DISCOVER

D.3.2 List of hurdles and gaps

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List of Abbreviation and Acronym

Abbreviation	Meaning
CEP	Community Energy Projects
PV	Photovoltaic
EC	Energy Community
REC	Renewable Energy Community
CEC	Citizen Energy Community
ECR	Energy Community Repository
OSS	One-Stop-Shop
RES	Renewable Energy Source
SME	Small and Medium Enterprise
EV	Electric Vehicle
DSO	Distribution System Operator
CSC	Collective Self-Consumption
	In Bulgaria
SEDA	Sustainable Energy Development Agency
BCRA	Bulgarian Cities and Regions Association
BDB	Bulgarian Development Bank
BEMF	Bulgarian Energy and Mining Forum
EAP	Energy Agency Plovdiv
EERSF	Energy Efficiency and Renewable Sources Fund
NIS	National Information System
	In Croatia
HERA	Croatian Energy Regulatory Agency
ZDOED	Energy Activity Permit
	In France
ADEME	Agency for the Environment and Energy Management
ANAH	Agency for Habitat Improvement
ADIL 75	Departmental Housing Information Agency of Paris
FFB	French Building Federation

	In Italy
NRRP	National Recovery and Resilience Plan
ANCI	National Association of Italian Municipalities
GSE	National Manager of Energy Services

1 Introduction: DISCOVER Project

1.1 Overview

DISCOVER is an innovative LIFE project with the strategic aim to support the transition to a renewable energy-driven society. By fostering Community Energy Projects (CEPs), DISCOVER will empower stakeholders and citizens and mobilize significant investments in renewable energy generation in pilot regions across Europe. DISCOVER will catalyse the launch of CEPs in 5 diverse European regions respectively in Austria, Bulgaria, Croatia, France and Italy. Local hubs will be set up to pilot innovative support mechanisms for CEPs. The hubs will deliver guidance and practical services on the technical, economic, financial and legal aspects and will help connecting CEPs to local service and technology providers. The services will cover all developmental stages of CEPs, accompanying them throughout their entire lifecycle.

Taking into account the diverse socio-geographical-legislative and market maturity levels across these 5 pilot regions, DISCOVER will follow a regionally specific approach with four local service hubs. On top of that, an interactive online tool will be designed to provide extensive support to local communities embarking on Renewable Energy Projects.

DISCOVER aims to simplify decision-making processes and reduce operational barriers by connecting projects with local service/technology providers and relevant authorities.

During the 3-year timeframe (2023 – 2026), DISCOVER is expected to reach more than 20,000 citizens, support 20 new initiatives (focusing on community PV installation), and trigger a total investment of more than 7.7 million of euros. The project will promote and facilitate the recreation of future service hubs in other regions to ensure replication across other European regions.

The DISCOVER consortium stands as a collaborative force spanning over five European countries, each committed to driving the vision of CEPs within their respective region. The consortium comprises active national / regional leaders in the CEP initiatives, well-connected to citizens, local authorities, and stakeholders.

2 “WP3 – List of hurdles and gaps” activities

2.1 Work package 3 activities

Work Package 3 centers on developing a specific guidebook based on the insights gained from WP2, particularly regarding existing support initiatives, services, schemes, and the general guidebook. The specific guidebooks will be utilized by the service hubs in each pilot region and structure all DISCOVER support services.

This work package initiates DISCOVER's stakeholder engagement activities (T3.1), guided by the stakeholder engagement strategy document (D3.1), which provides a tailored methodology for engaging each actor. Although stakeholder engagement extends across multiple work packages, WP3's initial efforts are dedicated to identifying and connecting with local stakeholders in each DISCOVER pilot region to understand the practical challenges they encounter in launching CEPs (D3.2).

Understanding these challenges is essential to effectively develop the DISCOVER support services portfolio, which aims to match such challenges with existing services. Where gaps are found, new or advanced services will be developed.

The creation of the specific guidebook for each pilot region (D3.4) involves aligning suitable services with the individual steps of the CEP lifecycle as called out in the general guidebook. Connecting a service to a specific step requires clear structuring. Services should be self-contained and encapsulated to integrate seamlessly into the guidebook. Each service must have clearly defined requirements that outline its purpose. To successfully connect the service to a step, it's also essential to specify the service's interface. This process includes defining the interconnections between stakeholders and the flow of information between them (D3.3), which also supports the initial development of new services by outlining their requirements (D3.5).

2.2 "List of hurdles and gaps" activities

Based on the work plan of DISCOVER, the main objective of this phase is to draw a list of hurdles faced by CEPs, and gaps with existing services, in each pilot region.

Work was done according to the methodology described in D3.1- Methodology for stakeholder engagement - which addresses how to better engage stakeholder considering each pilot region specifics, and the methodology of interviews and analysis of content that is described in the present chapter.

On top of the hurdles and gaps that were identified, numerous stakeholders were effectively engaged in the development of CEPs in pilot regions, and interconnections between them were explored.

