to shocks and stresses and potentially exposed to the most severe impacts of climate change. The effects of increasing global competition for energy and resources are likely to combine with those of climate change with major impacts particularly on the poorest and most vulnerable populations. This is also the case in Europe, where inequalities are worsening due to a number of demographic and economic phenomena.

The ability of cities to provide services, as well as to meet growth and development objectives is being challenged, as although many governments and communities have strategies in place to deal with change, increasing climate variability will require carefully planned management (with dedicated planning and funding) to ensure the desired resilience and enable sustainable growth in the future.[1]

By contributing to a large extent to the underlying causes of climate change (greenhouse gas emissions, concentration of material and energy consumption, etc.), cities can also be part of the solution to address the challenges of change.[2] The same concentration of people, industrial and cultural activities, translates into sets of opportunities that can make cities true laboratories of innovation, where they can catalyse strategies to test adaptation mechanisms, where they can improve social and economic equity and ultimately reduce vulnerability to the impacts of climate change through mitigation measures and reactive and preventive adaptation, for sustainable urban regeneration, thus introducing the concept of Resilient Cities and Communities.

The European Green Deal is the strategy with which the European Union intends to respond to the challenges of climate change, which cities also face. It is a new growth

[1] Fairhurst, L. (2011). Introduction: Describing Impacts at the Local Level. In *Resilient Cities: Cities and Adaptation to Climate Change-Proceedings of the Global Forum 2010* (pp. 13-14). Dordrecht: Springer Netherlands.

[2] Bulkeley, H. (2013). *Cities and climate change*. Routledge.

strategy aimed at transforming the EU into a fair and prosperous society with a modern, resource-efficient and competitive economy that will generate no net greenhouse gas emissions in 2050 and in which economic growth will be decoupled from resource use.

It also aims to protect, preserve and enhance the EU's natural capital and to protect the health and well-being of citizens from environmental hazards and their consequences. At the same time, this transition must be just and inclusive. It must put people first and pay special attention to the regions, industries and workers that will face the greatest problems. Since the transition will bring about substantial changes, active citizen participation and trust in the transition are crucial for the policies to work and be accepted.

The European Green Deal will accelerate and support the transition needed in all sectors: it is an integral part of the Commission's strategy to implement the 2030 Agenda and the UN Sustainable Development Goals.

To demonstrate the feasibility of the objectives contained in the Green Deal, the European Commission has promoted the EU Mission: Climate-Neutral and Smart Cities, selecting 112 cities (among them, Bologna) whose goal will be to achieve climate neutrality - that is, the net reduction of greenhouse gas emissions, possibly offsetting the remaining emissions - by 2030, through:

- the construction of a multi-level, co-creative process - formalised through a climate city contract - that is tailored to the realities of each city and contributes to the overall goal of the mission
- the promotion of cities as national, European and global leaders in addressing the European Green Deal and its main goal of climate neutrality in Europe by 2050, inspiring many other cities;
- initiating an equitable transition that also contributes to achieving the UN 2030 Agenda and its Sustainable Development Goals to improve the well-being of citizens;
- supporting the development of transition drivers in the five key enabling factors to:
- planning a transformation programme to become centres of innovation;
- develop new forms of participatory governance;
- develop a new economic model for climate action;
- implement an integrated urban planning model;
- deploy and use intelligent data systems and platforms.

What is really new about the EU's climate neutrality goal and the Green Deal is that they require action from all sectors of the economy and integrate climate and environmental considerations into all EU policy areas. The energy sector in particular is a sector that requires substantial transformation.

Civic empowerment

The Manifesto recognises that civic empowerment is determined by a complex and cross-cutting set of influencing factors that go far beyond policy and regulation. These include financial resources, access to technology, relationships to decision-making, knowledge and information.

The empowerment of consumers and end-users is considered crucial for the energy transition because it enables a rebalancing of the relationship between the actors in energy systems, guiding their development and transformation trajectories. However, the usual debate on the duties of citizens in the energy transition often ends up re-proposing an idea of the citizen as a universal subject with an abstract interest, erasing differences and inequalities through the neoliberal logic of individual responsibility. According to this approach, the field of action that the citizen-consumer can traverse is limited to purchasing choices in the private sphere, eluding any political discussion on how collective organisation and the sharing of mutual interests and responsibilities can help address both the environmental crisis and the technical, social and cultural changes required by the energy transition. For these reasons, civic empowerment cannot be separated from the right to information, awareness, guidance and training so that citizens can exercise their rights together.

In the context of environmental and energy policies, planning and decision-making processes are increasingly characterised by multiple attempts to involve the public. Specifically, planning the transition to renewable energy sources opens up specific opportunities for citizen participation, e.g. regarding the location and size of installations so that they can meet the needs of citizens and not those of third parties. However, considering the need not to consider participation as a neutral pathway, it is essential to ask how this and empowerment activities can actually influence the possibility of citizens to be involved and influence the outcomes of processes. On the other hand, it is also necessary to question how and to what extent citizens can influence, through participatory processes, the decision-making processes through which urban, economic, social and environmental choices of cities are defined. In this regard, participation should be more widely reconceived as a performative practice, in which forms of citizenship involvement and activation, both in more organised and spontaneous practices, can be recognised as legitimate.

The inclusion of citizens in energy-related decision-making processes, especially when it reveals existing inequalities and steps to overcome them, influences community response and the adoption of decarbonisation solutions. At the same time, civic empowerment is indispensable to intervene in the habits of a society accustomed to consuming large amounts of energy, believing it to be continuously available and cheap. As several studies have shown, the energy transition will not only take shape through the adoption of low-carbon solutions, but will have to reconfigure the need for and consumption of energy. Furthermore, it is crucial to adopt new energy-saving policies in public and commercial spaces in order to promote a culture of energy as an indispensable but not infinite primary good.

Energy citizenship

Energy citizenship is an emerging and promising concept in the theoretical framework of the energy transition. Research is increasingly interested in understanding how people can become active participants in the energy system. The concept of energy citizenship is an 'umbrella term' to describe the various ways in which citizens are actively involved in the energy transition, either as consumers and users or by engaging politically through participation in protest movements to influence the directions of change. In this sense, through this concept we want to highlight the human and social dimensions of the energy system, complementary to the technological ones, whose decarbonisation goals necessarily require the inclusion of citizens in energy-related decision-making processes.

However, engagement and participation in the energy system can also take more problematic and contradictory forms, such as in cases of opposition and contestation of renewable energy installations and projects. These cases often conceal broader concerns regarding the history and development of an area and its population, and which cannot be reduced to the use of the NIMBY (Not in My Backyard) label. For this reason, it is urgent to explore how the dimension of justice intersects with that of energy citizenship, as well as the multiple connections between energy transition, active participation and the potential reproduction of unjust and unequal socio-ecological relations.

To include citizenship in the energy transition, energy policies must not only aim to govern the transition, but also to improve the quality of life of people, especially the most vulnerable, such as those suffering from energy poverty. Energy poverty can be broadly defined as the inability of people to enjoy adequate levels of essential energy services such as heating, cooling and lighting, or the lack of means to power their household appliances. Low-income households experiencing energy poverty therefore spend a relatively high percentage of their income on energy needs and are consequently the most affected by increases in the cost of energy itself. According to the EU Energy Poverty Observatory, this phenomenon can also occur when consumers are unable to cover other expenses besides energy or when they are forced to reduce their household energy consumption, with significant consequences on their physical and mental health and well-being. However, because of the link between the phenomenon and the specific contexts in which it occurs, there is no universally agreed definition.

When addressing the issue of citizenship participation in the energy transition, it therefore becomes crucial to consider how the distribution of the costs of transformation impacts inequalities and pre-existing conditions of vulnerability.

Finally, reflection on energy citizenship can only be placed within the framework of energy justice. In the context of the GRETA project, reflections have been developed on the relationship between the affirmation of one and the other, emphasising how unjust

policies and processes represent an obstacle to energy citizenship, which instead can be fostered by procedures and projects oriented towards the pursuit of energy justice. Specifically in the context of GRETA, energy justice thus takes on a twofold value: on the one hand, it is considered as a framework for analysing transition policies and projects according to procedural (fair process), distributional (allocation of costs and benefits) and recognition (identification and inclusion of the demands of all parties involved) dimensions; on the other hand, energy justice represents a process that emerges from time to time depending on the practices and relationships between actors, technologies and institutions.

In this regard, new methods are crucial to overcome many of the barriers that energy citizens face in participation: in particular, exclusion and lack of capacity to interact with important stakeholders, whether other citizens or institutional actors, lack of access to appropriate information to support decision-making, and difficulties in understanding and interpreting data and other energy-related information. These issues have guided the actions and ambitions of the GRETA project.

3 Objectives

The main purpose of this contract is to establish a non-binding instrument with the ambition of bringing together communities around shared values and actions within the realm of energy justice.

Among the objectives: Territorial coordination of present and future energy citizenship initiatives in the Pilastro-Roveri area, in order to better exploit and coordinate synergies among stakeholders, enhance data transparency, and make information more inclusive and accessible to all.

The Parties commit to promoting and pursuing a path of active energy citizenship in line with the Community Transition Pathways developed by active members of the Pilastro and Roveri citizen community within the GRETA project, for the development of energy-climate neutrality and social justice themes.

The contract is not to be considered legally binding, but rather a request for a values-based commitment to the energy citizenship manifesto, which contains visions, objectives, and defines the horizons for implementing actions proposed by the participants.

The Pilastro-Roveri Energy Citizenship contract in Bologna is part of a trajectory in which the entire city is committed to accelerating the achievement of climate neutrality by 2030. In particular, Bologna is one of the cities selected by the "Mission 100 Climate Neutral Cities," which will develop the Climate City Contract. In this context, the energy citizenship contract aims to become a codified instrument that promotes aggregations and the creation of purpose-driven communities (of citizens, businesses, institutions, etc.), granting them access to the Climate City Contract through the formalization of their commitment, particularly in the field of energy citizenship actions.

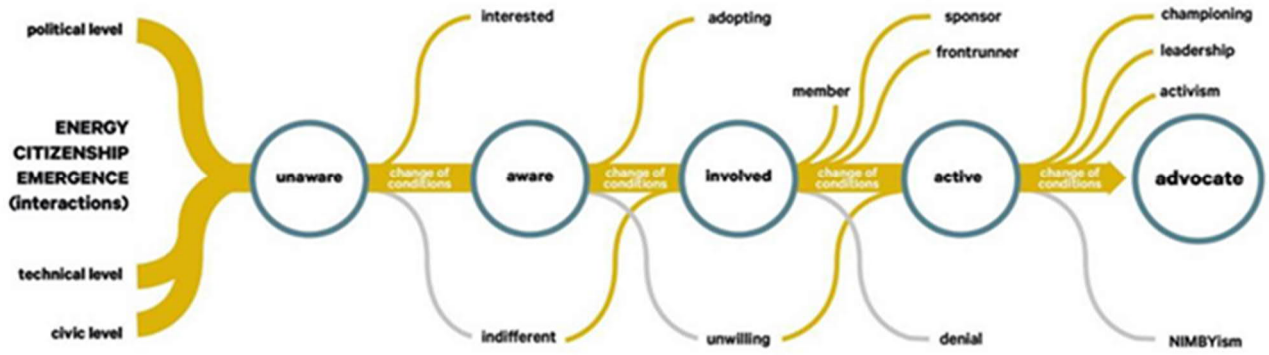


Figure B1 - the energy citizenship scale designed by the GRETA project

The Contract also aims to harmonize and coordinate, at the district level, all activities referred to in the preamble, as well as future activities related to the concepts of energy citizenship, energy justice, and citizens' access to conscientious and responsible energy consumption in the face of climate change and social justice. The Contract positions itself as a privileged container for collecting and leveraging the results achieved by previous programs and projects in the area (e.g., GECO project), facilitating their use for the local community.

Participation in the Contract can occur through an expression of interest by proposing an action or collaborating on an existing proposal. The expression of interest will ensure adherence to the values outlined in its Energy Citizenship Values Manifesto and recognition within a community that aggregates diverse entities with the goal of achieving climate neutrality through energy-righteous actions.

Moreover, participation in the Contract will allow participants to include their proposals in the investment plan of the Climate City Contract, recognizing the commitment of participants to the optimal use of energy as a collective asset for the entire city. Additionally, some members may be involved in municipal working groups related to the Climate City Contract.

The Parties are aware of the impacts and outcomes that the community process accompanying just transition (Community Transition Pathway) brings, which can be summarized as follows:

- Increased awareness of citizens regarding energy-related issues.
- Increased confidence in the effectiveness and outcomes of the ecological transition journey.
- Expansion of experiences and opportunities for knowledge, supported by universities, research institutions, and professionals.
- Creation of opportunities for citizens and local actors to deeply understand needs, thereby improving outcomes.
- Identification of technical and social opportunities and barriers.
- Assurance of transparency in decision-making processes and enhancement of communication channels.
- Facilitation of access to data and information.

- Optimization of risk management.
- Validation of results.
- Promotion of social inclusion and support for vulnerable groups.

3.1 The Coordinator

The coordinating entity is the Municipality of Bologna, as the Energy Citizenship Contract of Pilastro-Roveri will facilitate citizens' adherence to the Climate City Contracts, which the municipality coordinates. Therefore, also under the terms of this Contract, it acts as a facilitator of transition actions in line with the H2020 GRETA project, in order to coordinate and harmonize results and actions promoted by different municipal plans and programs, as mentioned in the preamble.

As the coordinating entity, the Municipality of Bologna will oversee, plan, and facilitate the execution of individual activities in reference to each specific case, supporting and enabling interested Parties to become active participants in these activities.

The coordinating entity will be assisted by one or more Parties, as appropriate, or will make itself available to them for the development of specific objectives or actions.

In particular, for the analysis, training, and updating of data and knowledge databases related to the district and/or the city of Bologna, the Municipality of Bologna will be supported by the Department of Architecture of the University of Bologna through an appropriate framework agreement.

Similarly, the activities involving engagement, information, and steady contact with stakeholders and the public will be carried out in collaboration with the Urban Innovation Foundation.

3.2 Stakeholders

The Parties are as follows:

- Municipality of Bologna, the coordinating entity with the role of supervision, planning, and facilitation of the execution of individual activities, through supporting and enabling interested parties.
- University of Bologna, Department of Architecture: the promoting entity and support institution for education, knowledge, and analysis, with a particular interest in updating data and knowledge databases related to energy citizenship in Pilastro-Roveri.

- Urban Innovation Foundation: the promoting entity and communication institution responsible for disseminating content and information to stakeholders and the community of Pilastro-Roveri and Bologna.

The Parties acknowledge that other promoting entities could include:

- Emilia-Romagna Region, Metropolitan City of Bologna, Acer, Caab-Fico, Department of Electrical and Energy Engineering, Department of Sociology and Law of Economics.

As mentioned above, the Parties cooperate among themselves for the planning, definition, and promotion of activities derived from the GRETA project under the terms of this Contract. The Parties encourage and welcome the collaboration of all other entities, private and public, individuals or organized in associations or groups, hereafter referred to as "Interested Parties." Therefore, the Parties commit to publicize and disseminate this Contract to all Interested Parties in order to gather their requests, needs, and contributions to proceed with integrating and realizing the objectives and actions outlined in this Contract.

As a preliminary analysis, a non-exhaustive list of potential stakeholders is provided, including:

- Groups of citizens organized in associations;
- Neighborhood organizations;
- Entities holding concessions for the distribution of energy and fuels at the local level (DSOs);
- Spontaneously formed energy communities with both climate and social sustainability goals;
- Entities holding concessions for the provision of public services (lighting, water, waste, transportation, etc.);
- Territorial development, energy, and environmental agencies;
- Professional associations and research institutions;
- Industry associations (property owners, tenants, administrators, production sector, etc.);
- Local industries and businesses;
- Financial institutions;
- Neighborhood committees.

4 Commitment and future initiative

In order to promote the objectives of the GRETA project in accordance with the Energy Citizenship Manifesto, the involved Parties propose to develop and select, based on specific local needs, one or more of the following activities, both programmatic and operational, aimed at socio-energetic local development, the dissemination of energy justice actions, and social innovation:

Table B1: List of the main Pilastro-Roveri actions

ACTIONS	AIMS	MAIN OPERATIONAL ACTIVITIES	ANNEXES (*ENABLERS OF EACH ACTIVITY*)
Development of a District Energy Transition Plan according to the principles of energy justice.	Characterization of the area, evaluation of technical and economic feasibility of solutions, monitoring of results.	Data collection and sharing in compliance with the law	Data sharing statement commitment between the parties (ownership and roles) Privacy Statement
		Technical mapping and database creation	
		Thematic data collection and processing for the purpose of technical-economic evaluation of various scenarios and public sharing of results/maps	
		Stakeholder membership	Statement of commitment/engagement to the project by individual stakeholder with actions and investments
Support the establishment/development of energy communities (evaluation of standard contracts, etc.) and collective self-consumption groups.	Development of renewable energies and combating energy poverty.	Evaluation of REC contract, analysis of the legal entity, identification and recruitment of	Citizen guidelines on market opportunities and informational materials (presentation of RECs and template for

		potential participants	citizens/other stakeholders to join...)
		Presentation of the new REC(s) with disclosure of objectives, benefits and membership rules	
Ongoing information, communication, training and updating activities (newsletters, events, website materials, App, information desk, etc.).	Design and promotion of permanent service activities in the area.	Support and guide citizens in choices and practices pertaining to energy justice and citizenship.	Support for actions and investments of different stakeholders for training/information/local counter activities

These actions will be developed using all the legal tools available, in accordance with what is provided by this Agreement, through programmatic agreements, shared actions, planning acts (with related environmental and social assessment procedures, where required), in compliance with legal principles and applicable norms and regulations.

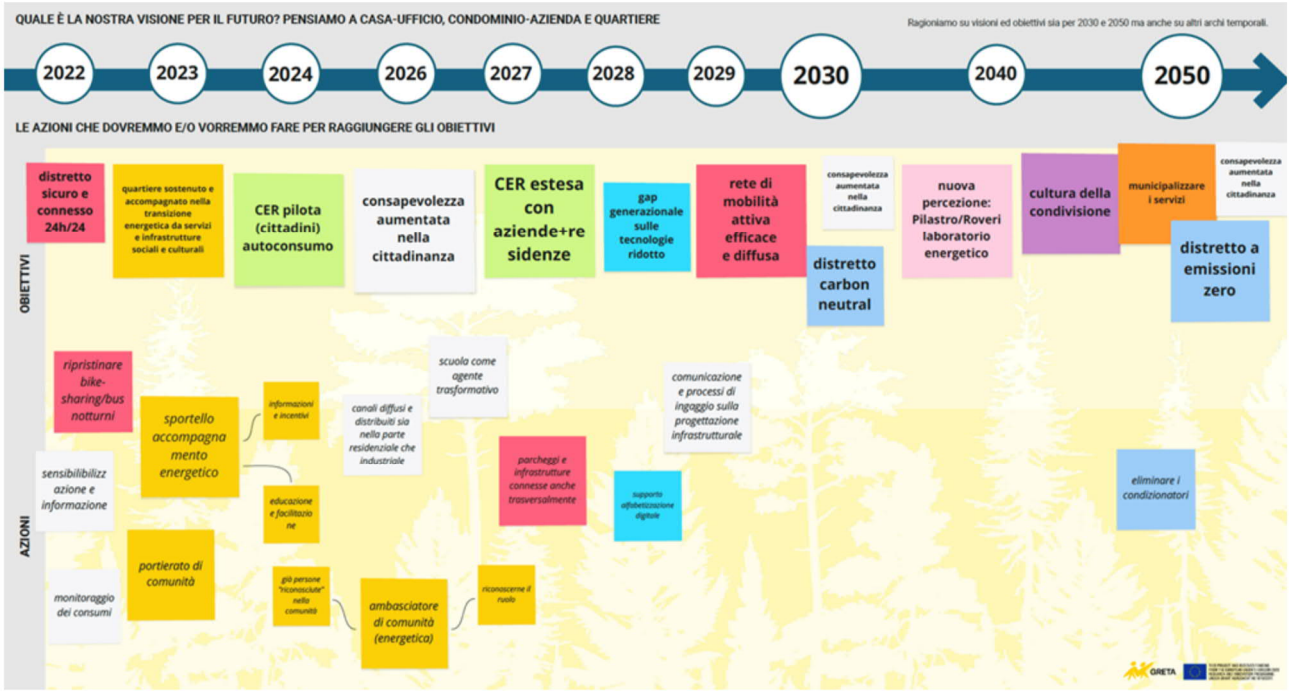
These actions are illustrative of a primary core of activities around which to gather the participation of the community of energy citizens. The Agreement is an open tool that allows the integration of proposals and participants.

5 Duration

The GRETA project has a duration of two years, with an expected completion date in the month of October 2023. During this period, the Parties aim to support the development of the actions and activities mentioned above related to the GRETA project, depending on the local needs that arise concerning the case study and following the provisions outlined in this Agreement. All other possible activities will be proposed, initiated, scheduled, or executed as necessary, aligning actions with the community's needs and utilizing all legal tools at their disposal. The Parties are aware that the objectives outlined in the GRETA project, to be developed through the actions specified in this Agreement, are of medium and long-term nature. Therefore, they will commit to creating the conditions to facilitate the aforementioned programmatic or operational activities, while respecting these objectives. In the spirit of collaboration, the Parties undertake to present, update, and keep the transition pathways open. These pathways provide an illustration of the step-by-step journey of the activities that will be carried out in the local territory for each activity.

The illustration shown below presents the steps that are foreseen to be carried out until 2050 as it was co-designed with the community of Pilastro-Roveri.

Figure B2: milestones of the pathway co-designed with the local community



6 Updates and costs

The Parties consider the Agreement an important opportunity to materialize GRETA's objectives and the vision of the Municipality of Bologna regarding the future of the city. The activities mentioned above are illustrative and subject to potential integrations, modifications, or necessary practical adjustments. For these reasons, the Parties acknowledge that the Agreement may be supplemented through a written agreement among them, with the possibility of adding new subscribing Parties based on requests and needs. As this is a programmatic and guiding document, it is understood that it does not entail any expenses or financial commitments on the part of any of the Parties.

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The annexes and background are an integral part of this Manifesto/Declaration.

All of the above read, approved and signed.

Annex C. Energy Citizenship Contract in UrBeroa, Donostia-San Sebastián

ENERGY CITIZENSHIP "DECLARATION" Promoted by H2020 GReen Energy Transition Action GRETA

1 Premises

a) Climate change, which is increasingly evident, is a serious global threat that needs to be remedied, both in terms of mitigation and adaptation, by acting collectively and promptly to avoid devastating effects in the short to medium term.

b) Environmental degradation due to the use of fossil sources is a problem felt both globally and locally, with numerous significant direct and indirect impacts on the health, safety and well-being of citizens.

c) The geopolitical balance threatened by the distribution of fossil resources, that are also limited, and the economic impact deriving from energy consumption are critical issues for the development of a safe and inclusive society even with respect to the most vulnerable groups.

d) Among the 17 global goals of the United Nations (Sustainable Development Goals) defined in the 2030 Agenda, the following points are reported in relation to energy issues, in addition to the numerous indirect links (poverty, health and well-being, water, economic growth, responsible consumption and production, businesses and infrastructures, life on land and in water, peace and justice ...):

- Goal 7: clean and reliable energy for all
- Goal 11: sustainable cities and communities (inclusive, safe, lasting ...)
- Goal 13: fight against climate change

1.1 European Union

a) The EU and its Member States are promoting an ambitious program for the decarbonisation of the economy and the development of renewable energies, with objectives to reduce climate-altering gases by 2050, through the European Green Deal (Communication from the Commission of 11.12.2019 (COM (2019) 640 final) and the related proposals to amend the European Directives and Regulations on the environment, energy and sustainability.

b) Cities play a key role in achieving climate neutrality by 2050, the goal of the European Green Deal. They occupy only 4% of the EU land area, but host 75% of EU citizens. Furthermore, cities consume over 65% of the world's energy and account for over 70% of global CO_2 emissions.

c) The European Union in 2008 established the voluntary initiative "Covenant of Mayors" to promote the ecological transformation of cities from below through the

reduction of consumption and climate-altering emissions, adaptation to climate change and the fight against energy poverty for safe, clean and available energy for all.

d) The Covenant of Mayors is based on three founding concepts:

- extended participation and co-definition of strategies, through citizens' empowerment
- continuous improvement and periodic adjustments of actions based on the results of monitoring and evaluation activities
- combined cooperation (among institutional levels).

e) The European Union promotes and supports scientific research and innovation by funding innovative and scalable research projects through the Horizon programs.

f) The European Union has established the "Missions" for the Horizon Europe 2021-27 program, a new way to bring concrete solutions to some of the most significant and current challenges. The missions have ambitious objectives and must produce tangible results by 2030 through the combination of research and innovation with new forms of governance and collaboration that provide for the direct involvement of citizens. In particular, the mission called "climate neutral and smart cities" provides support to 100 European municipalities to achieve the neutrality goal by 2030.

1.2 The H2020 GRETA project

a) In 2021, the Green Energy Transition Action ("GRETA") project obtained funding under the Horizon 2020 program; the project was born from the collaboration of the TECNALIA with other European research partners (www.projectgreta.eu) and aims to develop "energy citizenship", activating the direct participation of citizens, favouring the best conditions (technological and social) to achieve climate neutrality and community decarbonisation. The agreements for energy citizenship, such as this document, developed and promoted as part of the project and applied to local case studies, represent the operational tools to support the various energy sustainability actions from an organizational, technical, legal, financial point of view, etc.

b) The local case studies identified by GRETA will be used to identify problems, solutions and reach a shared and scalable / replicable approach for the energy transition (Community Transition Pathway), formalised through Energy Citizenship Contracts such as this document, whose results will be used to inform and encourage local and international policy makers to support energy citizenship.

1.3 The UR BEROA case study and its framework

The case study examines UR BEROA, an energy cooperative formed by the residents of Bera Bera neighbourhood in Donostia-San Sebastian, Spain. UR BEROA supplies domestic hot water (DHW) and community heating to its 550 members since its establishment in 1985. The cooperative was founded when the residents of the Bera Bera neighbourhood acquired a bankrupt private company providing them with domestic hot water and community heating. Over the years, the cooperative has successfully introduced more efficient and cleaner energy sources and ways to measure the energy consumption of each household. Now, the cooperative is slowly making its way toward decarbonisation, as its goal is to drive a shift toward a higher level of decarbonisation. The current facilities consist of three natural gas boilers, a cogeneration engine, a biomass boiler, and solar panels that generate hot water, which is distributed to seven substations. The entire system is remotely managed so that each zone has its temperature settings regulated to its needs. UR BEROA is taking another step towards decarbonisation with the installation of 222 PV panels that will produce 99.90 kWp and will provide electricity to around 100 households (103,200 kwh/year).

The decarbonisation endeavours of UR BEROA are driven ahead by various policies in different governance levels. The national, regional, provincial, and local policies promote energy communities, decarbonisation, and active citizens participation in the energy system with different mechanisms and instruments, which UR BEROA can potentially benefit in its evolution towards a greener energy cooperative. At national level, Spain is devoted to reach climate neutrality by 2050, transposing the international and EU-level agreements to national agenda. In the national context, the energy communities are supported by three different lines of aids: CE-Aprende, CE-Planifica and CE-Implementa, endowed with a total of 100 million euros within the framework of national Recovery, Transformation and Resilience Plan for energy communities. At regional level, a public-private initiative called EKIOLA started in 2021. EKIOLA is supporting the creation of energy cooperatives in the Basque Country through agreements with municipalities and citizens. At provincial level, the favourable policy framework is underpinned by several financial support mechanisms, such as subsidies for the creation of new energy communities, as well as support for investment by energy communities in photovoltaic installations. The San Sebastian City Council has been one of local administrations that has supported the creation of an energy community at municipal level. The table below presents a list of key strategies, policies and laws framing the policy context for the UR BEROA case.

Table C1: Case study related policies – UR BEROA

Policies related to UR BEROA case study
National level

Long-Term Strategy for a Modern, Competitive and Climate-Neutral Spanish Economy in 2050
Integrated National Energy and Climate Plan 2021–2030
Royal Decree 244/2019, of April 5, which regulates the administrative, technical and economic conditions of the self-consumption of electrical energy
Royal Decree-Law 23/2020, of June 23, which approves measures in the field of energy and in other areas for economic reactivation
Recovery, Transformation and Resilience Plan
Regional level
Climate Change Strategy 2050 of the Basque Country - Klima 2050
Energy Strategy of Basque Country 2030
Law 4/2019, of February 21, on Energy Sustainability of the Basque Autonomous Community
Basque Strategy for Hydrogen H2
EKIOLA public-private initiative 2021-2024
Provincial level
Gipuzkoa Klima 2050: Gipuzkoan strategy to fight against climate change 2050
Energy sustainability strategy of Gipuzkoa 2050
Local level
Climate Action Plan 2050 of Donostia / San Sebastian

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2 Objectives

Considering this, UR BEROA deems it appropriate to draw up, promote, share and disseminate to interested actors and citizens this programmatic document (hereinafter " Declaration") with the following contents.

> This Declaration aims to extend and the concept of energy citizenship beyond its current community of members and contribute to a clean energy transition by decarbonising UR BEROA's energy production system and adopting renewable energy. UR BEROA is in a privileged and pioneering position to achieve these objectives, since it has a very active collaboration network with different local agents, and the possibility of taking advantage of previous activities and projects that lay the foundations both for extending energy community, and to achieve the decarbonisation of their activities.

UR BEROA is committed to developing a plan to promote active energy citizenship, through coordination between citizens, public institutions, and companies, in order to achieve a fair and adequate energy transition leveraging on energy citizenship.

The concept of energy citizenship must be considered a priority for the achievement of the ecological transition. In fact, energy citizenship is the active participation of citizens in a new sustainable model of energy management that includes efficient use, with aware consumption behaviours and sustainable production - primarily from renewable sources - which are fundamental for the realization of local energy communities and climate-neutral districts. Social participation in the energy system, can and must take different forms, adapting to the potential of the subjects involved and the timing of implementation, and progressive steps of engagement (unaware, aware, interested, active, advocate).

In addition to the above objectives, the project expresses further aims, including:

- social and energy justice, to protect the most vulnerable and guarantee equal access to energy resources.
- the elevation of the principle of democracy through the involvement of citizens.
- the optimisation of synergies between the various existing and future through close local coordination

- the validation of standard energy citizenship contracts for further extensions and replications.

UR BEROA is committed to addressing the impacts arising from the UR BEROA Community Transition Pathway developed within the framework of the GRETA project, such as:

- Reduction of the global energy demand trhough the increase of the number of cooperative users and through the extension of UR BEROA´s services with the district heating system.
- Diversification of the energy cooperative beyond the supply of heating and hot water, such as the photovoltaic project.
- Decarbonisation of UR BEROA installations: reduction of dependence on fossil fuels and greater adoption of clean energy sources (hydrogen, aerothermal, and geothermal).
- Increased engagement and contribution of ideas by UR BEROA members.
- Raise awareness of the UR BEROA's case through increased knowledge of UR BEROA's experience as an energy cooperative.
- Maintain a competitive energy offer for cooperative members.

3 Promoters and local stakeholders

3.1 The Coordinator

The coordinator of the Declaration is UR BEROA. Therefore, pursuant to this Declaration, it acts as a facilitator of the above actions mentioned in this document and those interventions necessary to align and coordinate the results and actions promoted by other plans and programs referred to in the background.

As coordinator, UR BEROA will supervise, plan and facilitate the execution of the activities with reference to the case study, supporting and enabling the interested parties to become an active part of the Declaration.

The coordinator will be assisted by one or more Parties, depending on the case, or will be available to them for the development of individual objectives or actions.

3.2 Promoting Parties

- UTE URGI

3.3 Stakeholders

UR BEROA will collaborate with other interested parties to plan, define and promote the activities contemplated in this Declaration.

UR BEROA will favour collaboration with any other subject, both public and private, individual or associations or groups, here defined as interested parties. UR BEROA undertakes to publicize and disseminate this Declaration to all interested parties in order to collect their needs or contributions to integrate and implement the objectives and actions indicated in this Declaration.

Starting from a first analysis, a non-exhaustive list of possible interested parties is provided, such as:

- Technological and/or innovation centres
- San Sebastian City Hall
- Neighbourhood associations
- Financial entities
- The Basque Energy Agency

- Housing promoters
- Property Managers
- Local businesses in the neighbourhood

4 Commitment and future initiative

In order to promote the objectives of the GRETA project and in accordance with this Declaration, UR BEROA proposes to develop and select, on the basis of specific local needs, one or more of the following programmatic and operational activities, aimed at extending the concept of energy citizenship beyond its current community of members and contribute to a clean energy transition by decarbonizing the UR BEROA energy production system, and to spread of the concept of energy justice and innovation always aimed at the well-being of the citizen.

Table C2: List of principal actions of UR BEROA

ACTIONS	AIMS	MAIN OPERATIONAL ACTIVITIES	ANNEXES (*ENABLERS OF EACH ACTIVITY*)
Increase the number of members of UR BEROA	Extend active energy citizenship to close by neighbourhoods and to the general public	Make a new extension request to Pagola neighbourhood	Plan for the expansion of the network to new partners (confidential)
		Identify new areas to expand the network	
		Identify new housing developments	
		Presentation of new projects to public administrations	
		Contact the residents of the newly identified areas. Inform them and assess their interest in joining UR BEROA	
Publicize UR BEROA and the benefits of being part of an energy community		Carry out an open day of UR BEROA	Agenda for potential UR BEROA open days

		Collaborate with public administrations and other agents in the dissemination of energy communities	
Decarbonize the UR BEROA energy production system	Contribute to reducing greenhouse gas emissions at the local level. Contribute to the adoption of renewable energy sources at the local level.	Analyse possible collaborations with different technology and/or innovation centres	
		Prepare a diagnosis of the current situation of the UR BEROA system	
		Analyse possible technological scenarios and establish lines of action	
		Implement the UR BEROA decarbonisation plan	

The actions will preferably be carried out in collaboration with the different stakeholders and through the use of programmatic agreements, shared actions and planning acts in compliance with the principles of law and applicable rules and regulations.

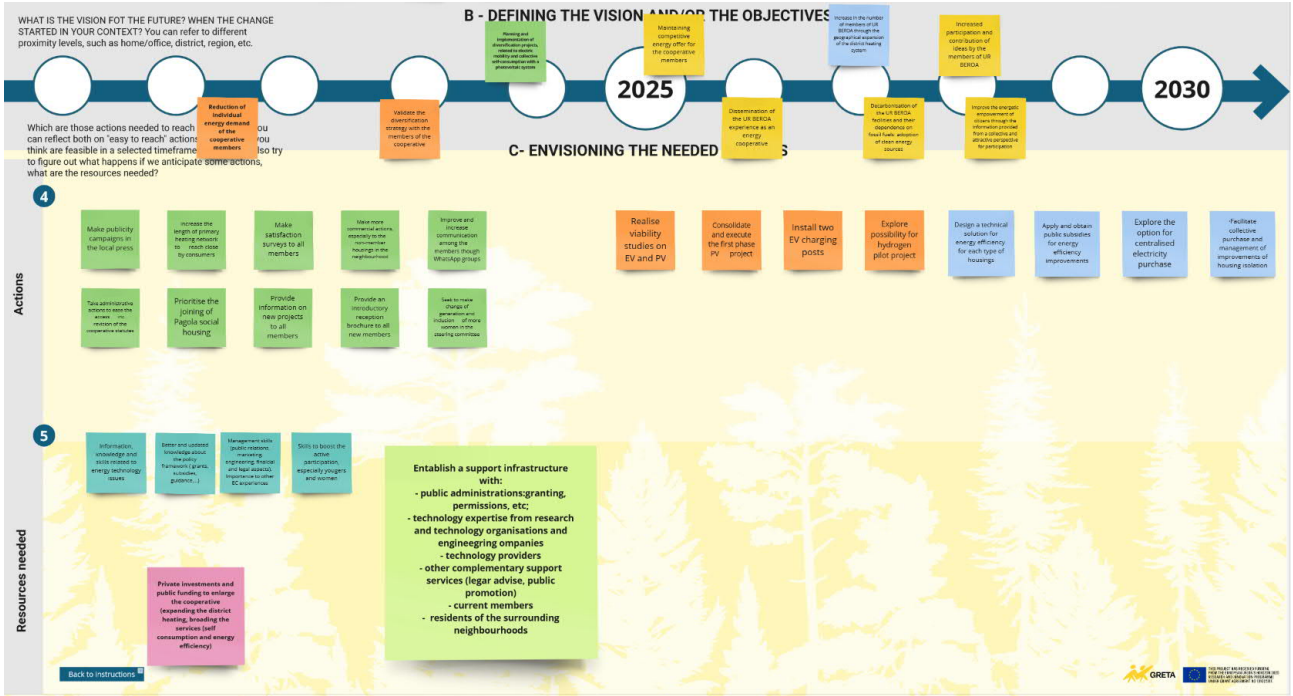
5 Duration

The GRETA project is scheduled for completion in October 2023. During this period, UR BEROA hopes to begin developing the actions and activities planned in accordance with the needs that arise in the case study and following the provisions contained in this Declaration. Therefore, all possible activities will be proposed, initiated, planned, or executed in the time strictly necessary, directing the actions to the needs of the community and using all available means.

UR BEROA is aware that the objectives indicated in the GRETA project, and to be developed through the actions indicated in this Declaration, are medium and long term, and undertakes to develop all the activities, programmatic or operational, referred to above at their respective time and with the collaboration of different interested parties.

The illustration shown below presents the steps that will be carried out.

Figure C1: URBEROA milestones of the pathway



6 Updates and costs

UR BEROA considers this Declaration an important dissemination opportunity to express the principles and objectives of UR BEROA and the GRETA project.

The activities listed above are intended as examples and are subject to possible additions, modifications, or practical adjustments as necessary. For this reason, UR BEROA recognises that the Declaration may be supplemented by written agreement, with the possibility of adding new collaborating parties, according to new needs and/or requests.

As this document is a declaration of intent, no expense or economic commitment is foreseen on the part of the UR BEROA.

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The annexes and background are an integral part of this Declaration.

All of the above read, approved and signed.

Annex C1 – URBEROA ECC Open Day Agenda

UR BEROA OPEN DAY

From 11:00 to 13:30(CET).

Agenda

Venue: UR BEROA premises or Neighbourdhood facilities (e.i.: sports center, hotel, etc)

UR BEROA, San Sebastian

TIME FRAME (CET)	TOPIC
11:00	Opening and Presentation of UR BEROA
11:15-12:00	Photo and Poster Exhibition
11:15-12:00	Activities for Families
Film screening: The Small Things (12 minutes) (European Investment Bank) Experiments and activities for children explaining the relationship between energy consumption and climate change	
12:00	Walking/Transfer and Guided Visit to the Cogeneration Plant
12:45	Come back to the URBEROA office facilities.
13:00	Community Advantages vs. Individually Committed Neighbourhoods: What is UR BEROA's project, and what is the future for you and the neighbourhood?
13:20	Refreshments and end of the day

Annex D. Energy Citizenship Contract in Coopernico, Lisbon

ENERGY CITIZENSHIP MANIFESTO
Promoted by H2020 GReen Energy Transition Action GRETA

1 Premises

a) Climate change, which is increasingly evident, is a serious global threat that needs to be remedied, both in terms of mitigation and adaptation, by acting collectively and promptly to avoid devastating effects in the short to medium term.

b) Environmental degradation due to the use of fossil sources is a problem felt both globally and locally, with numerous significant direct and indirect impacts on the health, safety and well-being of citizens.

c) The geopolitical balance threatened by the distribution of fossil resources, that are also limited, and the economic impact deriving from energy consumption are critical issues for the development of a safe and inclusive society even with respect to the most vulnerable groups.

d) Among the 17 global goals of the United Nations (Sustainable Development Goals) defined in the 2030 Agenda, the following points are reported in relation to energy issues, in addition to the numerous indirect links (poverty, health and well-being, water, economic growth, responsible consumption and production, businesses and infrastructures, life on land and in water, peace and justice ...):

- Goal 7: clean and reliable energy for all
- Goal 11: sustainable cities and communities (inclusive, safe, lasting ...)
- Goal 13: fight against climate change

1.1 European Union

a) The EU and its Member States are promoting an ambitious program for the decarbonisation of the economy and the development of renewable energies, with objectives to reduce climate-altering gases by 2050, through the European Green Deal (Communication from the Commission of 11.12.2019 (COM (2019) 640 final) and the related proposals to amend the European Directives and Regulations on the environment, energy and sustainability.

b) Cities play a key role in achieving climate neutrality by 2050, the goal of the European Green Deal. They occupy only 4% of the EU land area, but host 75% of EU citizens. Furthermore, cities consume over 65% of the world's energy and account for over 70% of global CO_2 emissions.

c) The European Union in 2008 established the voluntary initiative "Covenant of Mayors" to promote the ecological transformation of cities from below through the

reduction of consumption and climate-altering emissions, adaptation to climate change and the fight against energy poverty for safe, clean and available energy for all.

d) The Covenant of Mayors is based on three founding concepts:

- extended participation and co-definition of strategies, through citizens' empowerment
- continuous improvement and periodic adjustments of actions based on the results of monitoring and evaluation activities
- combined cooperation (among institutional levels).

e) The European Union promotes and supports scientific research and innovation by funding innovative and scalable research projects through the Horizon programs.

f) The European Union has established the "Missions" for the Horizon Europe 2021-27 program, a new way to bring concrete solutions to some of the most significant and current challenges. The missions have ambitious objectives and must produce tangible results by 2030 through the combination of research and innovation with new forms of governance and collaboration that provide for the direct involvement of citizens. In particular, the mission called "climate neutral and smart cities" provides support to 100 European municipalities to achieve the neutrality goal by 2030.