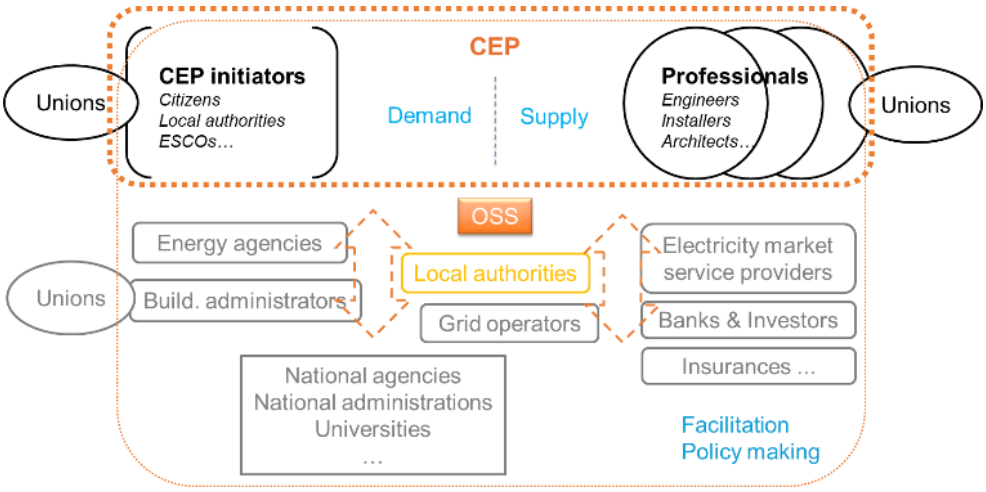

Figure 1: Typology of stakeholders (from D3.1- Methodology for stakeholder engagement)

The methodology for interview and content analysis has followed three steps in each pilot region:

1. Interviewing key stakeholders about hurdles faced locally by CEPs and potential solutions
2. Grouping the hurdles identified into coherent groups, and putting them in perspective with the national context
3. Analysing gaps between the hurdles identified and known existing services

2.2.1.1 Step 1: Interviews

Interviews have been conducted with 35 key stakeholders from the pilot regions between December 2023 and July 2024.

Given that over 80 stakeholders were identified by April 2024, interviews have been prioritized with key representatives from each pilot region. This selection was based on their role and type to ensure diverse stakeholder representation, while also taking local specifics into account.

Due to the specificities of each pilot, partners have given a particular focus to their investigation, such as the mobilization of condominiums in Paris, or the partnership with different municipalities in Croatia and Italy.

A common roadmap was made by APC with the agreement of pilot's partners in order to harmonize interviews of different forms (first meeting with elected officials, technical meeting with local authorities or private companies, call with a long-time partner, etc.). The roadmap helped focusing on common essential topics

	Roadmap for interviews		
Steps	**Aim**	**Information to collect**	**Details to get if possible**
1	Present DISCOVER project		
2	Explain stakeholder engagement objectives and the following steps list of hurdles when setting up CEPs interface requirements for external services development of new/advanced services initiation of new CEPs Communication and dissemination		
3	Let the Stakeholder to introduce itself		
4	Discuss about its views and activities in favor of CEPs	Aims and activities of the stakeholder	
		State of the art of CEPs according to the stakeholder	
		Activities in favor of CEPs and PV in the pilot region	Use of existing schemes, services and initiatives
		Hurdles and challenges	Type of hurdle or challenge Details about the hurdles Phase of CEP Leverages Geographical scope
		Expectations	Potential role of the local OSS (service, tool)
		Interface with other stakeholders	Personal contacts for interviews
		National and european scope	Activities in other regions or countries Knowledge of other initiatives relevant to DISCOVER

Figure 2: roadmap for interviews.

2.2.1.2 Step 2: Hurdles identification

The hurdles discussed in each interview were put into a table for identification.

For each pilot region, they were grouped into coherent categories, called main findings (such as, inadequate legal framework, difficulties in financing, lack of expertise, lack of information). They were also categorized according to the topic concerned (Energy Community, PV or both), the phase of CEP concerned (development, implementation, operation, or both) and the domain of activity concerned (legal, administrative, social, financial, technical, economic).

The text and figure below summarize the main categories of hurdles that were found common to all four pilot regions.

- **Contextual hurdles**, due to external factors to CEPs:
  - **Legal**: barriers due to legislative or regulatory system
  - **Administrative / organizational**: struggling with the procedures or the application of the laws and rules (deadlines, required papers, etc.)
  - **Social**: mobilizing citizens around the CEP, informing and raising awareness
  - **Financial**: accessing finance
- **Operational hurdles**, due to internal factors to CEPs:
  - **Technical**: struggling with feasibility (physical constraints, engineering challenges, local specifics of the territory, etc.)
  - **Economical**: struggling with profitability (business models, market actors, costs and prices, etc.)

- **Legal / organizational**: struggling with the understanding of legal framework, with the definition of governance models, long-term rules, etc.
- **Social / organizational**: struggling to build strong communities

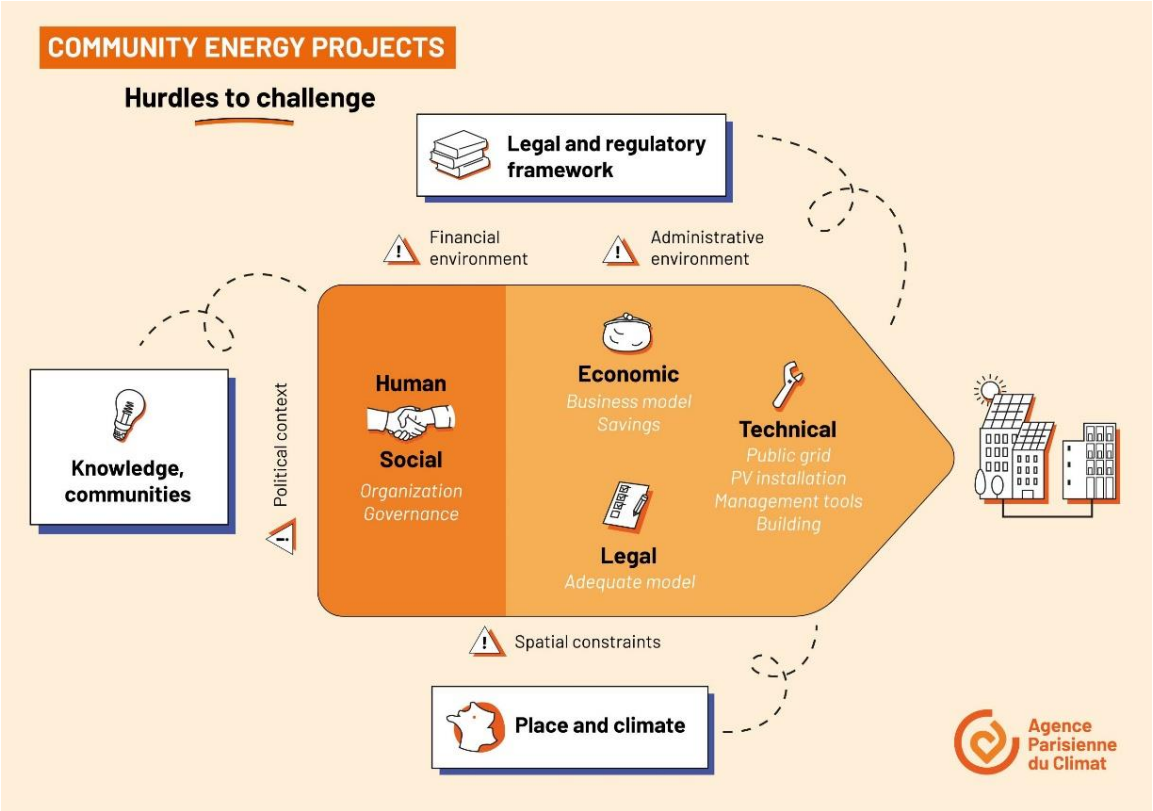

Figure 3: diagram of the types of hurdles faced by a Community Energy Projects

Hurdles were finally analysed in a qualitative way, considering the point of view of DISCOVER pilot partner and considering the national context as well.

2.2.2 Step 3: Gap analysis

For each hurdle identified, a table has been drawn and identifies 3 steps.

- Solutions to the hurdle were proposed, according to the interviews made and the point of view of the pilot partner
- Existing services and schemes that could be integrated in a CEP lifecycle and that could bring part of the solution were identified, mainly from the work done in DISCOVER Work package 2
- Gaps were identified between the known existing services and schemes and the proposed solution.

Needs for the local development of CEPs were thereby put into evidence. The next activity of DISCOVER will aim at requiring new or advanced services to be developed by pilot partners that would fill strategic gaps locally.

3 Presentation of the document

3.1 Overview of the document

The present document analyses the hurdles faced by CEPs and their partners, and the gaps between existing services to CEPs and potential solutions to the hurdles identified. in the four pilot regions of DISCOVER: Sofia region in Bulgaria, Primorje – Gorski Kotar County in Croatia, Paris city in France, Teramo province in Italy.

Analysis is based on the interviews of key stakeholders according to the methodology described in chapter 1.

The contexts of each pilot region are specific, but a recurrence of hurdles between them and an alignment with some of the hurdles reported at national and European levels indicates patterns to learn from.

3.2 Structure of the document

The present document is divided into an introduction, four chapters, a conclusion and an annex.

The introduction is an observation of hurdles faced by CEPs at the European level, to give context to the local observations made thereafter.

Each chapter is dedicated to one DISCOVER pilot region. It is divided into four parts following the methodology of chapter 1:

Scope of interviews of the pilot region

List of hurdles

Discussion on hurdles (delves deeper into local specifics)

Gap analysis

Conclusion for the pilot region (priorities for action)

The conclusion of the document points out at the main categories of hurdles considering the European context, and it is observed how these hurdles are effective or not to the four pilot regions, thereby underlying local specifics.

The annex gives a summary of each of the 35 stakeholder interviews (table 1 and table 2). In table 1, the situation, activities and point of view of each stakeholder on hurdles faced by CEPs are detailed. In table 2, potential solutions that were discussed in interview are detailed.

4 Observations on hurdles faced by CEPs at the European level

The Community Power Coalition has reported in 2020 on the typical obstacles faced by Citizen Energy projects in the European context. The Community Energy Guide published in October 2020, in its Chapter 23, states that Community Energy Projects must be prepared to recurring barriers:

- Internal conflicts within their team
- A lack of funding
- Processes for permits
- Administrative constraints
- Constraints for grid connection
- A lack of knowledge on renewable energies
- An opposition from the local population.