1.2 The H2020 GRETA project

a) In 2021, the Green Energy Transition Action ("GRETA") project obtained funding under the Horizon 2020 program; the project was born from the collaboration of the Cleanwatts Digital S.A. with other European research partners (www.projectgreta.eu) and aims to develop "energy citizenship", activating the direct participation of citizens, favouring the best conditions (technological and social) to achieve climate neutrality and community decarbonisation. The agreements for energy citizenship, such as this document, developed and promoted as part of the project and applied to local case studies, represent the operational tools to support the various energy sustainability actions from an organizational, technical, legal, financial point of view, etc. .

b) The local case studies identified by GRETA will be used to identify problems, solutions and reach a shared and scalable / replicable approach for the energy transition (Community Transition Pathway), formalized through Energy Citizenship Contracts such as this document, whose results will be used to inform and encourage local and international policy makers to support energy citizenship.

1.3 The Coopérnico case study and its framework

GRETA selected as a case study Coopérnico, as it represents the first (and until today only) energy cooperative in Portugal dedicated to sustainable development and selling of renewable electricity – counting with more than 2,300 members, including citizens, small-medium enterprises, and municipalities. Specifically, Coopérnico is a cooperative/social enterprise promoting citizens involvement in the transition to a new environmental, social, and economic model - at Coopérnico, customers are also the owners of your energy company. It promotes the collective investment in renewable energy projects and the sharing of benefits between its members, investors, the broader society, and the environment. In summary, Coopérnico's mission is to involve its members to reshape the energy sector into a more renewable, sustainable, socially just, and collaborative one. For that, Coopérnico promotes a: (i) Manifesto (see Annex A) that states (in order of relevance) the cooperative's main strategies and measures to achieve its mission, and a (ii) Director Plan (see Annex B) that states the 4-year strategic plan of activities to be carried by the cooperative.

In terms of national policy/programs affecting the energy transition of Coopérnico, the main enabling legal frameworks in Portugal at present that allow the cooperative to operate are:

- Decree-Law No.15/2022, January 14, 2022 - Transposition of the Electricity Markets Directive on CECs (Citizen Energy Communities).
- Decree-Law 162/2019, 25 Oct 2019 + Regulation 266/2020, 20 Mar 2020 that underwent a recent change under Regulation 373/2021, 5 May 2021 – Transposition of the concepts of collective self-consumption schemes and Renewable Energy Communities.

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Considering this, Cleanwatts Digital S.A. in agreement with Coopérnico (hereinafter, where jointly understood, the "Parties") deem it appropriate to draw up, promote, share and disseminate among the cooperative members this programmatic document (hereinafter "Manifesto") with the following contents and objectives shared by the promoters.

2 Objectives

The Parties commit to favour and concretely pursue an active energy citizenship plan within the GRETA project, through coordination between citizens, institutions, and businesses, for a just and right energy transition by leveraging on energy citizenship.

The concept of energy citizenship must be considered a priority for the achievement of the ecological transition. In fact, energy citizenship is the active participation of citizens in a new sustainable model of energy management that includes efficient use, with aware consumption behaviours and sustainable production - primarily from renewable sources - which are fundamental for the realization of local energy communities and climate-neutral districts. Social participation in the energy system, can and must take different forms, adapting to the potential of the subjects involved and the timing of implementation, and progressive steps of engagement (unaware, aware, interested, active, advocate).

In addition to the above objectives, the project expressess further aims, including:

- social and energy justice, to protect the most vulnerable and guarantee equal access to energy resources;
- the elevation of the principle of democracy through the involvement of citizens;
- the optimization of synergies between the various existing and future through close local coordination
- the validation of standard energy citizenship contracts for further extensions and replications

Coopérnico presents a short-term strategic plan for achieving the cooperative objectives until 2023 in its original Manifesto and Director Plan (see annexes). However, during the development of GRETA's Community Transition Pathway, Coopérnico's stated mid- and long-term objectives for the cooperative (i.e., 2026-2030 and 2050, respectively), which focuses on having 5MW of installed renewable capacity and 2,500 clients in the energy retail market by 2026, and 10MW of installed capacity by 2030.

For 2030, Coopérnico expects half of the councils in Portugal to have energy cooperatives for renewable self-production, along with them becoming energy retailers – all cooperatives working together and operating in energy markets to be able to be in a level playing field with private companies. Hence, the overarching idea is that renewable cooperatives can organise themselves into a federation of cooperatives. When there are many cooperatives at the territorial level, a second-degree cooperative is formed where cooperatives become first-degree cooperatives, instead of their members. Illustratively, there are already the examples of CONFECOOP (a more

general federation of cooperatives), CONFRAGI (federation of agricultural cooperatives), European federation of renewable energies, to name a few.

By 2050 Coopérnico expects that the distribution network is once again at the hands of cooperatives or municipal companies (i.e., the non-profit sector of the economy).

The Parties are aware and commit to act towards addressing the impacts and outcomes emerged from the GRETA Community Transition Pathways in Coopérnico as stated above.

3 Promoters and local stakeholders

3.1 The Coordinator

The main coordinator of the Manifesto is Coopérnico. Therefore, pursuant to this Manifesto, it acts as a facilitator and coordinator of the above actions and of those interventions necessary to coordinate and harmonize the results and actions promoted by other plans and programs, referred to in the premises.

As coordinator, Coopérnico will supervise, plan, and facilitate the execution of the individual activities with reference to the case study, supporting and enabling the interested parties to become an active part.

The coordinator will be assisted by one or more Parties, depending on the case, or will be available to them for the development of individual objectives or actions.

3.2 Promoting Parties

Name, aims and roles of main Parties:

- Coopérnico, a Renewable Energy Cooperative/Social Enterprise.
  Manifesto coordinator, promoter, and main beneficiary.

- Cleanwatts Digital S.A., a Climate Tech Company.
  Manifesto design facilitator.

3.3 Stakeholders

The Parties cooperate with each other to plan, define and promote the GRETA project pursuant to this Manifesto.

The Parties favour and welcome the collaboration of any other subject, whether private and public, single or gathered in associations or groups, here defined as stakeholders.

The Parties commit to publicize and disseminate this Manifesto to all stakeholders in order to collect their requests, needs and contributions to integrate and implement the objectives and actions indicated in this Manifesto.

In the first analysis, a non-exhaustive list of possible stakeholders is provided, such as:

- The cooperative members
- Associated local partners (e.g., local service providers, local industries and companies, etc.)
- The local public administration (i.e., City Halls, Parish Councils, etc.)
- Entities holding the concession for the transmission and distribution of energy (i.e., TSO, DSO)
- Legislators, the regulator, the government
- Professional associations, energy agencies, and research institutions
- Neighborhood committees and citizen-led social movements

4 Commitment and future initiative

In order to promote the objectives of the GRETA project pursuant to this Manifesto, the Parties involved propose to develop and select, on the basis of specific local needs, one or more of the following programmatic and operational activities, aimed at supporting the cooperative towards a renewable, sustainable, citizen-led energy transition, as well as the promotion of energy justice and innovation geared towards the well-being of the citizen:

Table D1: List of the main Coopérnico actions

ACTIONS	AIMS	MAIN OPERATIONAL ACTIVITIES	ANNEXES (*ENABLERS OF EACH ACTIVITY*)
Quintuple the renewable installed capacity by 2030.	Reach a fully renewable, sustainable transition.	Diversification of renewable generation technologies to mitigate the inherent risks to this activity, reinforce the installed capacity, and better match supply and demand.	Coopérnico's Director Plan of Activities (2020-2023) and Coopérnico's Manifesto
		Increase existing partnerships to improve decision-making and operation of such activities.	
		Centralized renewable generation power plants under the regimes of the liberalized market and self-consumption with significant excess generation	
		Energy purchase agreements through bilateral contracts under the Long-Term Power Purchase Agreements (PPA) to enhance the cooperative control through the incorporation of an asset of high liquidity, lowering the	

		cooperative risk as a supplier.
		More innovative, viable business models (e.g., one that allows cooperative members to invest in renewable projects and have rebates in their consumption that are proportional to the size of their investment).
		Expand the time window of the Director Plan for the management of the cooperative (at present it is a four-year plan without any longer-term vision.
New services for the cooperative members.	Promote a citizen-led, socially fair energy transition	Promote individual and collective self-consumption schemes
		Reinforce information sharing on energy efficiency and promote it through smart energy monitoring equipment
		Develop and promote Energy Communities
Member engagement and involvement.		Involve members in new collective investments schemes
		Improve regional representation
Innovation and technology.	Increase in sales and production activity (namely investment by members), and consequent increase in Coopérnico's financial operations	Adoption of an improvement payment system that allows optimizing the payments to be made by the cooperative to the cooperators who invest in production projects to automate the transaction system (debit and credit), thus optimizing the time allocation of cooperative employees.
		Further participation in R&D national and European projects.

		Establishment/expansion of internal working groups on innovation and development.
		Launch of Coopérnico's Programme of Intrapersonal Entrepreneurship aiming to welcome the ideas presented by cooperative members, but also challenge members to implement them.
Ongoing information, communication, training and updating activities.	• support Coopérnico's mission to develop a cooperative movement in the energy area based on internal democracy; • contribute to the growth of the cooperative and the involvement of new local agents; • Decisively support the implementation of Coopérnico as an electricity supplier; • make known and inform about new models of citizen participation in the energy sector;	Capacity building and opinion shaping through communications on relevant topics, as well as meetings with political and institutional representatives, in order to amplify Coopérnico's voice and message
		Media exposure at regional and national levels (e.g., TV, radio, newspapers, fairs, exhibitions, etc.).
		Strategic partnerships with similar entities (namely in the third sector and in civil society, particularly in environmental and social organisations) to spread Coopérnico's message among like-minded peers.
		Digital communication via web (e.g., social media presence, website improvement, etc.)

• Contribute to the definition of a positive political framework for the cooperative sector in the area of energy.	Internal monitoring and communication (e.g., through an online forum for internal discussions).

These actions will be developed using all the legal tools available in compliance with the provisions of this Manifesto, through programmatic agreements, shared actions, planning acts (with related environmental and social assessment procedures, where required), in compliance with the principles of law and the applicable rules and regulations.

5 Duration

The GRETA project has a foreseen deadline set at October 2023, and Coopérnico's Director Plan and Manifesto for the management of the cooperative has a four-year span (the latest being 2020-2023). Nonetheless, Coopérnico's Community Transition Pathway established mid- and long-term plans (2026 and 2030, respectively) for the cooperative that go beyond the short-term span of 2023.

During this period, the Parties hope to fully develop all the actions and activities envisaged by the same according to the needs that emerged in the case study, following the provisions contained in this Manifesto.

All possible activities will therefore be proposed, started, planned or carried out in the strictly necessary time frame, orienting the actions to the needs of the community and using all the legal instruments in their possession.

The Parties are aware that the objectives indicated in the GRETA project, and to be developed through the actions indicated in this Manifesto, are of medium and long term, therefore, they will commit to develop all the activities, programmatic or operational, referred to above, in the respect for them.

6 Updates and costs

The Parties consider the Manifesto an important dissemination opportunity to express the principles and objectives of the GRETA project.

The activities indicated above are intended as examples and subject to possible additions, modifications, or necessary practical adjustments. It is important to refrain that the creation of this Manifesto was informed by earlier interactions between the involved Parties in the context of the GRETA project, as well as the analysis of original documents created by Coopérnico that predates the GRETA project (see annexes).

For these reasons, the Parties acknowledge that the Manifesto may be supplemented by written agreement of the same, with the possibility of adding new signatory Parties according to requests and needs.

As this is a policy and policy document, it is understood that it does not provide for any expense or economic commitment on the part of any of the Parties.

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The attachments and premises are an integral part of this Manifesto.

All of the above read, approved and signed.

Annexes

I. *Annex D1 - Coopérnico's original manifesto (which predates the GRETA project)*
II. *Annex D2 - Coopérnico's Director Plan*

coopérnico

Energia verde, Sustentabilidade Cidadania

Manifesto Coopérnico

Para Uma Transição Energética Democrática

Coopérnico – Cooperativa de Energias Renováveis

15 de novembro de 2021

Sumário

Neste documento apresentamos a visão da cooperativa de energia Coopérnico para uma transição energética democrática, ecológica e socialmente mais sustentável, centrada na participação cívica e no envolvimento de todos e todas na construção do nosso futuro. Expomos também as principais estratégias e medidas que identificámos como fundamentais para um sistema energético 100% renovável, ambientalmente sustentável e socialmente mais justo e inclusivo.

Palavras-chave: democracia energética, sustentabilidade ambiental, inclusão, cidadãos, modelo descentralizado, estratégias e medidas.

Índice

Objetivo

As alterações climáticas e o colapso dos sistemas ecológicos ameaçam a nossa prosperidade coletiva e até a nossa sobrevivência. Parte da resposta jaz numa transição rápida para um sistema energético 100% renovável, sem descurar a nossa responsabilidade perante a natureza e os seres vivos, bem como em assegurar uma sociedade mais inclusiva e mais igualitária. Esta transição exige uma redução dramática do consumo de recursos naturais e da queima de combustíveis fósseis. Existem por toda a Europa comunidades e cooperativas envolvidas nesta transição, de um modo que promove a biodiversidade e proteção ambiental e assegura uma sociedade mais inclusiva e mais igualitária, guiada por princípios de justiça social, desde a necessidade de reduzir a pobreza energética à promoção da igualdade de género. Neste manifesto lançamos o desafio a que Portugal e a sua população sigam este paradigma!

A Coopérnico é uma cooperativa de energias renováveis fundada em Portugal, em 2013. Sendo a primeira, e até agora, a única cooperativa de energia renovável portuguesa, a Coopérnico segue uma longa tradição de cooperativas similares na Europa. Estas cooperativas têm a missão de acelerar a transição para um setor energético mais verde, descentralizado e democrático, envolvendo os cidadãos enquanto consumidores ativos de energia. Ser um membro 'ativo' da Coopérnico pode implicar investir em novas instalações de energia fotovoltaica, bem como a implementação de medidas de eficiência energética, e/ou promoção das mesmas, a participação em sistemas de autoconsumo coletivo ou nas novas comunidades de energia renovável, a contratação de eletricidade à cooperativa ou até a participação em consultas públicas relativas a regulamentações e projetos ligados à transição energética.

Mais do que uma pegada ecológica sustentável (curiosamente, uma ideia proposta por uma petrolífera colocando o ónus da responsabilidade da descarbonização nas pessoas individuais), os membros da Coopérnico são cidadãos que deixam atrás de si uma "sombra ecológica"[1], pelas escolhas que fazem, pelos projetos que escolhem apoiar e pelo

[1] Há quem proponha o conceito de "sombra ecológica" como um projeto de cidadania ecológica, que não se define apenas por métricas para a pegada ecológica, mas que implica uma cidadania ativa, escolhas políticas e económicas, incluindo para quem trabalhar, em quem votar, ou por exemplo, participar numa cooperativa de energia.

seu empenho coletivo em avançar com a transição. Existem hoje na Europa cerca de 160.000 cooperativas de energia renovável que contam já com 123 milhões de membros. Estas são apenas aquelas que, tal como a Coopérnico, fazem parte da Federação de Cooperativas de Energia Renovável da Europa (RESCOOP.EU), podendo haver muitas mais.

Existem ainda cerca de 7700 comunidades de energia na Europa[2], número que, embora impressionante, é apenas o prenúncio de um novo paradigma para o sistema energético do futuro. Este sistema será mais sustentável, renovável, descentralizado e centrado nas pessoas. Neste sistema, a energia pode ganhar gradualmente os contornos de um bem social comum.

A Coopérnico está por isso integrada numa comunidade transnacional dinâmica que tem vindo a avançar com a implementação de sistemas descentralizados de produção renovável, de consumo de energia, de distribuição e de autoconsumo, troca e partilha de energia renovável e a mostrar que é possível uma transição energética com justiça ambiental e social.

O modelo centralizado e descentralizado em Portugal

É no cruzar dos objetivos de descarbonização e neutralidade carbónica e na constatação de que este processo, a permitir uma verdadeira transformação social, deverá conduzir-nos a uma sociedade mais inclusiva e ambientalmente mais sustentável, que surgem diferenças fundamentais nos modelos de transição energética que se ambiciona ver florescer. Podemos identificar dois modelos para o desenvolvimento de novos sistemas de produção e consumo de energia renovável: o modelo centralizado e o modelo descentralizado.

O modelo centralizado, liderado por grandes investimentos públicos e privados, com base em grandes centrais solares, eólicas, hídricas ou até de queima de biomassa, vem fundamentalmente substituir os combustíveis fósseis por energias renováveis, mantendo

[2] Schwanitz, V. J., Wierling, A., Zeiss, J. P., von Beck, C., Koren, I. K., Marcroft, T., … Dufner, S. (2021, August 22). The contribution of collective prosumers to the energy transition in Europe - Preliminary estimates at European and country-level from the COMETS inventory. https://doi.org/10.31235/osf.io/2ymuh

as mesmas estruturas socioeconómicas de gestão tecnocrática e vertical, que prevalecem na economia fóssil desde a revolução industrial. Este modelo mantém as estruturas de poder nas quais assentam modelos de produção e consumo atuais, sem a participação democrática dos cidadãos e preserva (e tende a incrementar) as desigualdades sociais existentes. O modelo de produção centralizado implica também uma exploração significativa de recursos ambientais, pois depende de grandes investimentos em centrais de uma ordem de grandeza de potência instalada entre os 100MW e 1GW[3] que obrigam à ocupação de grandes áreas agrícolas e/ou de paisagens naturais. Considerando a necessidade de metais e matérias-primas para a produção tecnológica de equipamentos (e.g., painéis solares, turbinas eólicas), é ainda importante não esquecer que existe um período inevitável de retorno da energia necessária para produzir estes equipamentos (o "Energy return on energy invested[4]), sendo por isso imprescindível implementar as energias renováveis com o mínimo de impactos ambientais.

No entanto, as novas grandes centrais solares a ser implementadas em Portugal implicam instalações de centenas de painéis solares e novas linhas de alta tensão, tais como o caso da Quinta da Torre Bela na Azambuja (com uma produção média prevista de 500.000 MWh), ou a recentemente inaugurada central de Alcoutim (com 660 mil painéis solares). Ainda que findas as décadas de produção solar ou eólica destas instalações essas terras possam ser novamente reabilitadas para outros fins, o modelo centralizado implica também a construção de novas extensões de redes de alta ou muito alta tensão, na maioria das vezes sem envolvimento da população na definição do percurso destas novas linhas, através das quais a energia produzida é distribuída até chegar ao consumidor final (por norma em grandes centros urbanos), sempre com perdas inevitáveis na transmissão.