Other documents offer similar, general, statements about hurdles for CEPs. This observation sparked the DISCOVER project in 2023 to provide more contextualized information about hurdles and services in partner regions.

The Energy community Repository (ECR) (terminated in 2024 with the creation of the European Energy community Facility) under the Directorate-General for Energy for the European Union has published on 29 January 2024 (to be found at this link) a thorough report on barriers and action drivers for the development of energy communities and their activities. The report also addresses the topic from a generalist point of view. It identifies four types of barriers:

- First, the lack of a clear and uniform national legal definition for energy communities creates legal uncertainty.
- Second, citizens, businesses and local authorities may lack awareness around energy communities, requiring development of understanding and trust. Furthermore, they often lack technical expertise in project development or navigation of administrative and licensing procedures.

- Third, energy communities have trouble accessing finance for projects (particularly for early stages of project development) and are sensitive to frequent or abrupt changes in regulation and public support.
- Fourth, while there is an ambition to ensure energy communities are inclusive to all citizens, they are not very accessible to energy poor and vulnerable households.

National frameworks are discussed in DISCOVER D2.3- Assessment of National support schemes document and in the present document. Each pilot, to different degrees, is engaged at the national scale in favour of an improvement of legislation. Second and third barriers quoted from the ECR report, and the whole list quoted from the Community Energy Guide, are the core topics of DISCOVER project and are to be addressed by local One-Stop-Shops and Specific Guidebooks.

The inclusion of energy poverty, the fourth barrier quoted from ECR report, will not be the focus of the DISCOVER project. However, launching new CEPs can provide future synergies that potentially mitigate energy poverty.

5 List of hurdles in each pilot region

5.1 Bulgaria – Sofia Region

5.1.1 Scope of interviews

5.1.1.1 Energy transition and the role of municipalities

As part of the RED II transposition process, Bulgaria made several changes to the Energy Law and the Law on Energy from Renewable and Sources, as well as to other new secondary acts and regulations, to provide greater legal and regulatory certainty in the energy transition. However, there is a general noticeable delay in the establishment, development and functioning of the energy communities compared to other EU member states.

IESDI experts analyzed the existing obstacles related to normative and legislative documents laying the conditions for the implementation of energy communities in Bulgaria, considering the first successful initiatives implemented under similar European projects. Financial impediments, lack of awareness, cumbersome administrative procedures and tax policies were part of the interviews held with key stakeholders, the results of which are shown in p. 4.1.2 below.

Bulgarian municipalities are ambitious to accelerate the green energy transition and facilitate the development of new Community Energy Projects. It is recognized that municipalities have a leading role in this process due to their administrative, economic and social functions and as a guarantor to various public and private investment funds. The prospects for the development of modern highly efficient

energy infrastructure in Bulgaria are related to the implementation of distributed energy production at local level by the adoption of a comprehensive multi stakeholder engagement strategy. This, in turn, is directly related to the activity of IESDI as OSS facilitating the creation of energy communities and in particular, to the municipalities in Sofia Region and couple others – in Gabrovo Region.

5.1.1.2 Stakeholders interviewed

The interviews with 12 key Bulgarian stakeholders took place from April to August 2024. IESDI decided to discuss the challenges and opportunities in developing REC together with other types of CEPs in a very structured way, gathering more insight and preparing the ground for cooperating with the key stakeholders on designing the Specific guidebook (Chapter Bulgaria) to be used in the OSS to be designed later on within the project.

The Bulgarian stakeholders interviewed represent the following categories:

- National bodies (law making and law enforcing) - **Ministry of Energy, the Sustainable Energy Development Agency** (SEDA)
- National/regional associations - **Bulgarian Cities and Regions Association** (BCRA), **Bulgarian Energy and Mining Forum** (BEMF), **Chamber of Energy Auditors**
- Energy Agencies – **Energy Agency Plovdiv** (EAP)
- Financial institutions (banks) - **Bulgarian Development Bank** (BDB), **Energy Efficiency and Renewable Sources Fund** (EERSF)
- Municipalities – **Sofia**, **Dryanovo**, **Panaguyrishte**, **Pazardjik**, **Slivnitsa**.

5.1.2 List of hurdles

Hurdles are categorized into 5 categories according to methodology described in chapter 1:

1. **Inadequate legal framework**
2. **Long and difficult administrative procedures**
3. **Financial hurdles**
4. **Lack of information and understanding of the benefits**
5. **Tax policy**

Finding No. 1	**Related hurdles**	**Object**	**Domains**	**Phases**
Inadequate legal framework	**A more detailed regulation of the status of the Energy communities** as participants in the electricity market is needed, related for example to their relations with the respective network operator - connection, metering, payment of network services, with the conditions under which the final customer exercises his rights as a separate final customer of the network, and the status of the energy community as a participant, as well as the ways of sustainable financing.	Energy Comunity (EC)	Legal, organizational	Development, Operation
Finding No. 2	**Related hurdles**	**Object**	**Domains**	**Phases**
Long and difficult administrative procedures	There are more than 20 national laws and numerous regulations. Many of the norms have been changed over the years and create complexities for their implementation even for administrative authorities. It is a common phenomenon in the implementation of renewable energy projects that, due to the **lack of a clear legal practice on the coordination of norms from several laws**, administrative authorities or grid operators refrain for months from taking a decision and stop the investment process of a project.	EC	Administrative, organizational	Development, Implementation
		EC	Administrative, Financial	Development, Implementation, Operation
	Need for an information campaign by the Ministry of Energy for the benefit of municipal administrations, with the aim of facilitating the administrative procedures for the construction of energy installations in sites and properties operating in the energy community mode.	EC	Organisational, technical, administrative	Development
Finding No. 3	**Related hurdles**	**Object**	**Domains**	**Phases**
Difficulty in financing and securing projects	Requirement for collateral on **banking loans;** Absence of measures to facilitate **crowdfunding;** **Absence of specific financial instruments to provide electricity end-users with low incomes or vulnerable customers** with the opportunity to consume their own electricity from renewable sources within the EC	EC	Financial	Development, Implementation Operation
Finding No. 4	**Related hurdles**	**Object**	**Domains**	**Phases**

Lack of information and understanding of the benefits	**National Information System** for the potential, production and consumption of energy from renewable sources has not been implemented in the Republic of Bulgaria under Art. 52 para. 1 of RES Act. Need for an information campaign for the benefit of municipal administrations, with the aim of facilitating the administrative procedures for the construction of energy installations in sites and properties operating in the energy community mode	EC	Social, organisational technical	Development Implementation Operation
Finding No. 5	**Related hurdles**	**Object**	**Domains**	**Phases**
Tax policy	**Lack of clear rules regulating tax rates and how individual members of the energy community will be taxed** does not allow efforts in this direction to gain momentum. Owners of installations to produce (electricity) energy from RES are subject to numerous taxes, fees and administrative payments. Sometimes the total amount of these obligations exceeds the profit from the sale of the excess energy produced.	EC	Financial, organizational	Operation
	Lack of communication by the state regarding the risk of future introduction of new taxes and fees for EC members, including regarding the use of registration regimes for future taxation.	EC	Financial, organizational	Operation

Table 1: List of hurdles identified in Bulgaria

5.1.3 Discussion on hurdles identified

The hurdles identified are at the national level and cover all three phases of CEPs creation, impeding mainly the Development and Implementation phases.

5.1.3.1 Inadequate legal framework

The most serious hurdle as mentioned by all the stakeholders is the legal framework**.** Despite the norms transposed from the European legislation for the development of energy communities, both as CEC and as REC, and despite the changes introduced in the Law on Energy from Renewable Sources in Bulgaria from October 13, 2023, introducing the term "*communities for renewable energy*» the REC creation continues to falter.

Another hurdle is the inability to realize the benefits of energy communities due to existing regulations**.** The regulated electricity market for domestic consumers does not allow people to see the real potential of energy communities and their participation in the market as energy producers. Parallel to it, the lack

of flexibility of norms in the Condominium Management Law is another legal hurdle, including lack of specific texts to regulate public relations related to creation and functioning of energy communities in residential buildings.

5.1.3.2 Long and difficult administrative procedures

The need for a registration regime for communities i.e. a special authority to monitor their activities is a topic of big discussion and is also an overregulation hurdle. In the area of electricity production and consumption, the issues surrounding the use of networks and the measurement of electricity, which should be according to the so-called "net virtual metering" method, are unresolved.

One view on this matter is that there is no need for such a regime because it would put cooperatives at a disadvantage compared to other types of entities. There is an opinion that there should be stricter rules regarding the activities of the communities and that they should be under some control. Ministry of Energy believes that the rules should not be so unified, and they should be subject to decision of the initiators and members of the community. The more liberal view of the representatives of the ME on the regime of work and control over the communities stems from the fact that in Bulgaria there are still no specific programs and measures to stimulate the development of civil energy communities. But if such appear, it will also create the need for control to ensure, above all, the correct spending of the incentives.

The SEDA also shares the view that the creation and functioning of the communities should be on the initiative of the participants within the structure and not be a self-serving policy of administrative decisions.

5.1.3.3 Difficulty in financing and securing projects

One of the main obstacles faced by energy community initiators is the access to finance, due to:

- Absence of financial instruments to provide end users of electricity with low incomes or vulnerable customers with the opportunity to consume their own electricity from renewable sources.
- Absence of targeted measures aimed at the banking sector to remove administrative and technical obstacles to EC project financing.
- Absence of measures to facilitate access to bank financing of EC projects.
- Lack of crowdfunding practices, stipulated by law.

However, local authorities can be the guarantor of loans, provide initial financing through municipal funds or set aside specific budget lines to support the local community at every step of the process of CEP creation.

5.1.3.4 Lack of information and understanding of the benefits

The National Information System (NIS) for the potential, production and consumption of energy from renewable sources has not been implemented in the Republic of Bulgaria under Art. 52 para. 1 of the Renewable Energy Sources Act. The NIS in question represents a natural register for the reporting of active ECs without carrying unnecessary administrative functions for their registration or authorization.

The promotion of the development of the renewable energy communities by the state, under the RES Act, is carried out only through assessments of the executive director of SEDA about the existing obstacles and their development potential. The absence of a national strategy promoting REC and the imputation of special functions regarding REC to professional condominium managers, municipalities and associations of owners, may create a sense of uncertainty and risk among investors from introducing financial schemes.