Assim, o modelo centralizado atualmente aplicado é pouco democrático, pouco preocupado com um novo sistema sócio-energético mais inclusivo e igualitário, ambientalmente menos sustentável e, no que respeita à distribuição, menos eficiente, comparativamente aos pequenos e médios sistemas de, por exemplo, energia fotovoltaica

[3] A DGEG tem o valor de referência mínimo de 1MW para estas centrais, mas estas, na sua maioria, são de uma dimensão muito superior.

[4] Diversos artigos científicos sobre este conceito podem ser consultados aqui: https://www.sciencedirect.com/topics/engineering/energy-return-on-investment

descentralizada). Estes são dimensionados e geridos de forma inovadora (tendo em conta os consumos), permitindo que toda a energia produzida seja consumida ou partilhada localmente, com o mínimo de perdas. Por outro lado, não se podem ignorar os efeitos negativos sobre a sequestração de CO_2 efetuada por plantas e solo em sistemas naturais, quando estes passam a ser ocupados por novas instalações de grande porte.

É neste contexto que a Coopérnico, à semelhança das suas cooperativas pares europeias, acredita que a transição energética deve contemplar com seriedade a combinação da satisfação das necessidades energéticas nacionais e locais com a preservação do uso do solo e dos ecossistemas e a necessidade de envolvimento dos cidadãos.

A descarbonização implica também inevitavelmente uma redução drástica do consumo. Estamos perante um ponto crucial de viragem na humanidade e temos a possibilidade de fazer diferente e de fazer melhor. Ainda que algumas centrais de energia renovável de maior porte possam ser necessárias para garantir a descarbonização total do nosso sistema socio-energético, a priorização de grandes centrais solares fotovoltaicas, como se tem verificado em Portugal, irá criar novos problemas ecológicos e sociais, sem conseguir responder efetivamente aos desafios da descarbonização e de uma transição justa.

Caminhos para uma transição energética democrática

Para caminhar ao encontro de uma transição energética democrática, a Coopérnico considera essencial contemplar as seguintes estratégias e medidas, por ordem de prioridade:

1) Maximizar a Eficiência Energética

Dar a importância devida e prioridade máxima à implementação de medidas de eficiência energética no consumo, tanto nos consumos residenciais, como nos consumos industriais, a fim de captar o enorme potencial existente para reduzir e tornar mais eficiente o consumo energético. Com esse intuito, devem ser estabelecidos:

a) Ecossistemas financeiros que permitam a antecipação dos ganhos económicos futuros de medidas de eficiência energética. Isto é, ganhos de eficiência devido

a investimentos em, por exemplo, obras de remodelação de edifícios, possam ser reinvestidos em sistemas de autoconsumo coletivo.

b) Modelos transparentes para a atribuição de fundos a famílias e empresas, no âmbito dos programas do Novo Pacto Verde europeu.
c) Serviços nacionais e/ ou municipais informativos, para promover a literacia energética e de apoio à eficiência energética.

2) Maximizar a adoção do Autoconsumo Individual

Devem ser disponibilizados incentivos para uma implementação acelerada do autoconsumo elétrico em Portugal, nomeadamente no que respeita ao IVA, ao IRS de pessoas individuais e IRC de pessoas coletivas e, até mesmo o IMI (por exemplo, diminuindo o IMI em casas mais eficientes).

3) Maximizar a participação de cidadãos em sistemas de Autoconsumo Coletivo e Comunidades de Energia

Deve acelerar-se o processo de implementação dos modelos de autoconsumo coletivo e comunidades de energia, incluindo a transposição de novas diretivas europeias que definem diferentes tipologias de comunidades de energia, nomeadamente:

a) Proceder à publicação e implementação de um quadro regulatório para as *Comunidades de Cidadãos para a Energia* e à transposição da Diretiva para o Mercado Interno de Eletricidade.
b) Remover os obstáculos existentes no contexto legal e regulamentar nacional para a implementação do Autoconsumo Coletivo e das Comunidades de Energia Renovável (CER), a fim de acelerar e massificar a implementação destes sistemas.
c) Promover a implementação de processos administrativos simplificados de registo de CER.
d) Instaurar novos gabinetes de apoio, quer a nível nacional, quer a nível autárquico, para informar os cidadãos sobre sistemas de autoconsumo individual, coletivo e sobre as CER, comunicando e explicando de forma clara

aos cidadãos as diferentes etapas necessárias para a implementação destes sistemas, bem como os seus custos e benefícios.

e) Permitir a experimentação e flexibilidade de novos sistemas de autoconsumo coletivo, considerando também tarifas de redes e garantindo uma regulamentação que permita aos cidadãos beneficiarem de modelos de partilha e troca de energia, mais justos e equitativos, com base em trocas diretas entre pares ('peer-to-peer').

f) Promover a implementação de comunidades de energia em zonas rurais (utilizando terrenos degradados, telhados, incluindo telhados de parques de estacionamento, pedreiras e minas abandonadas, etc.), como modelos alternativos, tais como solar fotovoltaico em sinergia com produções agrícolas, que possam contribuir para diminuir a escala de grandes instalações fotovoltaicas em zonas agrícolas rurais.

g) Permitir a implementação de tarifas dinâmicas de eletricidade: Com a introdução de cada vez mais renováveis no sistema elétrico, existem maiores oscilações na produção de energia, sendo essencial que exista também uma adaptação do sistema tarifário, que permita refletir estas variações nos custos de energia do lado do consumidor, influenciando uma resposta dinâmica a estas oscilações (Demand Response). As tarifas dinâmicas surgem com o intuito de possibilitar a partilha de informação do sistema com os consumidores de forma realista. Esta partilha permite que os clientes adaptem o seu consumo aos diferentes valores que a tarifa vai tomando, podendo esta possibilidade levar a uma redução na fatura do próprio consumidor, mas também a uma diminuição dos custos globais do sistema.

4) Facilitar e incentivar novas instalações de dimensão média (i.e., 250 kW – 1 MW)

O modelo descentralizado pode beneficiar muito de instalações de dimensão média, tanto em espaços rurais, como em espaços urbanos (por exemplo, utilizando telhados de parques de estacionamento, ou um baldio abandonado).

No entanto, após terminado o anterior quadro legal das UPP (ou Unidades de Pequena Produção com injeção na rede), as opções para o produtor/(auto)consumidor passaram a cingir-se praticamente ao autoconsumo por um lado, ou, por outro, a centrais de grande dimensão, cujas licenças leiloadas, ou atribuídas por acordo com os operadores de rede, estão apenas acessíveis a grandes investidores e empresas.

As instalações de média dimensão permitem investimentos de pequenos comercializadores e cooperativas como a Coopérnico, bem como o estabelecimento de novos "power purchase agreements" (PPAs) ou acordos de compra de energia, que podem tornar estes pequenos comercializadores mais resilientes face às flutuações de preço nos mercados de energia, promovendo também maior diversidade nos modelos de produção numa lógica de descentralização. Daí que é importante:

a) Voltar a disponibilizar o procedimento simplificado para licenciamento de novas instalações de até 1MW de potência, excluindo candidaturas de proximidade, por exemplo, limitando o procedimento simplificado (registo prévio) a 1MW por raio de 2km.
b) Dar prioridade aos projetos que promovam utilizações combinadas como, por exemplo, as soluções "agrovoltaicas", para proteger a qualidade do solo e continuidade da atividade agrícola, estabelecendo também incentivos para o efeito no quadro dos fundos comunitários aplicáveis (i.e., agricultura, desenvolvimento rural, energia, etc.)
c) Os telhados de escolas, centros de saúde, hospitais, edifícios administrativos, e de outros edifícios públicos e património público urbanístico, serem disponibilizados para a colocação de painéis solares.

5) Compra, troca e partilha de excedentes

A compra de excedentes permite maximizar o caso económico para autoconsumo. Apesar da regulamentação atual admitir a contratação de excedentes, esta atividade é ainda lenta e implica o reconhecimento de assinaturas nos contratos submetidos, o que encarece e dificulta o processo. Para dinamizar esta atividade é importante:

a) Clarificar o processo, simplificando-o ao confirmar que basta apenas a assinatura normal ou digital certificada. Este é o processo adotado desde o início do autoconsumo para a compra de excedentes pelo Comercializador de Último Recurso, bem como desde o início da miniprodução e microgeração.
b) Nova legislação que permita criar plataformas eletrónicas onde os particulares (incluindo microprodutores) possam vender os seus excedentes de forma agregada, dando, deste modo, um grande incentivo económico, não só aos particulares como também a empresas de microgeração de energias renováveis (fotovoltaica, eólica, hídrica, etc.).

6) Melhorar o processo de atribuição de licenças via os leilões

Os leilões têm atualmente como único critério o preço do MWh. No entanto, é imprescindível incluir critérios ecológicos e sociais na atribuição de licenças. As autoridades competentes devem ainda assumir a responsabilidade de monitorizar e regulamentar o processo ao longo de toda a sua implementação.

7) Criar leilões de energia renovável diferenciados para pequenos comercializadores

Garantindo o acesso prioritário das licenças de exploração/energia em leilão a pequenos comercializadores e garantindo uma comercialização obrigatória a preços inferiores ao Comercializador de Último Recurso (CUR), estimulando a concorrência e garantindo preços mais baixos para o consumidor final.

8) Mitigar os impactes das grandes centrais solares

As instalações fotovoltaicas centralizadas são tendencialmente criadas em terrenos com topografia suave e com pouca vegetação arbórea, os quais, em espaço rural, coincidem com terrenos agrícolas. Aqui, residem algumas das contradições estratégicas mais relevantes que deveriam ser levadas em conta no processo de leilões. No caso de projetos

de grandes centrais renováveis (fotovoltaica e eólica), para além do já previsto na Avaliação de Impacte Ambiental (AIA), devem ser assegurados um conjunto de critérios técnicos e socioambientais que permitam compatibilizar os impactes das centrais solares de grande dimensão com os ecossistemas e as populações envolventes. Nomeadamente:

a) Proteção dos ecossistemas locais e implementação de sistemas para a sua promoção
b) Consideração de critérios geográficos de exclusão (e.g., vertentes demasiado declivosas)
c) Distanciamento entre painéis, que permita proteger a qualidade do solo
d) Conceção tecnológica que permita evitar e/ou mitigar efeitos como os de "ilha de calor" fotovoltaica

9) Participação e transparência na implementação (quando inevitável) de grandes centrais solares

a) Envolver as populações nos processos decisórios e de avaliação de impacte, incluindo uma comunicação transparente e verdadeira ao longo de todo o processo de desenvolvimento dos projetos.
b) O direito efetivo à participação pública dos cidadãos em momento de Avaliações de Impacto Ambiental, com prazos alargados para a participação, com ampla divulgação pelas autarquias, juntas de freguesia e entidades locais e sessões de esclarecimento.
c) Assegurar o direito de participação das comunidades e agentes económicos locais no financiamento (ou estrutura de capital) dos projetos estabelecidos, por exemplo garantindo um enquadramento legal que assegure a obrigatoriedade de uma percentagem de financiamento proveniente de comunidades locais (como existe já noutros países europeus, e.g., Dinamarca e Holanda).
d) Implementação de medidas em benefício das populações locais, que asseguram a criação e manutenção de riqueza nas regiões onde os projetos são implementados, debatidos e acordados com o seu envolvimento.

10) Uma sociedade mais igualitária, democrática, ecológica e 100% renovável

A visão da Coopérnico passa por uma sociedade mais igualitária, democrática, guiada por princípios ecológicos e com uma economia assente em energias 100% renováveis. Esta visão implica uma transformação dos nossos modelos de produção e consumo, com base em novas tecnologias e sistemas energéticos renováveis, mas também mais justos socialmente, sendo o cidadão e o consumidor um ator ativo no desenho e exploração de novos sistemas de energia.

Um modelo de produção e consumo descentralizado não deve ser só tecnológico, mas também socialmente mais distribuído, tornando a energia limpa cada vez mais acessível a todas e todos, respeitando as características do território, protegendo a biodiversidade e o meio natural, e garantindo valor social e económico para as comunidades envolvidas.

Movida por esta visão de um sistema socio-energético verdadeiramente inovador, a Coopérnico, à semelhança das cooperativas de energia europeias, tem vindo desde a sua concepção, a promover e a desenvolver em Portugal sistemas de energia distribuídos, com base em instalações que vão desde sistemas familiares de autoconsumo instalados individualmente por vários membros da cooperativa, a comunidades de energia renovável e sistemas de autoconsumo coletivo. Entre instalações em regime de autoconsumo (UPAC) e unidades de pequena produção (UPP), a Coopérnico já instalou, um total de 2,1 MW distribuídos por 32 sistemas.

Este modelo descentralizado permite aproveitar as paisagens humanizadas e infraestruturas já construídas (casas, condomínios, escolas, edifícios públicos, parques de estacionamento, fábricas, centros comerciais, universidades, etc.), minimizando deste modo os impactes ambientais de novas instalações de energia solar. Por outro lado, permite uma multiplicidade de novas práticas de troca e partilha da energia produzida localmente, minimizando as perdas, com base em modelos participativos e de gestão comunitária, e com potenciais benefícios económicos e sociais para as comunidades envolvidas, incluindo ainda novos serviços comunitários para a eficiência energética e a implementação de estratégias para a redução da pobreza energética.

Não há dúvida que a proliferação de energia renovável é fundamental para a transição energética e que maior produção de energias renováveis, como a solar e a eólica, vai traduzir-se em preços mais baixos de energia no mercado grossista. De facto, a presente crise energética que se vive por toda Europa, com um aumento exponencial dos preços de energia no mercado marginalista, é mais uma prova de que os caminhos para a transição não podem basear-se nos mesmos mercados grossistas da era do petróleo, nem nos mesmos padrões de produção e consumo de energia que têm sido vigentes desde o início da revolução industrial. É preciso um sistema verdadeiramente inovador, centrado nas pessoas e assente numa diversidade de modelos, a diversas escalas e medidas, guiados por princípios de inclusão, participação cívica e proteção ambiental.

A própria União Europeia começa a reconhecer este facto tendo proposto numa recente comunicação, como uma das medidas a implementar, a análise "das vantagens e os inconvenientes da atual configuração do mercado de eletricidade e de propor recomendações tendo em vista a sua avaliação pela Comissão até abril de 2022"[5]. A União Europeia considera também que os consumidores e 'prosumidores' - produtores e autoconsumidores de energia de fontes renováveis - têm um papel central na transição, sendo fundamental a sua participação ativa em Comunidades de Energia Renovável e Comunidades de Cidadãos de Energia (*Citizens Energy Communities*). Esta última tipologia ainda não beneficia de um enquadramento legal em Portugal, devido ao atraso na transposição da Diretiva para o Mercado Interno de Eletricidade.

A importância destas comunidades não se cinge a espaços urbanos. Aliás, é fundamental o desenvolvimento de comunidades de energia em espaços rurais, que podem ser implementadas a uma escala que permita constituir alternativas a grandes instalações de energia solar em terras agrícolas, estando previsto para breve o lançamento de um centro de apoio europeu para as comunidades de energia rurais (*Advisory Hub for Rural Energy Communities*). [6] Em Portugal, existe um potencial significativo fotovoltaico em espaços

[5] Comunicação da Comissão ao Parlamento Europeu, ao Conselho Europeu, ao Conselho, ao Comité Económico e Social Europeu e ao Comité das Regiões- Enfrentar o aumento dos preços da energia: um conjunto de medidas de apoio e ação https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:52021DC0660&from=EN, p. 19

[6] Relatório do Estado da União de Energia 2021 - https://ec.europa.eu/energy/sites/default/files/state_of_the_energy_union_report_2021.pdf (p. 24)

rurais, que pode ser explorado de forma sustentável, estabelecendo sinergias entre a produção de energia solar e atividades agrícolas.

Se queremos avançar com uma transformação sustentável, reduzindo a queima de combustíveis fósseis, sem descurar a necessidade de cuidar do meio ambiente e fomentar um esforço coletivo para uma sociedade mais justa e igualitária, é necessário apostar em soluções descentralizadas, tanto nas zonas urbanas como rurais. A Coopérnico visa apoiar o desenvolvimento de modelos descentralizados de produção e (auto) consumo, mais sustentáveis, de forma democrática, criando valor social e económico local e com o envolvimento dos cidadãos.

Coopérnico

Energia verde, sustentabilidade e cidadania

PLANO DE ATIVIDADES PARA O QUADRIÉNIO

2020-2023

Lisboa, 7 de Dezembro de 2019

COOPÉRNICO - Cooperativa de Desenvolvimento Sustentável CRL
Rua de São Nicolau 73, 2º Esq.
1100-548 Lisboa

Conteúdos

Nota introdutória

O ano de 2019 foi mais um ano de consolidação da Coopérnico, ao nível do crescimento de membros e aumento da atividade de produção, mas fica marcado por ser aquele em que finalmente cumprimos um desejo da Cooperativa desde a sua fundação – o início da atividade de comercialização.

A mudança de Direção que agora se pretende tem precisamente a ver com o crescimento verificado pela cooperativa e que exige uma maior de dedicação de meios e também uma Direção mais interventiva.

Foi nesse sentido que a Direção cessante propôs a alteração aos estatutos aprovada na última Assembleia Geral (em Faro), propondo o aumento da Direção de três elementos para cinco elementos, que resultou na necessidade de realização de uma Assembleia Eleitoral que agora se realizará.

A proposta desta lista agora apresentada, visou o estabelecimento de um novo corpo de órgãos sociais robusto e diverso, permitindo acumular a experiência e a diversidade em cada órgão.

Composição dos candidatos aos órgãos sociais da presente lista:

Na Assembleia Geral optou-se pela continuidade pois se reconhece que, quanto mais tempo passou e experiência se acumulou, mais construtivas e colaborativas foram as Assembleias Gerais da Coopérnico.

Assembleia Geral

Presidente – Pedro Sousa Lobo
Vice-Presidente – Manuel Nina
Suplente – Luís Cachinho

No que respeita à Direção a opção foi um misto de continuidade e aumento de diversidade bem como reforço de competências. Assim foram escolhidos membros da cooperativa de acordo com o seu perfil e a forma como encaixam nos pelouros previstos:

Direção

Presidente – Nuno Brito Jorge (Estratégia, equipa e desenvolvimento de negócio)
Vogal – Pedro Martins Barata (Formação de opinião e comunicação)
Vogal – Miguel Almeida (Gestão financeira e comercialização)
Vogal – Inês Campos (Comunidades de energia)
Vogal – João Crispim (Produção renovável)
Suplente – Rui Pulido Valente (Dinamização Territorial)
Suplente – Guilherme Luz (Inovação e Tecnologia)

Para o Conselho Fiscal manteve-se também a presidência, mas optou-se, face à falta de disponibilidade temporal de alguns dos anteriores membros, por renovar a estrutura de forma a assegurar uma maior dedicação dos membros que o compõem.

Conselho Fiscal

Presidente – Anaís Criolo
Vogal – Fernando Oliveira
Vogal – Ivo Gomes Francisco
Suplente – Helena Amendoeira
Suplente – Jorge Pinto

Por último, para o Conselho de Curadores, optou-se por fazer um misto entre a inclusão de membros com maior antiguidade e envolvimento na vida e divulgação da cooperativa e alguns membros com reconhecidos percursos e reputação no setor energético, que trarão mais-valias que vão desde a partilha de experiência ao reforço da reputação e confiança na cooperativa.

Conselho de Curadores

Susana Fonseca (Presidente), João Alírio, Carlos Pimenta, Jorge Vasconcelos, Júlias Seixas, João Almeida, Luísa Schmidt, Susana Carvalho, António Pina.

O plano de atividades proposto para este quadriénio é um reforço da ambição da Coopérnico em trazer cada vez mais a mudança para o setor energético através do envolvimento dos cidadãos e empresas na transição energética de forma justa, transparente e democrática.