The Ministry of Energy does not conduct an explanatory campaign for the benefit of municipal administrations, with the aim of accelerating and facilitating the construction of energy installations in sites and properties operating in the energy community mode.

5.1.3.5 Insufficient tax policy

The single form of encouragement of REC creation in the tax policy is insufficient and must be supplemented by:

- a flexible scheme of tax relief for properties in the Renewable Energy Community regime, with a parallel increase in the tax burden for properties whose owners did not invest in the construction of the REC.
- introduction of targeted schemes for EC credit and lease financing by the Bulgarian Development Bank and its subsidiaries.
- introduction of incentives for building owners in energy-related legal acts, including:
    - when renting out a building or premises from the building.
    - when building charging points for electric cars.
    - when building heat pump and microclimate installations, etc.

5.1.4 Gap analysis

According to the methodology described in chapter 1, 10 gaps were identified for the Bulgarian pilot.

For hurdle n°1 (“inadequate legal framework”) one gap is identified, in the final column:

- Gap n°1: **There are no existing services targeted at explaining regulation and coordination among existing legislations and norms**.

Related hurdles	Solutions	Existing services and schemes (identified in WP2)	Analysis of existing services (integration in CEP lifecycle or not, recommendations)	Gaps
A more detailed regulation of the status of the Energy communities as participants in the electricity market is needed, related for example to their relations with the respective network operator - connection, metering, payment of network services, with the conditions under which the final customer exercises his rights as a separate final customer of the network, and the status of the energy community as a participant, as well as the ways of sustainable financing	Improving regulations with specific details in coordination with other legal norms	Some overviews are randomly provided by the Sustainable Energy Development Agency (SEDA). There are no existing services focused on improving regulation and coordination among existing legislations and norms, there are only suggestions for improvement on national basis. There is no legislation allowing implementation of fast track procedures.	There are no existing services focused on improving regulation and coordination among existing legislations and norms, there are only suggestions for improvement on national basis. Several EU project beneficiaries and private legal firms are sometimes analysing the gaps in the legislation and call for improvement.	**(1) There are no existing services targeted at explaining regulation and coordination among existing legislations and norms.**

Table 2: gap analysis steps for Bulgarian pilot (1 out of 4)

For hurdle n°2 ("Long and difficult administrative procedures"): three gaps are identified in the last column:

- Gap n°2: **There are no existing services targeted at facilitating administrative procedures, only analyses and policy recommendations**
- Gap n°3: **Existing procedures do not take in consideration the specific requirements and needs of CEP members and investors.**
- Gap n°4: **Existing OSSs are not practically useful for CEPs and ECs and remain scarcely used**

Related hurdles	Solutions	Existing services and schemes (identified in WP2)	Analysis of existing services (integration in CEP lifecycle or not, recommendations)	Gaps

There are more than 20 national laws and numerous regulations. Many of the norms have been changed over the years and create complexities for their implementation even for administrative authorities. It is a common phenomenon in the implementation of renewable energy projects that, due to the lack of a clear legal practice on the coordination of norms from several laws, administrative authorities or grid operators refrain for months from taking a decision and stop the investment process of a project.	Improving regulations with specific details in coordination with other legal norms; Fast-track procedures for coordinating the connection to electricity networks	Such services are occasionally provided by the Chamber of Energy communities in Bulgaria (CECB). There are no existing services focused on improving regulation and coordination among existing legislations and norms, there are only suggestions for improvement on national basis. There is no legislation allowing implementation of fast track procedures.	There are no existing services focused on improving regulation and coordination among existing legislations and norms, there are only suggestions for improvement on national basis. Several EU project beneficiaries and private legal firms are sometimes analysing the gaps in the legislation and call for improvement.	**(2) There are no existing services targeted at facilitating administrative procedures, only analyses and policy recommendations.**
	Facilitated issuance of building permits, Facilitated grid connection of renewable energy installations for own use.	There are no existing services or schemes targeted at facilitation of building permits issuance. For detached single family houses the building permits are not required anymore.	Building permits are issued based on complicated coordination between tens of laws and regulations. Facilitated issuance of building permits is not provided for in the legislation.	**(3) Existing procedures do not take in consideration the specific requirements and needs of CEP members and investors.**
Need for an information campaign by the Ministry of Energy for the benefit of municipal administrations, with the aim of facilitating the administrative procedures for the construction of energy installations in sites and properties operating in the energy community mode	Creating OSS at regional level (as provided in IPEC), conducting a comprehensive national campaign, train the experts	About 6 EU funded OSS projects dedicated at Renewable Sources have been realised in Bulgaria, but neither one existing OSS is really helpful to households and businesses from practical point of view - all existing OSSs are formalistic and in reality, are mere "invitations for action" but not real services. For this reason they were not identified in WP2.	There is popular misbelief concerning the practical usefulness of OSSs in the sphere of renewable energy.	**(4) Existing OSSs are not practically useful for CEPs and ECs and create a negative public opinion.**

Table 2: gap analysis steps for Bulgarian pilot (2 out of 4)

For hurdle n°3 (“Financial hurdles”): three gaps are identified in the final column:

- Gap n°5: **There are no existing services or schemes targeted at reconsidering interest rates and collaterals by banks**
- Gap n°6: **There is a need for crowdfunding models and practices**
- Gap n°7: **There is a lack of targeted green fund at national level.**