Destacam-se:

i) o início da atividade como comercializador independente de eletricidade, já assegurado a 1 de Novembro de 2019 mas que terá início com efeitos a 1 de Janeiro de 2020;
ii) a aposta na angariação de novos projetos e modelos de negócio de produção renovável;
iii) a criação de uma estratégia para as comunidades de energia;
iv) a grande vontade de maior poder de representação e dinamização das atividades a nível local e regional da cooperativa;
v) o regresso dos grupos de trabalho, na forma do grupo de trabalho de inovação, incluindo o lançamento do programa de intra-empreendedorismo da Coopérnico.

O gráfico abaixo ilustra um pouco do percurso percorrido até hoje pela cooperativa:

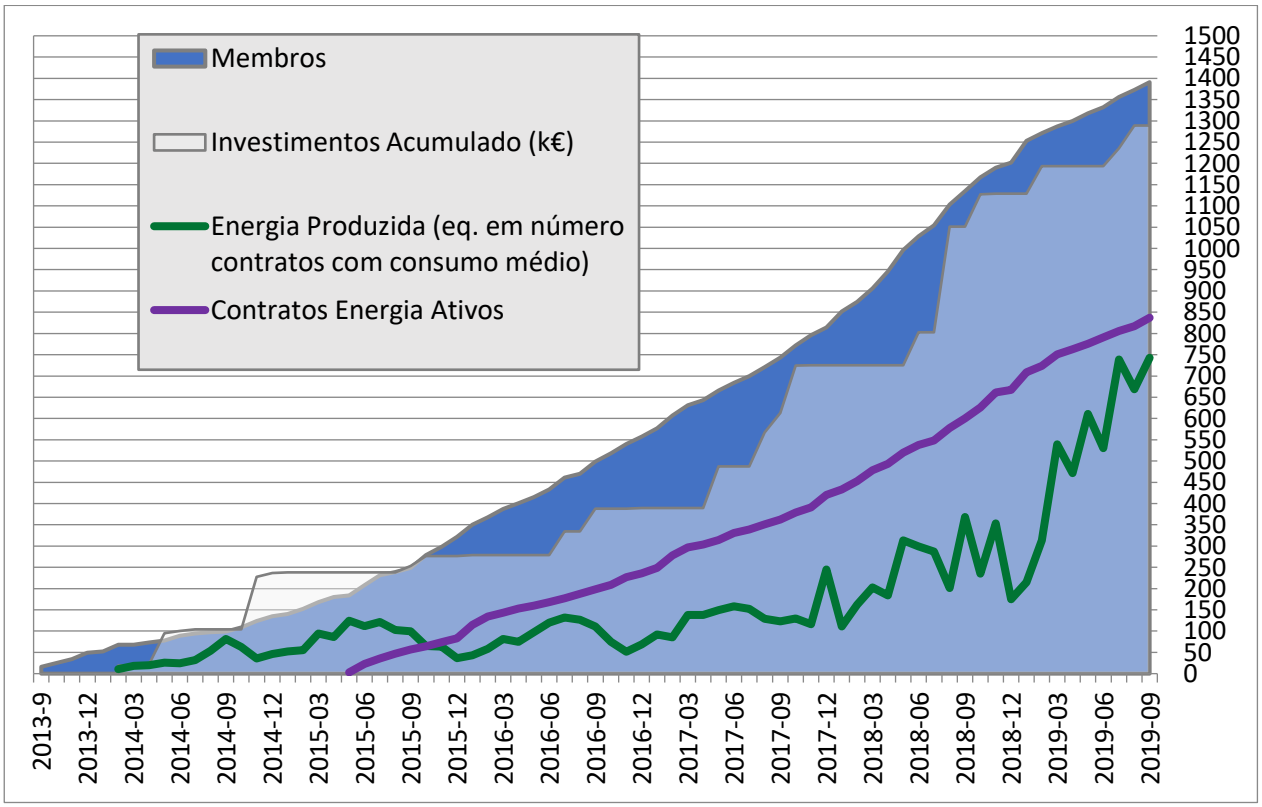

Figura 1 - Evolução de KPIs da Cooperativa

Esperamos que 2020 seja o primeiro ano de um quadriénio que vai representar um “salto” significativo no crescimento da Coopérnico e que nos reafirma como um elemento incontornável do novo paradigma do setor energético em Portugal.

1 Os desafios do próximo quadriénio

O plano para este quadriénio é marcado por novos e grandes desafios e ambição renovada:

1. Aumentar os índices de crescimento registados pela Cooperativa;
2. Reforçar o envolvimento dos membros nas atividades da cooperativa;
3. Reforçar a representação local/regional da cooperativa em todo o território nacional;
4. Diversificação do *mix* de produção energética ajustando tanto quanto possível a produção à procura;
5. Desenvolver e solidificar a área de negócio da comercialização;
6. Manter a trajetória da Cooperativa enquanto agente de formação de opinião pública e de políticas para o setor energético;
7. Criar uma abordagem estratégica e sistemática para as Comunidades de Energia Renovável;
8. Reforçar as atividades de inovação interna e em parceria na Cooperativa.

2 Produção

A produção de energia renovável descentralizada é um pilar fundamental da nossa Cooperativa. Como se referirá em maior detalhe nos próximos pontos, a possibilidade de investimento em novas Unidades de Pequena Produção (UPP) foi limitada pelo Governo, seguindo uma orientação estratégica de eliminação progressiva de apoios à produção de energia com base em fontes renováveis descentralizadas.

Desta forma, a estratégia de diversificação de modelos de negócio previamente iniciada será de redobrada importância. Alterações legais com influência no regime aplicável a Unidades de Produção para Autoconsumo (UPAC) ditarão boa parte da estratégia de Produção da Coopérnico agora proposta, **criando valor para o autoconsumidor**, sob forma de uma tarifa mais económica que a alternativa de aquisição à rede, **para o sistema**, pela garantia de produção local e gestão mais eficiente da rede elétrica nacional e **para a sociedade**, pelo aumento da produção de energia renovável em território nacional.

A Coopérnico não deixará, no entanto, de relevar junto dos decisores políticos a importância da manutenção dos apoios à produção renovável descentralizada, ainda que em modelo "*phase out*" progressivo, de forma a manter a viabilidade em locais com consumos sazonais ou noturnos e dados os diversos benefícios da produção descentralizada.

Desta forma, no próximo quadriénio propomo-nos a implementar as atividades que a seguir se descrevem nesta área.

2.1 Gestão e otimização do atual parque produtor

Procurando uma racionalização dos custos fixos da cooperativa, a Coopérnico lançou um concurso para Operação do seu parque produtor fotovoltaico, que foi ganho pela empresa Enforce S.A. Esta estratégia tem sido importante na minimização de tempos de interrupção de serviço que, de outra forma, se arriscavam a comprometer o resultado económico dos nossos projetos.

A estratégia seguida para a Manutenção preventiva tem sido a de lançamento de concursos bi-anuais, lançados às empresas instaladoras nossas cooperadoras.

Dando continuidade à estratégia até agora seguida, e atendendo ao aumento de escala devido ao investimento previsto e aumento de capacidade, prevê-se a oportunidade de otimização de serviços, garantindo que a qualidade e rapidez de intervenção nunca seja posta em causa.

Assim, no quadriénio que se inicia prevê-se o estudo de viabilidade e eventual implementação de contratos conjuntos de Operação & Manutenção. Será também ponderada a internalização deste serviço na Cooperativa.

2.2 Reforçar o parque produtor com base em modelos de negócio de mercado

No novo panorama legal, ante o provável fim dos subsídios à produção renovável descentralizada, é primordial reforçar e otimizar os modelos de negócio utilizados pela cooperativa.

No passado, a Coopérnico pôde optar por desenvolver os projetos no modelo de Unidades de Pequena Produção (UPP) garantindo uma tarifa bonificada durante 15 anos, através de um processo de leilão

público. Nesta modalidade, a energia produzida nas centrais fotovoltaicas instaladas pela Coopérnico era vendida integralmente à rede elétrica nacional.

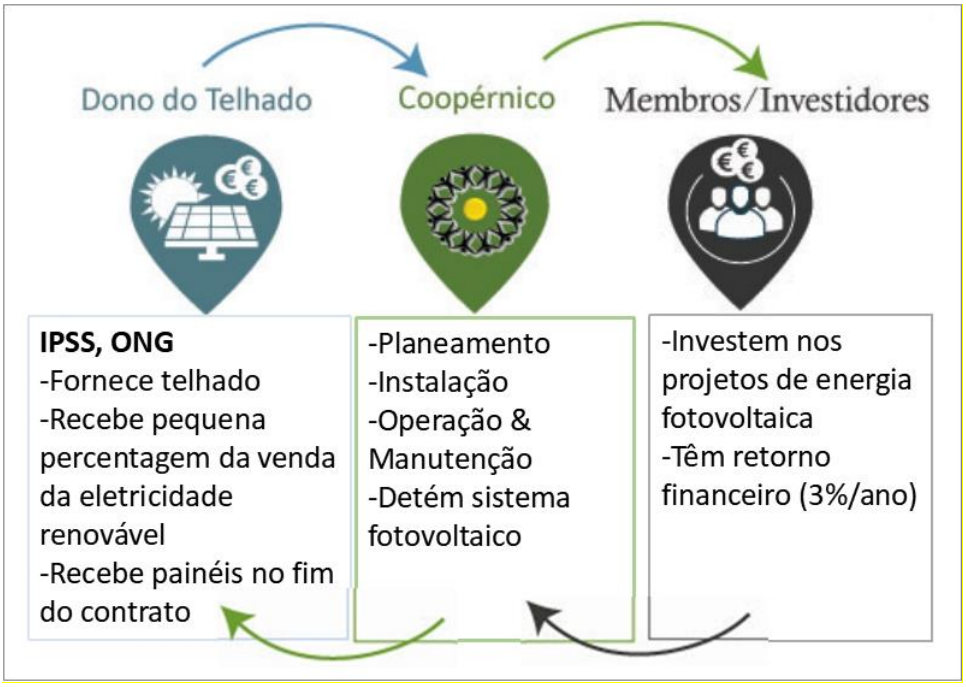

Figura 2 - Modelo de distribuição de benefícios e obrigações nas UPP

Embora todos os projetos assim concebidos anteriormente tenham continuidade nos termos da licença, os futuros projetos a desenvolver provavelmente não terão já a possibilidade de enquadramento neste regime, pelo menos no formato em que é hoje conhecido.

2.2.1 Produção em autoconsumo com poupanças partilhadas ou PPA

Prevendo tal situação, a Direção anterior iniciou um processo de diversificação de portefólio, com uma primeira experiência de produção de eletricidade no modelo de autoconsumo (UPAC), ganhando competências e experiência.

Este modelo vai ao encontro das expectativas de muitas organizações e entidades que anseiam por poder consumir eletricidade produzida nas suas instalações.

No âmbito das UPAC, a relação entre a Coopérnico e a instituição parceira é enquadrada sob um Acordo de Compra de Energia de Longo Prazo (*Power Purchase Agreement,* PPA) ou um Contrato de Partilha de Poupanças, onde a Coopérnico detém a totalidade do sistema de energia renovável e é responsável pela sua manutenção durante o contrato.

A entidade onde está instalado o sistema de produção compra então a eletricidade gerada pelo sistema a um preço inferior ao da rede elétrica, mantendo-se a possibilidade de, no final do contrato a central passar também para a posse da entidade parceira.

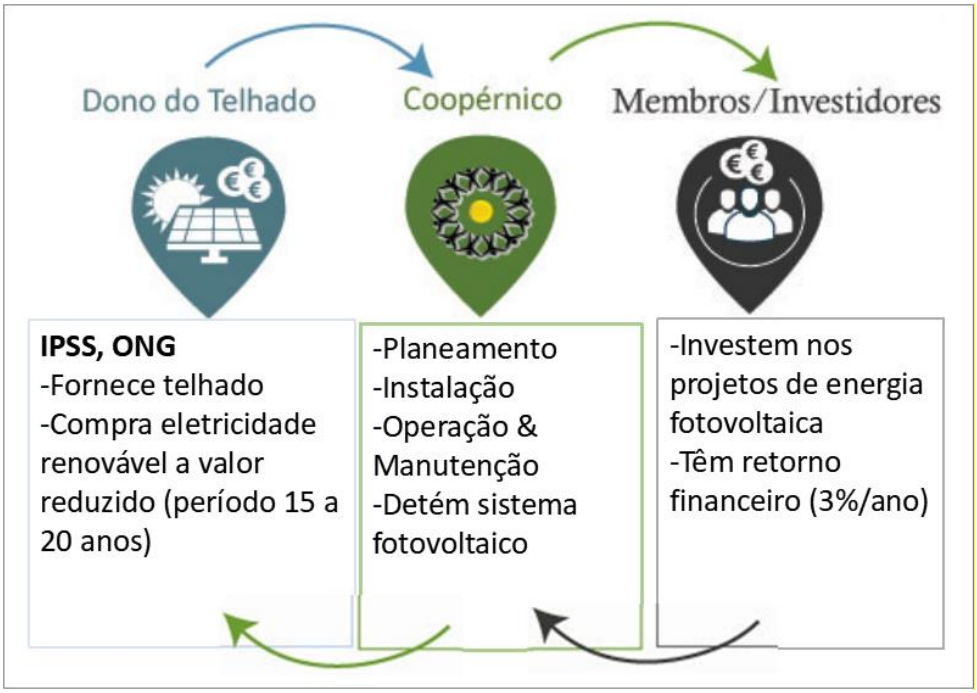

Figura 3 - Modelo de distribuição de benefícios e obrigações nas UPAC

Estas diferenças na forma implicam uma análise de projetos efetuada focando menos na rentabilidade direta do investimento (as tarifas de venda à entidade parceira serão facilmente superiores à obtidas nas UPP) e mais na necessidade de garantir uma relação de longo prazo entre o investidor – a Coopérnico– e a entidade parceira.

A Coopérnico cobrará a eletricidade produzida no local e consumida pelo parceiro, ao preço acordado, ao longo de um prazo que pode variar entre os 5 e 15 anos. Prevê-se, assim, que seja ao nível do relacionamento institucional de longo prazo que poderão surgir dificuldades, nomeadamente em casos em que exista falta de liquidez por parte da entidade, ou na eventualidade de uma alteração dos seus órgãos de Direção que possa condicionar o acordo firmado. Em contraponto, este tipo de risco não se coloca nas UPP, já que a contraparte é o comercializador de último recurso por conta do Estado Português.

A seleção de entidades da economia social ou outras que disponham de condições técnicas para a instalação de um sistema de autoconsumo financiado pela Coopérnico, deverá seguir critérios bem definidos, de que é exemplo o caso da Cooperativa Agrícola de Mangualde, onde desde meados de 2018 está em funcionamento a primeira central fotovoltaica da Coopérnico em regime de UPAC-PPA.

Para a Coopérnico, identificam-se as seguintes vantagens:

- Implementar projetos de energias renováveis, promovendo a descentralização da produção e restantes vantagens da utilização de fontes renováveis;
- Criar valor nas entidades parceiras, com menor capacidade económica para realizar o investimento;
- Promover oportunidades sustentáveis de investimento para os cooperantes;
- Tarifa vantajosa para o produtor, quando comparada com venda em mercado ou UPP.

Em termos de vantagens para as instituições, é possível identificar:

- Possibilidade de compra de eletricidade a um valor atrativo relativamente ao mercado;
- Usufruir de eletricidade de origem renovável, produzida no local.
- Oferta dos equipamentos no final do contrato (5-15 anos)

Neste aspeto importa ainda ressalvar que, para os projetos em modelo UPAC-PPA, será desenvolvido um modelo de otimização de monitorização e cobranças, com vista à redução do risco inerente ao modelo.

O recente Decreto-Lei 162/2019, amplamente referido no capítulo 4 vem ainda enquadrar as "Comunidades de Energia Renovável", potenciais interessados no modelo de financiamento da Coopérnico, sendo aliados naturais na descentralização de energia neste regime UPAC.

A Coopérnico vê-se também como um facilitador e financiador (por via da participação ativa) em futuros projetos de Comunidades de Energia Renovável em Portugal, tornando-se também um catalisador deste movimento em Portugal.

A rede de parcerias com entidades operadoras de mercado, consultores de desenvolvimento de projetos de engenharia, de realização de modelos de previsão ou serviços de previsão de produção, manutenção e operação de centrais e fabricantes de equipamentos, continuará a ser ampliada.

2.2.2 Produção de energia renovável em regime de mercado

Existe ainda a vontade de diversificar as tecnologias de produção elétrica da Coopérnico como forma de redução do risco da atividade, reforço da capacidade e de maior ajuste entre produção e procura. Todos os projetos serão estudados caso-a-caso, respeitando os melhores princípios de análise de impacte ambiental.

Em continuidade com a visão da equipa de gestão anterior, a possibilidade de a Coopérnico vir a tomar posição em centrais de produção de energia elétrica de origem renovável em regime de mercado livre e em autoconsumo com excedentes significativos mantém-se ativa.

A possibilidade de realização de acordos de aquisição de energia através de contratos bilaterais sob o Acordo de Compra de Energia de Longo Prazo (*Power Purchase Agreement*, PPA) com tais entidades potenciará o controlo da sociedade e a incorporação na cooperativa de um ativo de elevada liquidez ao mesmo tempo que baixa o risco a que a cooperativa estará exposta enquanto comercializador.

Uma estratégia desta natureza implica uma evolução de parcerias que terá de atingir um estado de maturidade que permita uma tomada de decisões e operação na gestão destas entidades de uma forma consciente e profissional.

Propõe-se também procurar a utilização de modelos de negócio mais inovadores, e que agora se afiguram como cada vez mais viáveis, como por exemplo, o utilizado pela cooperativa Som Energia em Espanha – Generation kWh – que permite aos cooperadores investir em centrais fotovoltaicas e "utilizar" nos seus pontos de consumo a custo zero (no que respeita à parte referente à produção) uma quantidade de eletricidade proporcional ao seu investimento.

2.3 Acesso ao investimento em projetos de produção

Reconhecendo a apetência que os cooperantes têm vindo a demonstrar pelos investimentos abertos no passado, bem como a necessidade de capital social para elevar a capacidade da Coopérnico a novos modelos de negócio e aumento de liquidez, é apresentada no Plano de Atividades uma proposta inovadora para o regime de investimento, fazendo corresponder o valor máximo de investimento ao número de títulos detidos pelo membro no momento do registo do investimento.

Nos projetos de financiamento abertos anteriormente, cada cooperante pôde investir, com um mínimo de 250€, até ao máximo de 20.000€. Estes valores não se faziam depender do número de títulos do cooperante.

Propõe-se agora, para efeitos de aumento do acesso às oportunidades de investimento na Cooperativa, bem como para reforço de liquidez pela via de aquisição de títulos de capital, a introdução de limites ao investimento feito pelos membros da cooperativa em projetos de produção em função do número de títulos da cooperativa detido. Esta proposta vê o valor máximo de investimento depender do número de títulos: 1.000€ por cada título detido. Nestas condições, um investidor que pretenda investir 20.000€ terá de deter um mínimo de 20 títulos. Refira-se, no entanto, que detendo os 20 títulos o investidor poderá participar até ao montante máximo de 20.000€ em cada investimento aberto, não sendo exigível o reforço a cada novo investimento.

A título de exemplo deixa-se o quadro abaixo:

Número de títulos adquiridos	Investimento autorizado por projeto
3 títulos (60€)	3.000€
5 títulos (100€)	5.000€
20 títulos (400€)	20.000€

Tabela 1 - Exemplo de investimento por número de títulos detido

Esta alteração será aplicada sem efeitos retroativos e a partir do momento em que forem implementadas as necessárias adaptações informáticas à plataforma da cooperativa.

O teto máximo de 20.000€ poderá ser eliminado deliberadamente quando se verifique que o montante a investir no projeto em causa, dada a sua eventual grande escala, permitirá acomodar investimentos superiores mantendo a diversidade e o acesso ao investimento.

2.4 Planeamento para 2019 no âmbito do quadriénio

Considerando o quadriénio que se avizinha, bem como as alterações regulamentares quanto ao tipo de acesso a licenças de produção, a Direção prevê um crescimento de Produção com base na execução das licenças remanescentes em regime UPP, mas principalmente alicerçados em novos contratos em regime de UPAC. Com este foco, ambiciona-se o crescimento da cooperativa, duplicando o número de membros, e sustentando o crescimento de potência instalada, superando os 4MW até ao final de 2023.

Ano	2020	2021	2022	2023
Nr. Membros	2.200	2.750	3.438	4.297
Nova Potência Instalada - Venda Rede (kW)	614,5	0	0	0
Potência Inst - Venda rede (kW)	2.165	2.165	2.165	2.165
Tarifa UPP (€/MWh)	100	100	100	100
Produção UPP (MWh)	3.084	3.247	3.247	3.247
Faturação - Venda Rede (€)	291.155 €	305.933 €	304.404 €	302.882 €
Nova Potência Instalada - Autoconsumo PPA (kW)	300	500	500	500
Potência Inst - Autoconsumo PPA (kW)	519	1019	1519	2019
Faturação UPAC-PPA (€)	85.398 €	167.471 €	241.634 €	315.425 €
Investimento próprio (mil €)	759	415	415	415
Investimento acumulado (mil €)	2444	2859	3274	3689
Investimento médio por membro	345 €	140 €	112 €	89 €
Produção Elétrica (MWh)	2.683	3.183	3.683	4.183
Faturação Total (€)	**376.553 €**	**473.404 €**	**546.037 €**	**618.307 €**

Tabela 2 - Evolução da Cooperativa para o próximo quadriénio

Referindo o panorama positivo de crescimento de potência instalada e de faturação prevista é relevante assinalar a alteração do perfil de risco inerente à alteração de modelo de investimento em UPP para UPAC. Como referido anteriormente, o risco de contraparte será agora mais saliente, com contratos entre privados e necessidade de continuada monitorização das condições em que os pagamentos são feitos. Tais alterações de perfil motivam alguma cautela no ritmo de crescimento até à consolidação de processos internos.

Para aumentar a notoriedade da Coopérnico nos locais onde tem centrais fotovoltaicas serão avaliadas propostas para a colocação de ecrãs onde apareça a produção da central PV, as emissões evitadas e outras informações relevantes para os utilizadores do edifício.

3 Comercialização

3.1 Início da atividade como comercializador independente

A participação da Coopérnico na área da comercialização de eletricidade começou, em parceria com a ENFORCESCO S.A., em Junho de 2016. Até meados de Outubro de 2019 a Coopérnico conseguiu 848 contratos ativos, valor que fica aquém do objetivo a que nos propusemos para os clientes domésticos e empresariais.

A partir de 1 de Novembro de 2019 iniciou-se uma nova etapa na entrada da Coopérnico na comercialização de energia elétrica, com a operação em nome próprio.

No novo modelo de atuação no mercado de comercialização de eletricidade a Coopérnico passa a ser praticamente independente na sua atividade, mantendo-se apenas, e após a proposta do nosso parceiro tecnológico (Digitalmente), a execução de ordens de compra de eletricidade no mercado ibérico a cargo da Ezurimbol - Comércio de eletricidade, Lda.

Todas as restantes atividades passam a ser internalizadas na cooperativa, que passa assim a ter muito maior autonomia (angariação e gestão de clientes, faturação, previsão de compras, aprovisionamento pelas fontes desejadas, etc.)

Com a entrada em funcionamento desta nova tipologia de operação, é de esperar que o número de contratos de comercialização aumente ainda até ao final do ano de 2019, sendo importante sublinhar que iniciaremos as campanhas de promoção e desenvolvimento de esforços de angariação de clientes empresariais e domésticos, no início de 2020, estando até lá a vigorar um processo de aprendizagem e adequação da operação à nova realidade de operação.

Ao contrário do verificado em 2018, o ano de 2019 registou maior regularidade de preços e um comportamento em conformidade com os fundamentais do mercado. Designadamente com o preço da energia a variar consoante as quantidades de energia oferecida, mediante as disponibilidades de vento e água, resultando que, em momentos de maior disponibilidade de eólica e hidráulica, o preço de mercado diminuiu refletindo essa disponibilidade, registando um valor médio de 49,34 €/MWh até 12 de Novembro, quando a média de 2018 foi de 63,72 €/MWh (fonte EGASI).

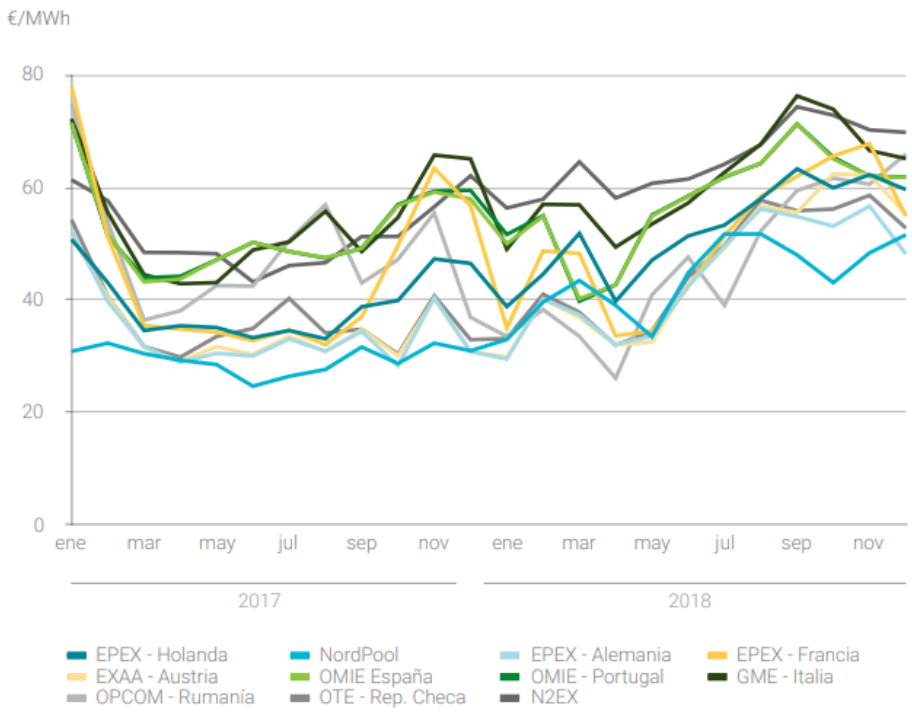

Figura 4 - Evolução dos preços 2017-18; Fonte: OMIE Relatório Anual 2018

O comportamento de mercado alicerçado nos seus fundamentais, permite a entrada da Cooperativa na comercialização com menor grau de risco e enfrentando desafios para os quais confiamos estar preparados. O gráfico acima ilustra este comportamento nos anos de 2017 e 2018 nos diversos mercados europeus.

No entanto, esta entrada na comercialização, não deixa de lançar novos desafios e aumentar as necessidades de recursos humanos e tecnológicos para uma boa gestão dos desafios do dia-a-dia da cooperativa.

Para este fim, surge a necessidade de reforçar os quadros de pessoal da cooperativa, através da admissão de um novo estagiário e de um perfil mais técnico financeiro, com vista reforçar a gestão de tesouraria, aprovisionamento de energia e cotação de clientes de maior consumo (Baixa Tensão Especial-BTE e Média Tensão-MT).

Com a entrada direta na comercialização chega o momento de direcionar esforços para a realização de um segundo objetivo, não menos importante, a da comercialização de energia 100% renovável.

No mercado português, continua a não existir a possibilidade de emissão de Garantias de Origem, solução com algumas limitações éticas, mas de fácil implementação para que nas nossas faturas possa figurar um *mix* energético 100% renovável. Neste momento é possível comprar garantias de origem no mercado europeu, mas não no nacional.

Neste enquadramento o desafio de ter uma fatura de energia elétrica 100% renovável ganha contornos de maior flexibilidade e dificuldade na concretização, pois implica a realização de contratos de aquisição de energia bilaterais com produtores renováveis que cubram ou excedam a quantidade de energia

consumida pelos nossos clientes, uma vez que a energia produzida pela Cooperativa não pode ser utilizada para a concretização do *mix* oferecido aos clientes (por se encontrar ao abrigo da produção subsidiada).

A realização de contratos bilaterais de compra de energia obriga à gestão de diversas etapas que passamos a identificar:

- Necessidade de prever a energia a produzir pelas centrais e suporte de sobrecustos resultantes dos erros de previsão;
- Compra da totalidade da energia produzida pelas centrais, volume hoje provavelmente muito superior ao que os nossos clientes consomem, obrigando a que exista uma massa crítica suficiente;
- Obrigatoriedade de negociar a aquisição da energia com base num modelo de preço, experiência que teremos de adquirir, de forma a minimizar os riscos inerentes;
- Maior nível de exigência de tesouraria quer pelo volume, quer pelo risco associado;

Neste contexto, o ano de 2020 será um período no qual dificilmente conseguiremos implementar as soluções que levem à eliminação da referência à energia fóssil no *mix* energético a apresentar aos nossos clientes. O nosso compromisso para 2020 é o de desenhar uma estratégia que vise a eliminação da energia não renovável nas nossas faturas no ano de 2021, resultante da aprendizagem e desenho de soluções que conduzam a este fim.

Para que estes objetivos sejam cumpridos é importante sublinhar alguns fatores críticos para que sejamos bem sucedidos:

- Crescimento da base de clientes, domésticos e empresariais;
- Envolvimento dos membros na divulgação da cooperativa e suas atividades junto das suas redes de proximidade;
- Dinamização e aumento, das atividades de divulgação da cooperativa em todo o território nacional;
- Aproveitamento de novas oportunidades de mercado que o processo de transição energética em curso proporciona, como o novo enquadramento legislativo do autoconsumo coletivo e das comunidades de energia renovável ou a regulamentação e implementação das garantias de origem.

A gestão de tesouraria é um dos desafios maiores da comercialização. Para que esta gestão seja bem sucedida, uma das propostas que iremos elaborar para os nossos membros/clientes passará pela compra antecipada de energia.

3.2 Tipologia e limitações aos clientes de comercialização

A Coopérnico entra na comercialização com a mesma regra que já tinha na parceria com a Enforcesco: cada membro pode ter o número de contratos que pretender em nome próprio e oferecer contrato e tarifário Coopérnico a três familiares e/ou amigos.

É importante manter esta regra pela gestão de tesouraria da cooperativa, uma vez que a aquisição de títulos de capital social é uma importante fonte de rendimento.

No entanto, há entidades que estatutariamente não podem ser associadas de outras organizações, entre elas, autarquias, outras entidades da economia social e partidos políticos. Para este conjunto de entidades

específico propomos que se abra uma exceção, a contratação sem necessidade de aquisição de títulos de capital, de forma a que possam cumprir a sua vontade de escolher eletricidade limpa, justa e democrática.

4 Serviços a membros

4.1 Apoio ao autoconsumo pelos cooperadores

A concretização do modelo do autoconsumo está em tudo alinhado com os objetivos da Coopérnico. Nesse sentido, propõe-se a manutenção do atual modelo de apoio:

1) Facultar **informação e atividades de aconselhamento** aos nossos membros tendo em vista o correto dimensionamento do sistema de produção de energia fotovoltaica.
2) **Reforço do banco de empresas cooperadoras** e criação de ofertas dedicadas a membros da Coopérnico com o objetivo de conseguir preços mais competitivos em equipamentos domésticos para autoconsumo ou eficiência energética, como solicitado pelos membros na resposta ao inquérito realizado em 2015.

A este modelo acresce o apoio ao autoconsumo coletivo, como definido pelo novo DL 162/2019 e que será enquadrado na estratégia para as comunidades de energia, descrita no ponto 4.3.

4.2 Reforço da informação sobre eficiência energética

O envolvimento da Coopérnico no projeto RESCOOP Plus permitiu ter acesso a inúmeras ferramentas e estratégias já utilizadas por outras cooperativas europeias de energias renováveis mais experientes, para promover a eficiência energética dos seus cooperadores.

Neste contexto, os membros da Coopérnico continuam a utilizar a **ferramenta de gestão de energia, o ID Energia.** Esta ferramenta continuará gratuita para todos os utilizadores particulares.

Um dos objetivos a cumprir em breve é a integração do sistema ID energia com o sistema de faturação e área de utilizador dos clientes de eletricidade da cooperativa, de forma a evitar a necessidade de introdução manual dos dados de consumo em posse da cooperativa, disponibilizando assim informação atualizada em cada consulta.

Os membros da Coopérnico têm maiores vantagens na utilização desta plataforma, tais como integração automática das leituras registadas na área de cliente da Copérnico ou o grupo Coopérnico, onde os clientes podem funcionar como uma comunidade e comparar consumos entre si. Para os clientes Coopérnico será criada uma linha de email de apoio à utilização desta plataforma.

Nota: O ID Energia é uma plataforma de gestão de consumos energéticos que irá permitir que os consumidores de energia da nossa cooperativa adquiram maior conhecimento sobre os seus consumos globais de energia elétrica. No entanto, esta plataforma é muito mais abrangente. Cada cliente pode registar os seus consumos de gás, de biomassa (lenha e pellets), de gasolina e gasóleo (automóvel), água e resíduos. Adicionalmente, esta plataforma também permite o registo e acompanhamento da produção do sistema de autoconsumo de cada utilizador, para além de integrar vários smart-meters, entre os quais um português (o "Cloogy"). O ID Energia é, assim, uma ferramenta acessível a todos os consumidores/cidadãos que desejem ter uma perceção melhor do seu consumo de recursos naturais, bem como das emissões de gases de efeito de estufa.

Depois da aquisição de **equipamentos de monitorização de consumos de eletricidade**, para distribuição pelos diferentes pontos de representação regional, irá manter-se a troca destes equipamentos entre mais membros, de forma a permitir aumentar o conhecimento dos seus consumos energéticos, melhorando a sua performance energética e facilitado o aconselhamento sobre eficiência e autoconsumo.

No ano de 2019 foi também realizada uma parceria com o Cloogy, que permite aos membros da cooperativa a aquisição deste equipamento com um desconto de 30% sobre o preço atual, que pretendemos renovar para 2020 e em diante

Os *workshops* "Conversas com Energia", que tiveram início em 2018, vão continuar em 2020. Estas reuniões, onde o tema principal é poupar energia em casa, ajudam também a angariar novos membros e a consolidar a comunicação entre os membros já existentes. Este tema é desenvolvido no capítulo 6.

4.3 Comunidades de energia

Face à recente publicação do Decreto-Lei 162/2019, de 25 de outubro de 2019, ficou estabelecido o regime legal do autoconsumo partilhado e das comunidades de energia renovável, há muito sugerido e pressionado pela Coopérnico aos decisores nacionais.

Pretende-se agora a criação de uma estratégia integrada da Coopérnico, para responder às diferentes oportunidades e soluções que começaram já a surgir.

Nos últimos anos, têm vindo a surgir projetos para comunidades de energia em Portugal, como são exemplos a Ilha de Culatra no Algarve e a aldeia de São Luís em Odemira. A emergência destes e outros projetos nos últimos anos é um indicador de que há um interesse social no desenvolvimento do autoconsumo coletivo. Ainda que estas iniciativas se encontrem numa fase inicial, a publicação do DL 162/2019 vem eliminar as barreiras legislativas que existiam, nomeadamente a impossibilidade de existirem sistemas de autoconsumo coletivo e comunidades de energia renovável. Por outro lado, a nova lei vem dar resposta à reformulação da Diretiva Europeia para as Energias Renováveis (Diretiva (EU) 2018/2001)

As Comunidades de Energia Renovável são a pedra de toque para o desenvolvimento de um sistema energético descentralizado e de um modelo mais democrático e equitativo. O desenvolvimento das Comunidades de Energia Renovável (CER) é uma oportunidade também para a cocriação de novos modelos de negócio, com valor social, com benefícios tangíveis para as comunidades locais que usufruem diretamente dos recursos naturais locais (tais como o sol e o vento). As CER têm um enorme potencial

para promover a inovação social e são, deste modo, uma ponte para um novo modelo de energia 100% verde, em benefício da economia local e com benefícios sociais e ambientais. É por este motivo que a Coopérnico visa, ao longo do próximo período, desenvolver e implementar uma estratégia para as CER, a que designamos de Estratégia CER Coopérnico e que passará pela disseminação e envolvimento de comunidades, bem como pela cooperação e apoio aos nossos membros que queiram promover CER no seu local de residência.

4.3.1 Estratégia Coopérnico para as comunidades de energia

Face à recente publicação, a 25 de Outubro de 2019, do DL 162/2019, ficou estabelecido o regime legal do autoconsumo coletivo e das comunidades de energia, há muito sugerido pela Coopérnico aos decisores nacionais.

Segundo o novo decreto-lei, o autoconsumo coletivo é definido como "um grupo de pelo menos dois autoconsumidores organizados" (Art.2 e)). Já as comunidades de energia renovável (ou CER) são definidas como: "uma pessoa coletiva constituída nos termos do presente decreto-lei, com ou sem fins lucrativos, com base numa adesão aberta e voluntária dos seus membros, sócios ou acionistas, os quais podem ser pessoas singulares ou coletivas, de natureza pública ou privada, incluindo, nomeadamente, pequenas e médias empresas ou autarquias locais, que seja autónoma dos seus membros ou sócios, mas por eles efetivamente controlada, desde que, e cumulativamente:

i) Os membros ou participantes estejam localizados na proximidade dos projetos de energia renovável ou desenvolvam atividades relacionadas com os projetos de energia renovável da respetiva comunidade de energia;
ii) Os referidos projetos sejam detidos e desenvolvidos pela referida pessoa coletiva;
iii) A pessoa coletiva tenha por objetivo principal propiciar aos membros ou às localidades onde opera a comunidade benefícios ambientais, económicos e sociais em vez de lucros financeiros;" (Art 2. j))

De acordo com esta definição legal, as CER podem envolver diferentes atores sociais (desde comunidades locais, bairros, aldeias, condomínios, a municípios e PMEs). Esta diversidade pode dar origem a múltiplos tipos de comunidades (condomínios, bairros, aldeias, parques empresariais, etc.), com base em diferentes modelos económicos (por exemplo, criando-se cooperativas locais, ou associações sem fins lucrativos), resultando em novas oportunidades para o desenvolvimento de sistemas de produção de energia limpa, num modelo descentralizado. A Coopérnico, sendo ela própria uma comunidade (ainda que com diferentes contornos face à definição legal de CER), deverá desenvolver uma estratégia concertada, que vise apoiar o estabelecimento destas comunidades, de forma transparente e inclusiva.

Em particular, o novo decreto-lei oferece um conjunto de novas oportunidades que podem ser relevantes para a Coopérnico. Por exemplo, o decreto-lei introduz a figura do "agregador" (que pode ou não ser um comercializador) (Art 2, a)), e da "entidade gestora do autoconsumo coletivo" (Art 2, n)), podendo a Coopérnico prestar também este tipo de serviço a novos sistemas coletivos e/ou a novas CER.

Por outro lado, ao definir a "rede interna" (Art 2, aa)) - "rede de serviço particular instalada dentro de espaço confinado e com contiguidade geográfica, composta por um conjunto de linhas interconectadas e demais instalações elétricas auxiliares destinadas à veiculação da energia oriunda de uma ou mais UPACs para uma ou mais IU (instalação elétrica de utilização) associadas ao autoconsumo, podendo ter uma interligação elétrica com a RESP" - o novo decreto-lei abre também caminho para o desenvolvimento de micro-redes, em sistema de "ilha". Com estas surgem novos desafios, não só tecnológicos, mas também

de organização e gestão interna, bem como desafios para a proteção e gestão de dados. A Coopérnico pode ter também aqui um papel privilegiado, trabalhando diretamente com as comunidades para desenvolver soluções acessíveis e eficazes.

Cabe à Coopérnico, em primeiro lugar, refletir sobre os princípios em que deve assentar o seu envolvimento com os novos autoconsumidores coletivos e as comunidades de energia. A nova estratégia, a ser desenvolvida ao longo do próximo período, deverá ter em atenção os seguintes aspetos:

- Considerando os diferentes tipos possíveis de atores sociais envolvidos numa CER, com quem deverá a Coopérnico cooperar? e como se pode implementar esta cooperação?
- Definir novos serviços que a Coopérnico pode optar por desenvolver face ao autoconsumo coletivo e às CER, tais como:
    - Investir em UPACs que sejam geridas por uma comunidade e/ou por um sistema de autoconsumo coletivo (sendo que qualquer estratégia implementada estará em conformidade com o plano de geral da Coopérnico para as UPACs).
    - Desempenhar o papel de "agregador", combinando a eletricidade produzida, consumida ou armazenada por várias comunidades e/ou sistemas de autoconsumo individual ou coletivo, para compra ou venda no mercado de energia.
    - Desenvolver um serviço de apoio às CER enquanto "entidade gestora do autoconsumo coletivo".
    - Promover o estabelecimento de novas CER em parceria com a Coopérnico (tornando-se os membros da CER também membros e clientes da Coopérnico).