Related hurdles	Solutions	Existing services and schemes (identified in WP2)	Analysis of existing services (integration in CEP lifecycle or not, recommendations)	Gaps
Requirement for collateral on banking loans	Reconsidering the interest rates and collateral values	Private financial consultations in banks/financial institutions	Such services may be part of CEP life cycle and updated when needed or may not be, as DISCOVER will provide links/contacts to funding bodies	**(5) There are no existing services or schemes targeted at reconsidering interest rates and collaterals by banks.**
Absence of measures to facilitate crowdfunding	Adopt crowdfunding in legal norms, specific for CEPs	There are no existing services or schemes targeted at altering the existing legal norms for CEPs.	Crowdfunding models are compulsory for the CEP lifecycle and should be provided by DISCOVER	**(6) There is a need for crowdfunding models and practices**.
Absence of specific financial instruments to provide electricity end-users with low incomes or vulnerable customers with the opportunity to consume their own electricity from renewable sources within the EC	Creating national green/transition funds; restructure similar funding bodies (National Eco Trust)	There are no green/transition funds aimed at households / small businesses.	It is recommended to establish a national green transition fund or similar.	**(7) There is a lack of targeted green fund at national level.**

For hurdle n° 4 (Lack of information and understanding of the benefits): one gap is identified in the final column.

- Gap n°8: **Lack of a smart tool integrated with official legal procedures for reporting data about CEPs and ECs.**

Related hurdles	Solutions	Existing services and schemes (identified in WP2)	Analysis of existing services (integration in CEP lifecycle or not, recommendations)	Gaps

National Information System for the potential, production and consumption of energy from renewable sources has not been implemented in the Republic of Bulgaria under Art. 52 para. 1 of RES Act.	Information campaign, training public energy experts, creating a National information System for registration and monitoring	Existing OSS developed under other EU projects, GRID ONE and CECB provide the base for gathering information about renewable sources and CEPs and ECs.	GRID-ONE Smart platform is under negotiations with the state to become a testing platform for a future National Information System.	**(8) Lack of a smart tool integrated with official legal procedures for reporting data about CEPs and ECs.**

Table 2: gap analysis steps for Bulgarian pilot (3 out of 4)

For hurdle n° 5 (Hurdles related to tax policy): two gaps are identified in the final column:

- Gap n°9: **Lack of specific tools, gathering technical and financial data with very simplified GUI.**
- Gap n°10: **Lack of integrated communication tool from technical and financial data.**

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
Lack of clear rules regulating tax rates and how individual members of the energy community will be taxed does not allow efforts in this direction to gain momentum. Owners of installations for the production of (electricity) energy from RES are subject to numerous taxes, fees and administrative payments. Sometimes the total amount of these obligations exceeds the profit from the sale of the excess energy produced.	Improve the whole legal framework, but specifically the tax policy for CEP/EC	All private investors offer some tax calculation tools.	An integrated smart tool for tax calculation does not exist at national level.	**(9) Lack of specific tools, gathering technical and financial data with very simplified GUI**.
Lack of communication by the state regarding the risk of future introduction of new taxes and fees for EC members, including regarding the use of registration regimes for future taxation.	Create targeted communication channels on new taxation policy	There are no bodies that facilitate communication between state bodies and CEPs / ECs concerning tax optimization.	Creating/nominating a service provider (financial institution or agency) communicating financial and taxation policy	**(10) Lack of integrated communication tool from technical and financial data.**

Table 2: gap analysis steps for Bulgarian pilot (4 out of 4)

5.1.5 Conclusion for Sofia region

The development of CEPs in Bulgaria can bring benefits to households, small businesses, farmers and municipalities, but to trigger changes in this direction, time-lasting support and a clear regulatory framework are needed.

Besides the missing regulatory and legal framework, other main obstacles to the development of energy communities are low awareness among households, municipalities and small and medium-sized enterprises and somewhat negative attitudes towards community and common work; the lack of funding and available financial instruments; ambiguities in tax legislation and gaps in compensation and remuneration for net surpluses of energy produced by energy communities, problems with the capacity of the infrastructure.

Because they are often funded by local governments and small businesses and run by volunteers, energy communities face a lack of time and resources to develop, implement, operate and expand their energy projects. These problems lead to various obstacles, such as heavy and complex administrative procedures for registration, permitting, network access and licensing. Public and technical support and funding opportunities are equally important in removing obstacles to their development.

DISCOVER is meant to address some of these hurdles and its outputs, elaborated in close cooperation with the key Bulgarian stakeholders will help increase the awareness for various crucial aspects of the development, implementation and operation of CEPs.

5.2 Croatia – Primorje – Gorski Kotar County

5.2.1 Scope of interviews

5.2.1.1 A focus on citizen and municipal participation

i. Municipalities have essential resources, but they lack knowledge

Cities and municipalities are essential stakeholders in advancing CEPs because they have the organizational and financial resources needed to navigate the complex establishment process. However, many lack the necessary knowledge to effectively drive these projects forward, even though they understand the potential benefits. Strengthening the capacity of local governments and removing regulatory barriers will be crucial for the successful development of energy communities in Croatia.