Estes são alguns dos pontos de partida, que ilustram a necessidade de desenvolver uma estratégia detalhada a fim de posicionar a Coopérnico face aos novos autoconsumidores coletivos e às CER.

Esta estratégia, a que chamamos **CER Coopérnico**, será criada e implementada no próximo período e apresentada ainda em 2020, com vista a responder às diferentes oportunidades e soluções que se apresentam, em linha com o código ético das cooperativas e promovendo a criação de valor social local.

4.3.2 Estudo e constituição da primeira comunidade de energia

Será dada continuidade à participação da Coopérnico no projeto Europeu, designado COMPILE. Teremos a oportunidade de participar ativamente no desenvolvimento de um projeto piloto, onde vamos trabalhar na criação do que poderá ser a primeira comunidade energética em "ilha" (apenas uma ligação à rede pública para vários consumidores que fazem gestão interna dos seus consumos) em Portugal. Este projeto será muito importante para a cooperativa, pois implicará o estudo, quer de novas formas de implementação desse tipo de comunidades em Portugal, quer de novos modelos de negócio associados à partilha de energia.

Com a revisão de várias diretivas europeias na área da energia que contemplam, pela primeira vez, uma definição de comunidade energética, não levará muito tempo até que a mesma definição seja transposta para o direito nacional. Neste contexto, a Coopérnico tem a ambição de estar associada à criação da primeira comunidade de produção e partilha de energia, quer através do projeto COMPILE, quer na adoção de um sistema de partilha virtual entre os seus membros, à semelhança do que já acontece noutros países europeus.

5 Envolvimento dos membros

5.1. Envolvimento dos membros nas operações de investimento

Uma das formas mais representativas de atuação dos membros na Coopérnico será o seu envolvimento nas operações de investimento, seja sinalizando oportunidades de investimento, seja sobretudo participando diretamente como investidor.

Contudo, até à data, apenas um número relativamente pequeno de cooperantes participa nas operações de investimento. Haverá um conjunto de explicações que se poderão adiantar para explicar esse facto, mas é pertinente tentar perceber melhor os constrangimentos que se possam colocar à atuação dos cooperantes. Propõe-se por isso lançar um inquérito aos cooperantes em que esta, entre outras, seja uma questão a abordar.

5.2. Representação Regional

Um dos elementos fundamentais do movimento cooperativo é a sua capacidade de agregação de pessoas num objetivo comum e um espírito de benefício do coletivo. O sentimento de serviço à comunidade através de uma ação que prioriza o bem público, é uma garantia de empenhamento e motivação para cidadãos preocupados com o a salvaguarda do planeta, as energias renováveis e a transparência do setor energético.

Dos sete princípios básicos da filosofia cooperativa devemos, ao falar de representação regional, centrar a nossa ação em três deles: Educação, Formação e Informação, Intercooperação e Interesse pela Comunidade. A capacitação da nossa rede de cooperadores passa, fortemente, por uma atuação conjugada e continuada naqueles domínios, encontrando fatores de motivação alicerçados no serviço à comunidade, no desenvolvimento do território e na solidariedade humana.

Queremos seguir uma estratégia que promova o envolvimento de mais membros no quotidiano da Cooperativa, desde logo como forma de garantir a motivação, mas também a capacidade de representação que se espera que a cooperativa adquira.

O caminho percorrido até agora permite-nos partir de uma base muito confortável no que respeita a representatividade geográfica, com um crescimento estável ao longo do ano, pelo que se entende que estão reunidas as condições para, devidamente capacitados, os membros assegurarem a representação da Cooperativa nos diferentes contextos. Nos Açores e na Madeira a representação da Coopérnico ainda não é expressiva.

A situação atual revela que perto de 43,9% do total dos cooperadores (base de cálculo 1427) são do distrito de Lisboa, com uma percentagem de 26,5% da capital. Dentro deste distrito há uma forte representação de Cascais (4,2% do total dos cooperadores) e de Oeiras (3,4%). Em termos nacionais, depois de Lisboa, surge o Porto com 13,5% e, logo a seguir, Setúbal com 7,8%. A fechar as representações locais com algum peso, temos Faro com 6,0%. Estes números devem ser validados por uma análise mais rigorosa dos dados, mas são bastante elucidativos. A merecerem algum destaque, pela positiva, temos ainda Aveiro (3,7%), Leiria e Santarém (3,1%) e Braga e Coimbra (3,0%). Os distritos com menor representação são Bragança, Guarda, Vila Real, Beja, Portalegre, Castelo Branco, Viseu, e Évora, por ordem crescente de importância. A Madeira e os Açores parecem estar fora da nossa influência, o que não é de todo nossa intenção.

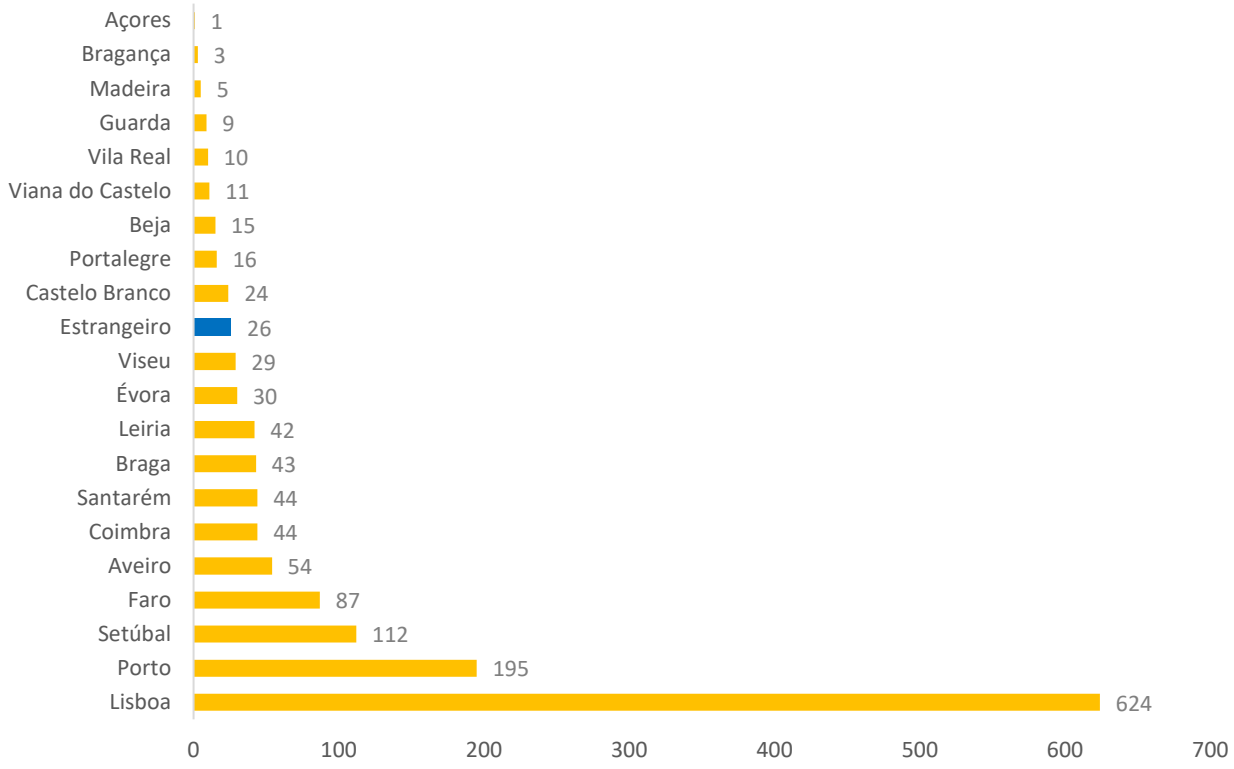

Figura 5 - Distribuição geográfica dos cooperantes

Até agora foram desenvolvidas algumas iniciativas tendo em vista apoiar o desenvolvimento desta representação regional, e concluiu-se facilmente que o foco deve ser posto em membros que possam estar disponíveis para representar a Cooperativa a nível regional e possam assegurar a sua participação em eventos que contribuam para aumentar a visibilidade e o conhecimento sobre a Coopérnico. As "Conversas com Energia", realizadas em vários pontos do país, com a ajuda dos membros, têm ajudado a consolidar o contacto entre os membros locais.

A realização de sessões de capacitação de membros, como as realizadas em maio de 2016 e em março de 2018, deverão continuar a ser realizadas. De assinalar que, ao contrário do previsto, não foi lançado, em 2019, o programa de empreendedorismo interno, com o objetivo de acolher as melhores ideias apresentadas, mas também, desafiar os membros da cooperativa a implementá-las.

A recente aprovação do regime legal do autoconsumo coletivo e das comunidades de energia renovável, veio reforçar a necessidade de fortes grupos locais que, em todo o país, possam fomentar a transição para as energias renováveis e a eliminação da dependência local dos combustíveis fósseis. O objetivo de criar comunidades verdes, isentas de qualquer dependência do petróleo é, hoje, uma realidade próxima e exequível.

A experiência dos últimos anos aponta para um determinado modelo de participação dos cidadãos a nível local com grupos alargados em que há uma colaboração entre empresas, instituições locais e os residentes. O envolvimento do setor de atividade ligado às energias renováveis (instaladores e projetistas) tem-se revelado importante, nunca perdendo de vista a dimensão social associada à intervenção da Coopérnico.

Para além dos objetivos gerais que nos têm guiado:

- Melhorar a informação disponibilizada na página da Coopérnico sobre os representantes locais/regionais, tornando-a mais adaptada às necessidades sentidas perante diferentes solicitações;
- Manter a estratégia de capacitação dos membros, no que respeita à representação e divulgação da Coopérnico;
- Disponibilizar material promocional e equipamentos (monitores de energia p.e.) para utilização pelos representantes locais.

Gostaríamos, ainda, de traçar alguns objetivos específicos:

- Representatividade a nível de todo o país, incluindo Açores e Madeira, o que passa pela existência de, pelo menos, um grupo local (ou representante) por distrito num horizonte de dois anos;
- Realização de Conversas com Energia em 40 novos concelhos do país, até final do mandato, o que corresponde a 10 por ano, uma média de 1 por mês;
- Coordenação do trabalho local e regional com as Comunidades de Energia Renovável, de forma a rentabilizar os meios e recursos, após publicação da regulamentação devida e de acordo com a estratégia a definir para esta temática em 2020;
- Criação de uma plataforma dos grupos locais com interligação com o site e com o universo das Comunidades de Energia Renovável, no prazo de ano e meio;
- Criação de módulos de formação ajustados às necessidades específicas de cada tipologia de cooperadores (capacitação dos membros) através da constituição de um grupo de trabalho que defina o calendário e as prioridades. Este grupo de trabalho deverá, também algo sobre o relançamento do Programa de Empreendedorismo;
- Ligação dos grupos locais à comunidade através da rede de ensino, das autarquias locais e das agências regionais e municipais de energia, das associações culturais, desportivas e sociais, assim como das IPSS (atenção às paróquias e aos centros de dia e de cuidados a idosos);
- Definição de um plano de intervenção com prioridades nas localidades em que pretendemos reforçar a nossa presença no prazo de três meses;
- Estabelecimento de um calendário de participação em eventos durante o ano de 2020, incluindo a entrada em Fóruns de interesse para a Coopérnico (exemplos Fórum da Economia Circular do Alentejo e iniciativas da Academia).

A finalizar este capítulo e como compromisso da Direção, propomos a elaboração de relatórios semestrais sobre a Representação Regional e o cumprimento dos objetivos estabelecidos no presente Plano. Para tal será necessário definir indicadores e etapas para o período do mandato.

6 Comunicação

A comunicação externa da Coopérnico tem vários objetivos:

- apoiar a missão da Coopérnico de desenvolvimento de um movimento cooperativo na área da energia assente na democraticidade interna;
- contribuir para o crescimento da cooperativa e do envolvimento de novos agentes locais;
- apoiar decisivamente a implantação da Coopérnico como comercializador de eletricidade;
- dar a conhecer, informar, sobre novos modelos de participação cidadã no sector da energia;
- contribuir para a definição de um quadro político positivo para a atuação do sector cooperativo na área da energia.

Estes objetivos serão alcançados através de uma atuação em vários eixos, como descrito nos próximos pontos.

6.1 Formação de opinião

A Coopérnico tem procurado reforçar a sua intervenção na formação de opinião sobre os temas com relevância para a atividade da Cooperativa, desde consultas públicas ao nível da UE à concretização de acordos internacionais. A recente atuação da Coopérnico teve já efeitos positivos e relevantes, reconhecidos pela tutela, na elaboração do novo quadro jurídico e regulamentar sobre o autoconsumo coletivo e as comunidades de energias renováveis. Contudo, a implementação desse quadro carece ainda de regulamentação detalhada, a qual a Coopérnico deverá continuar a acompanhar, participar e tentar influenciar.

Importará nos próximos meses/anos centrar a formação de opinião sobre:

- as oportunidades que a evolução tecnológica do sector permite abrir para a auto-gestão da energia e para a formação do "prosumer";
- o aumento da resiliência social que as comunidades de energia e outros modelos de energia podem providenciar;
- o potencial de um modelo descentralizado de redes de energia em comparação com o atual modelo de gestão centralizados;
- a necessidade de acelerar a transição energética através da eletrificação de consumos, mas também através do aumento do peso das renováveis, com vista à neutralidade carbónica;
- o papel de um comercializador com as características da Coopérnico como um passo na evolução para um modelo mais descentralizado e participado de gestão de energia.

Procurar-se-á manter a emissão de comunicados sobre temas relevantes, bem como reuniões com representantes políticos e institucionais, no sentido de amplificar a voz e a mensagem da Coopérnico.

6.2 Parcerias estratégicas

A Coopérnico continuará a buscar parcerias estratégicas com organizações com as quais partilha preocupações e valores, nomeadamente na área do terceiro sector e na sociedade civil, em particular nas organizações de carácter ambiental e social. Essas parcerias consubstanciam-se em ações e projetos

conjuntos, participações em plataformas de interesse comum, e permitem potenciar a ação da Coopérnico e aumentar a sua visibilidade externa.

Nesse sentido, a Coopérnico deverá:

- acompanhar plataformas e organizações alinhadas com um maior nível de ambição em termos de clima e em particular em termos de energias renováveis;
- apoiar iniciativas, plataformas e projetos sobre democratização do acesso à energia renovável, acesso à energia e combate à pobreza energética;
- buscar parceiros no terceiro sector e na administração pública descentralizada (juntas de freguesia, agências locais de energia, etc.) que estejam alinhados com a visão de um modelo de fornecimento de energia democrático, descentralizado e renovável.

Para além desta componente mais mediática, houve e haverá a preocupação de estabelecer parcerias com entidades que partilhem os nossos valores, no sentido de permitir levar a mensagem da Coopérnico a públicos que possam sentir afinidades com o que defendemos.

Assim, o estabelecimento de parcerias estratégicas como forma de ampliar a visibilidade e o conhecimento sobre a Coopérnico é um objetivo central em termos de comunicação. Estamos perante entidades que possam servir de multiplicadores da mensagem da Coopérnico.

A comunicação é uma área fundamental para o futuro da Coopérnico, podendo ser subdividida em quatro áreas: exposição mediática, parcerias estratégicas, formação de opinião e comunicação digital.

6.3 Exposição mediática

A aposta na estratégia de comunicação que destaque a Coopérnico na imprensa e comunicação social é uma estratégia a manter, considerando os resultados que permite atingir no que respeita à divulgação da cooperativa.

Em 2020 propomos:

- Participar em eventos dirigidos a diferentes públicos e, sobretudo, reforçar a participação em eventos de âmbito regional, com a colaboração ativa dos cooperadores;
- Procurar incluir referências, notícias sobre a Coopérnico em newsletters, jornais, publicações de diferentes entidades (em particular as que se dedicam à área da sustentabilidade);
- Assumir posições sobre temas relevantes para a cooperativa com emissão de comunicados de imprensa como forma de promover a notoriedade da Coopérnico;

Neste quadriénio, estes pontos deverão ser reforçados tendo sobretudo em atenção, dois níveis complementares de atuação:

- Nacional – através dos meios de comunicação nacionais (TV, jornais nacionais, rádios);
- Ao nível regional – buscando máxima visibilidade em meios de comunicação regionais.

Em particular, esta exposição mediática deverá sempre que possível assumir como objetivo a sensibilização da audiência para a Coopérnico enquanto comercializadora de eletricidade com as características especiais que a mesma reveste.

No que diz respeito aos eventos, sobretudo na participação em feiras e exposições, manter-se-á o objetivo de melhorar o material informativo e promocional da cooperativa, com o objetivo de melhorar a prestação de informação e aumentar a eficácia da comunicação presencial com visitantes.

6.4 Parcerias estratégicas

Para além desta componente mais mediática, houve e haverá a preocupação de estabelecer parcerias com entidades que partilhem os nossos valores, no sentido de permitir levar a mensagem da Coopérnico a públicos que possam sentir afinidades com o que defendemos.

Assim, o estabelecimento de parcerias estratégicas como forma de ampliar a visibilidade e o conhecimento sobre a Coopérnico é um objetivo central em termos de comunicação. Estamos perante entidades que possam servir de multiplicadores da mensagem da Coopérnico.

6.5 Comunicação digital

A comunicação digital via *web* é uma parte fundamental de qualquer estratégia de comunicação em movimentos como o da Coopérnico. O sítio da internet da Coopérnico já funciona em inglês, o que permite chegar aos residentes estrangeiros em Portugal e nossos membros. Com a entrada na comercialização, a página de internet da Coopérnico irá também ser revista, para dar mais visibilidade a esta área.

As redes sociais são outra aposta da Coopérnico neste novo quadriénio. A rede social Facebook é já uma plataforma importante de comunicação e divulgação da Cooperativa. É por isso necessário empenhar especial cuidado na melhoria da gestão nesta e outras redes sociais (twitter e linkedin) deste aspeto na cooperativa que, apesar de ter um número significativo de seguidores online (+5000 no Facebook) que pode ser um veículo para alargarmos a nossa base de influência.

Para 2020 prevê-se também fazer continuar uma renovação do site da Coopérnico, de forma a adequá-lo às novas tendências de comunicação mas, sobretudo, às necessidades da cooperativa devido à entrada na área da comercialização.

6.6 Monitorização e comunicação interna

As necessidades de envolvimento de membros manifestadas no ponto 6.1 são de extrema importância e uma parte desse envolvimento passa por garantir que todos os membros se sentem envolvidos e estão informados da atividade da cooperativa, para poderem participar no processo de decisão de forma democrática e horizontal. Para que isto seja efetivo a comunicação interna é fundamental. A criação de um Fórum de discussão permanente online é possivelmente uma boa solução para implementar através da área de membro no site da Coopérnico.

7 Inovação e tecnologia

7.1 Melhoria da infraestrutura tecnológica de pagamentos

Em paralelo com a necessidade de reforçar o quadro de pessoal, decorre também do aumento da atividade de comercialização e de produção (nomeadamente de investimentos dos membros), e consequente aumento de operações financeiras da Coopérnico, a necessidade de automatizar o sistema de transações (a débito e crédito) por forma a otimizar a alocação de tempo dos colaboradores da cooperativa.

Assim propõe-se a adoção de um sistema de pagamentos que permita otimizar os pagamentos a efetuar pela cooperativa aos cooperadores que investem nos projetos de produção.

7.2 Participação em projetos financiados

O envolvimento em projetos nacionais ou europeus foi até hoje e manter-se-á para o futuro como um objetivo estratégico da Coopérnico, procurando posicionar a Cooperativa como um parceiro para projetos, em particular a nível europeu.

Em 2020 manter-se-á a aposta na participação em candidaturas conjuntas a fundos europeus e/ou nacionais em áreas relevantes para a atividade da nossa Cooperativa.

Projeto COMPILE (projeto Horizonte 2020, 11/2018 - 4/2022) **-** O principal objetivo do COMPILE é, mostrar as oportunidades e benefícios que as comunidades energéticas podem trazer para a descarbonização do fornecimento de energia, a construção de identidade comunitária e a criação de benefícios ambientais e socioeconómicos. No COMPILE, as comunidades de energia são definidas como áreas (por exemplo, aldeias isoladas, pequenas cidades, distritos urbanos, áreas rurais) que se encontram ligadas à rede, com um grau ou potencial significativo de autoconsumo. No COMPILE, o foco está em mostrar o benefício da cooperação entre a produção descentralizada e uma infraestrutura de distribuição de energia centralizada através de comunidades de energia que mitigam os problemas da rede, evitando o dispendioso reforço da rede e otimizando as necessidades de energia, ao mesmo tempo em que aumenta a participação das energias renováveis.
A Coopérnico é o parceiro português e também tem a seu cargo o projeto piloto em Portugal. O nosso caso piloto será a construção de uma comunidade de energia renovável num condomínio de 150 famílias, em 8 prédios. Esperamos ainda no decorrer deste projeto conseguir começar a trabalhar com outros condomínios para começar a replicar este primeiro piloto.

Projeto PEARLS (projeto H2020) - O principal objetivo do PEARLS é desenvolver conhecimento aplicado sobre como aumentar o envolvimento dos cidadãos num sistema energético sustentável e renovável. Os resultados deste projeto podem transformar iniciativas legislativas e intervenções estratégicas junto das populações, em locais onde existem recursos de energia renovável e as comunidades locais estão em desvantagem, quer por falta de informação, quer por falta de contacto com outras populações.

7.3 Grupos de trabalho de inovação e desenvolvimento

Os sistemas de energia atravessam um importante processo de transformação devido não apenas ao emergir das redes inteligentes (smart grids) e da produção renovável descentralizada, mas também devido

às novas arquiteturas de sistema e modelos de negócio tais como agregadores, comunidades de energia ou autoconsumo coletivo. Neste contexto as cooperativas de energias em geral, e a Coopérnico em particular, assumem uma posição privilegiada para ensaiar, experimentar e estudar novos conceitos, ideias e modelos de operação do sistema de energia pois no futuro estes poderão vir a ser uma parte importante do modelo de negócio e da operação da cooperativa e esta poderá vir a implementá-los de uma forma inovadora. Para além disso, pelas suas características organizativas assentes na democracia, na cooperação e numa visão da energia como um bem comum as cooperativas possuem uma flexibilidade e resiliência relativamente às transformações em curso e estão, por isso, numa posição particularmente privilegiada para lidar com estas.

Os temas que hoje marcam a investigação e a discussão sobre sistemas de energia e cujo interesse para a cooperativa é notório são, por exemplo, as tecnologias de *blockchain*, micro-redes e os seus desafios, mercados locais de energia ou modelos de troca direta P2P, comunidades de energia e modelos de partilha, variabilidade do recurso e modelos de previsão, inteligência artificial e digitalização, flexibilidade do consumo (*Demand-Side Management* e *Demand-Response*), mobilidade elétrica, operação ótima de comercializadoras em mercados de eletricidade ou agregadores de flexibilidade, por um lado e, por outro, a privacidade dos dados e a garantia dos direitos digitais no âmbito das redes inteligentes.

Devido à importância estratégica destes temas, mas também devido à sua complexidade, torna-se necessário dotar a cooperativa de uma estrutura interna dedicada à discussão, estudo e investigação em inovação e tecnologia e que tenha como objetivo trazer conhecimento e know-how sobre os temas referidos e demais questões fundamentais dos atuais sistemas de energia inteligentes e da transição energética. A sua atividade pode centrar-se na compilação de informação sobre um dado tema, no uso de ferramentas computacionais para testar uma dada hipótese ou ideia, ou no desenvolvimento de ferramentas. A atividade desta estrutura deve, no entanto, ser levada a cabo em articulação não apenas com as necessidades concretas da cooperativa, mas em comunicação com os projetos em que esta se encontra envolvida nomeadamente os projetos de investigação em curso (COMPILE, FLEXCOOP) e tendo em conta os conhecimentos produzidos no âmbito .de projetos já terminados (Rescoop Plus e ID.Energia). Para além disso, deve ainda comunicar com os planos estratégicos e atividades futuras da cooperativa nomeadamente a atividade da comercialização, as necessidades de promover a literacia energética ou o estabelecimento de comunidades de energia.

Os objetivos do grupo de trabalho **"Inovação e Tecnologia"** são:

- Estudar, analisar, discutir e divulgar questões ou problemáticas sobre o tema abrangente dos sistemas de energia e da transição energética, com um foco predominantemente técnico e científico.
- Realizar o proposto no ponto 7.1 em articulação com as necessidades da cooperativa e concretamente, com as restantes áreas de intervenção e pelouros.
- Produzir e publicar estudos, relatórios internos ou públicos com vista a esclarecer a cooperativa ou a sociedade sobre as questões identificadas em cima.
- Levar a cabo iniciativas públicas ou privadas de discussão (debates, conferências, palestras, *meetups*, workshops) sobre questões identificadas em cima que sirvam de divulgação e *networking*.

O primeiro passo para a constituição do grupo de trabalho **"Inovação e Tecnologia"** começará por auscultar o universo abrangente dos cooperantes e entrar em contacto com potenciais interessados em fazer parte do grupo (considerando também as possíveis propostas recolhidas no âmbito do Programa de Intraempreendedorismo). Posteriormente, uma reunião inicial terá lugar com vista a definir coletivamente

a forma como se este se organizará e quais os seus objetivos, questões a focar e quais as capacidades reais. Em função do resultado deste processo inicial será planificada a atividade do grupo para o quadriénio 2020-2023.

7.4 Programa de intraempreendedorismo da Coopérnico

O Programa de Intraempreendedorismo da Coopérnico era uma das iniciativas mais inovadoras do Plano de Atividades de 2019 que, não tendo sido possível (sobretudo por falta de meios humanos), agora se recupera para implementação neste novo quadriénio. Assim replica-se abaixo o texto apresentado no Plano de Atividades anterior.

Com o crescimento da Cooperativa, cresceu também o volume de solicitações e sugestões que chegam à Coopérnico. Uma grande parte destas sugestões, realistas e aplicáveis, não são implementadas por falta de recursos da Cooperativa. Por vezes trata-se de escassez de meios técnicos ou orçamentais, mas a razão principal prende-se com a falta de recurso humanos.

Há, no entanto, nesta altura uma noção de estabilidade financeira e de organização interna que nos permite ser mais ambiciosos nas iniciativas lançadas. Nesse sentido, propõe-se a criação de um programa de empreendedorismo interno, com o objetivo de acolher as ideias apresentadas, mas também de desafiar os membros da cooperativa a implementá-las.

Este programa será lançado no primeiro trimestre de 2020 e assenta no princípio de que os membros promotores deverão também ser os “motores” da implementação das medidas que propõem.

A Cooperativa coloca ao seu dispor os recursos disponíveis (recursos humanos, orçamento, licenças, espaço, infraestrutura online, etc.) ficando, em caso de seleção, o membro proponente como responsável (ou gestor) da sua implementação no âmbito da atividade da cooperativa.

Assume a Coopérnico também o objetivo de apoiar a captação de recursos financeiros para a nova atividade, sejam eles internos (ex.: integração no orçamento ou financiamento dos membros) ou externos (ex.: fundos públicos ou apoio de parceiros europeus).

A organização do programa será feita em torno de 5 temas:

1) Produção verde e descentralizada;
2) Mobilidade suave e/ou partilhada;
3) Eficiência no consumo;
4) Comunidades energéticas e partilha de energia;
5) Pobreza energética.

Propõe-se o lançamento do programa durante o ano de 2020.

8 Orçamento plurianual 2020-2023

O mandato que se inicia em Janeiro de 2020, será marcado por um diversos novos desafios que têm vindo a ser elencados ao longo dos diversos capítulos do presente documento. A maioria destes desafios, oportunidades e constrangimentos terá uma repercussão orçamental, com maior ou menor peso, pelo que o presente capítulo pretende materializar numericamente estes impactos.

A entrada direta na comercialização, um dos objetivos da cooperativa desde a sua génese, será muito provavelmente o ponto com maior impacto nas contas da cooperativa no período em análise.

	2020	2021	2022	2022
Nº Clientes BTN	1.240	2.000	3.000	4.000
Nº Clientes BTE	20	30	45	68
Consumo estimado BTN (KWh)	4.161.328	6.711.819	10.067.728	13.423.638
Consumo estimado BTE (KWh)	2.400.000	3.600.000	5.400.000	8.100.000
Margem após custo EZU BTN €	76.152	120.813	181.219	241.625
Margem após custo EZU BTE €	14.640	10.800	16.200	24.300
Margem Potência Contratada €	589	950	1.425	1.900
% da Margem Potência Contratada	5%	5%	5%	5%
Preço Compra Energia (inc. EZU) €/MWh	60	60	60	60
Preço Venda BTN €/MWh	78,3	78	78	78
Preço Venda BTE€/ MWh	66,1	63	63	63

Tabela 3 - Resumo da Comercialização

A Tabela acima projeta o número esperado de clientes por cada ano, bem como os consumos esperados, tendo como base a nossa carteira atual de clientes. Prevemos uma taxa de crescimento do número de clientes de 50% em 2020, valor que pode ser considerado conservador, tendo em conta a pouca competitividade dos preços praticados atualmente pelo nosso parceiro Enforcesco e o número de membros que não possui contrato ainda com a cooperativa.

Utilizamos como referência uma estabilidade de preços médios de mercado, em linha com o real de 2018, pois 2019 à presente data o preço médio do mercado está próximo dos 50 EUR/MWh, inferior aos 60 EUR/MWh utilizados como preço de referência nas nossas projeções. Os preços de venda utilizados como referência, refletem ainda a dificuldade em diluir a nossa estrutura de custos, devido ao reduzido número de clientes, mas têm implícita uma redução de preços face à tabela atualmente praticada pelo nosso parceiro Enforcesco. Optou-se por algum conservadorismo no que respeita à estabilidade do comportamento de mercado.

A produção, será em 2020 o pilar fundamental da atividade da cooperativa, importância que em termos relativos esperamos se venha a diluir com a comercialização, no entanto, prevemos que venha a continuar a registar um crescimento constante.

Produção média (kWh/kWp)

Ano	2020	2021	2022	2023
Num Membros	2.200	2.750	3.438	4.297
Nova Potência Instalada - Venda Rede	614,5	0	0	0
Potência Inst - Venda rede	2.165	2.165	2.165	2.165
Tarifa UPP (€/MWh)	100	100	100	100
Produção UPP (MWh)	3.084	3.247	3.247	3.247
Faturação - Venda Rede (€)	291.155 €	305.933 €	304.404 €	302.882 €
Nova Potência Instalada - Autoconsumo PPA	300	500	500	500
Potência Inst - Autoconsumo PPA	519	1019	1519	2019
Faturação UPAC-PPA (€)	85.398 €	167.471 €	241.634 €	315.425 €
Investimento próprio (mil €)	759	415	415	415
Investimento acumulado (mil €)	2444	2859	3274	3689
Investimento médio por membro	345 €	151 €	121 €	97 €
Produção Elétrica (MWh)	2.683	3.183	3.683	4.183
Faturação Total (€)	**376.553 €**	**473.404 €**	**546.037 €**	**618.307 €**

Tabela 4 - Produção em UPP e UPAC

A tabela acima ilustra as previsões para a produção nas modalidades de UPP (Unidades de Pequena Produção) e UPAC (Unidades de Produção para Autoconsumo), prevendo-se que com a suspensão das UPP em 2019 no futuro sobre esta modalidade apenas entrem em produção as centrais com tarifa já atribuída e em fase construção ou ligação à rede. Por esta razão, a entrada de novas centrais deve focar-se em UPAC's.

Para 2020 estimamos uma taxa de crescimento moderada e sobretudo centrada naquilo que são os projetos já aprovados ou em fase avançada de estudo, esperamos que no ano de 2019 a faturação da produção atinja os 200.000 EUR (ou um valor muito próximo deste) e que em 2020 cresça sobretudo pela entrada em produção das centrais cuja potência foi atribuída em 2019 e pela produção na totalidade do ano por centrais que entraram em produção em 2019 e que produziram apenas alguns meses.

A tabela acima não reflete qualquer possível investimento em produção a mercado, pois esta terá de ser analisada caso a caso, sendo um objetivo a que nos propomos em 2020 e anos seguintes de forma a suportar o objetivo de possuir um mix energético de origem renovável no decorrer do ano 2020. De notar que as UPAC pela sua natureza têm um impacto no mix energético neutro, pois o aumento de produção equivale um aumento de consumo.

Coordenação
Admin/Apoio Cliente
Técnico
IT / Comercialização
Estagiário
Finanças / Mercado
Outros FSE
(apoio legal)

Tabela 5 - Quadro de Pessoal para 2020

O crescimento da atividade da cooperativa, exige um crescimento do quadro de pessoal e de colaboradores em regime de contratados de forma a suportar a manutenção e melhoria da qualidade de serviços a prestar aos membros, bem como, responder à maior crescente complexidade dos desafios em que nos envolvemos. A figura acima resume os perfis do quadro de pessoal da cooperativa para 2020. Manteremos uma coordenadora, uma pessoa de apoio ao cliente, uma técnica no sector, incrementamos os custos com IT através de um fornecedor externo, admitiremos um estagiário com perfil técnico e que poderá ser integrado na equipa no futuro, admitiremos a tempo parcial um técnico com um perfil de gestão financeira e mercados de energia, iremos iniciar um processo de parceria com um fornecedor de serviços jurídicos para dar suporte à comercialização e produção e orçamentamos outras necessidades de apoio pontual de acordo com as necessidades ao longo do ano.

A Tabela seguinte resume o plano de negócios para os quatro anos do mandato que se iniciará em Janeiro de 2020. Este continua a assentar em premissas muito cautelosas e baseadas na informação de que dispomos na atualidade. Optamos por destacar alguns elementos ainda não referidos nos planos de detalhe da Comercialização e produção:

- Projetos europeus: os projetos atualmente em execução (Compile e PEARLS) permitem cobrir 70% dos custos com pessoal em 2020, não se considerando qualquer receita com candidaturas atualmente em fase de conclusão ou avaliação que possam vir a ser financiadas;
- Receitas com a produção e consequente rentabilidade dos projetos têm vindo a crescer desde que se implementaram contratos de monitorização e manutenção;
- Custos com a produção estimados de forma muito conservadora;
- Desvios e imprevistos calculados como 6% dos proveitos totais, constituindo uma base de proteção para eventuais variações de mercado não esperadas;
- Estimamos um crescimento significativo do número de membros em 2020 com a entrada da comercialização direta, este objetivo está sustentado com a forte convicção de que os atuais membros serão a nossa melhor forma de divulgação;
- Os resultados esperados para 2019 e o realismo das projeções constantes na tabela seguinte, cimentam a convicção que continuará a crescer a confiança dos membros na cooperativa e o consequente crescimento da mesma.

Ano	Detalhe	2020	2021	2022	2023
Crescimento	Membros	2.200	2.750	3.438	4.297
	Capital Social Inicial	224.980 €	273.980 €	312.480 €	360.605 €
	Capital Social Novo	49.000 €	38.500 €	48.125 €	60.156 €
	Capital Social Final	273.980 €	312.480 €	360.605 €	420.761 €
Proveitos		**551.685 €**	**630.967 €**	**744.881 €**	**886.133 €**
Produção	Portfólio de produção	376.553 €	473.404 €	546.037 €	618.307 €
Comercialização	Nº de contratos	1.260	2.030	3.045	4.068
	Consumo estimado (MWH ano)	6.561	10.312	15.468	21.524
	Margem bruta comercialização	91.381 €	132.563 €	198.844 €	267.825 €
Subsídios a exploração	PEARLS	2.250 €			
	COMPILE	81.500 €	25.000 €		
Custos		**279.280**	**346.548**	**383.335**	**423.002**
Custos Produção	25% faturação (arrendamento,	94.138 €	118.351 €	136.509 €	154.577 €
Staff	Coordenação	29.923 €	31.420 €	32.991 €	34.640 €
	Admin/Apoio Cliente	16.977 €	35.652 €	37.434 €	39.306 €
	Apoio Técnico	16.977 €	17.826 €	18.717 €	19.653 €
	IT / Comercialização	18.000 €	18.900 €	19.845 €	20.837 €
	Finanças / Mercado	19.431 €	20.403 €	21.423 €	22.494 €
	Estagiário/técnico	5.946 €	17.826 €	18.717 €	19.653 €
	(apoio legal)	1.120 €	1.456 €	1.893 €	2.461 €
Escritório	650€/mês	7.800 €	8.034 €	8.275 €	8.523 €
Software	Renovação Site / SW Comercialização	7.500 €	7.725 €	7.957 €	8.195 €
Contabilidade	325€/mês	4.225 €	4.352 €	4.482 €	4.617 €
Comunicação e imagem	Design/Marketing/PR	7.590 €	7.818 €	8.052 €	8.294 €
Desvios e imprevistos	5% da faturação	33.101 €	37.858 €	44.693 €	53.168 €
Deslocação e ajudas de custo		16.551 €	18.929 €	22.346 €	26.584 €
EBITDA		272.405	284.419	361.547	463.130
Ativos	Valor total	2.187.082,83 €	2.456.277,31 €	2.707.525,49 €	2.942.023,79 €
Amortização ativos	15 anos	102.003,42 €	145.805,52 €	163.751,82 €	180.501,70 €
EBIT		170.401,29 €	138.613,16 €	197.794,73 €	282.628,79 €
Financiamento angariado		759.035,00 €	415.000,00 €	415.000,00 €	415.000,00 €
Capital em dívida membros		2.159.797,46 €	2.400.754,80 €	2.658.562,57 €	2.626.042,63 €
Pagamento Juros (€)	4% juros anuais	53.183,85 €	71.273,32 €	76.824,15 €	82.415,44 €
EBT		117.217,44 €	67.339,85 €	120.970,58 €	200.213,35 €
Impostos	(IRC)	27.546,10 €	15.824,86 €	28.428,09 €	47.050,14 €
Net profit		**89.671,34 €**	**51.514,98 €**	**92.542,49 €**	**153.163,21 €**
Operational Cash-Flow		219.220,85 €	213.145,37 €	284.722,40 €	380.715,05 €
FREE CASH FLOW		**191.674,76 €**	**197.320,50 €**	**256.294,31 €**	**333.664,91 €**
ACCUM CASH FLOW		368.734,39 €	566.054,90 €	822.349,21 €	1.156.014,12 €
Novo Capital Social		49.000,00 €	38.500,00 €	48.125,00 €	60.156,25 €
Investimento de Capitais próprios em Produção	(se possível)		20.750,00 €	20.750,00 €	20.750,00 €
Amortização dívida	Pagamentos aos membros	118.776,18 €	174.042,66 €	157.192,23 €	447.519,93 €
LIQUIDEZ		**339.829,35 €**	**380.857,20 €**	**507.334,28 €**	**432.885,51 €**

Tabela 6 - Plano de negócios quadrienal 2020/23

A comercialização trará um novo desafio em várias vertentes, do ponto de vista financeiro, a gestão de tesouraria será aquela que maiores exigências trará, pelo que o reforço da estrutura de capital para fazer face às necessidades de liquidez geradas pelo desfasamento entre pagamentos e recebimentos (os pagamentos a fornecedores serão devidos no inicio do mês seguinte ao do consumo de energia, enquanto os recebimentos de clientes serão entre 15 e 30 dias das datas de emissão das faturas) obrigará à retenção

dos excedentes gerados para reinvestimento na cooperativa, não se prevendo qualquer distribuição dos mesmos aos membros no quadriénio apesar dos resultados positivos acumulados projetados.

Esta é uma opção que terá de ser confirmada anualmente em Assembleia Geral no caso de se verificarem os resultados positivos esperados.