Citizen and municipal participation in energy communities can be a powerful tool for local energy transition, aligning with the interests of various stakeholders. In this phase of the project, contacts and discussions with cities and municipalities were carried out, shown in the following table:

ii. Diverse local energy community projects

Based on insights from interviews, several specific areas of engagement for citizen energy communities can be highlighted:

a. **Renewable Energy Production (All)**: CECs can take the initiative to establish and manage their own renewable energy sources, such as solar power plants, wind farms, or small-scale hydropower plants. This not only boosts local sustainable energy production but also empowers communities to become energy self-sufficient, reducing reliance on external sources. The municipality of Jelenje is focused on the construction of a larger photovoltaic plant in which the citizens would participate, the rest planning smaller plants.

b. **Energy Efficiency (Matulji, Jelenje)**: CECs can spearhead efforts to enhance energy efficiency within the community. This could involve educational campaigns on energy-saving practices, promoting the installation of energy-efficient lighting and appliances, and implementing building insulation projects. These measures help reduce overall energy consumption, lower costs, and contribute to a more sustainable community. Most of the interviewees are implementing energy renovation programs of buildings financed from national funds in parallel, practically all communities have installed efficient public lighting.

c. **Community Energy Sharing (All)**: One of the most impactful activities CECs can engage in is the organization of local energy sharing and distribution projects. By establishing community networks, surplus energy produced by individual members can be shared among the group, maximizing the use of locally generated renewable energy and creating a resilient energy system. It is especially important to include SMEs and entrepreneurs so that production and consumption are as balanced as possible

d. **Promotion of Electric Mobility (Kastav, Opatija, Matulji)**: CECs can play a critical role in reducing carbon emissions in the transport sector by promoting electric vehicle (EV) adoption and developing EV charging infrastructure. This could include setting up charging stations within the community, offering incentives for EV users, and integrating EVs into community transport solutions. Several cities are seriously considering connecting energy communities and optimizing electricity transport.

e. **Social Initiatives (Delnice, Matulji)**: CECs have the potential to drive social change by implementing programs that support vulnerable groups in accessing renewable energy. In this context, two communities emphasized the need to solve energy poverty in their communities, boost financial assistance for the energy renovation of low-income households or targeted communal projects to reduce energy poverty expenses with aim to reduce costs for municipality, significantly impact social equity, ensuring that the benefits of sustainable energy are accessible to all.

These areas are not only aligned with stakeholder interests but also present practical ways for citizens and municipalities to actively contribute to the energy transition. Engaging in these activities can strengthen community bonds, improve local resilience, and drive collective action towards a greener future.

5.2.1.2 Stakeholders interviewed

The interviews were conducted between February and July 2024 with the representatives of 6 municipalities of the Primorje – Gorski Kotar County.

5.2.2 List of hurdles

The following key problems were grouped into several categories according to the methodology described in chapter 1.

1. **Inadequate legal framework**
2. **Financial hurdles**
3. **Lack of knowledge**
4. **Lack of expertise**

Finding No. 1	**Related hurdles**	**Object**	**Domains**	**Phases**
Inadequate legal framework	**Inadequate transposition of EU directives** creates numerous additional restrictions for the establishment of the CEP	EC	Legal, organizational	Development, Implementation, Operation
	Lack of understanding of the complex process, rules and numerous documents required for project implementation.	EC	Administrative, financial, organizational	Development, Implementation, Operation
	Completely bureaucratic approach of the relevant institutions to the establishment of the CEP, insistence on unnecessary and complicating processes (insistence on "paper" vs. digital documents, etc.), rejection of requests due to minor errors (for example, the stamp is not clear enough)	EC	Organizational, administrative	Development, Implementation, Operation
	Ambiguities surrounding the principles of non-profit, commercial and social CEP	EC	Legal, financial, organizational	Development, Implementation, Operation
Finding No. 2	**Related hurdles**	**Object**	**Domains**	**Phases**
Financial hurdles	Complete lack of understanding of innovative and alternative models funded by CEP (Energy	EC	Legal, economic	Development, Implementation

	Community as a service - ECaaS, Photovoltaic plant as a service - PVaaS).			
	State incentives are rare and inadequately distributed. The rules are often unclear or difficult to reach, a lot of documentation is required	EC	Financial, administrative	Development, Implementation
	Lack of education among citizens about the opportunities provided by investments in renewable energy sources. In addition to energy savings, it is also possible to achieve significant returns on invested capital, significantly higher than the interest rates on savings currently offered by banks.	EC	Social, financial, economic	Development, Implementation
	Insufficient support from commercial banks, distrust in new investments in the field of renewable energy sources	EC	Social, financial, organizational	Development, Implementation, Operation
	Unclear rules and fiscal support if investing in renewable energy sources, both by citizens and the economy and by cities. Currently, only the VAT reduction is in effect for the construction of the plant	EC	Legal, financial, organizational	Development, Implementation, Operation
Finding No. 3	**Related hurdles**	**Object**	**Domains**	**Phases**
Lack of knowledge	**General lack of knowledge among all participants in energy transition** (citizens, companies, municipalities)	EC	Social	Development
	Lack of adequate strategies in cities that would facilitate the establishment of CEP. Whether in the context of reserving space for, for example, communal solar power plants or battery plants, or designing various types of incentives for the implementation of the energy transition	EC	Organizational, technical, legal	Development, Implementation, Operation
	A multidisciplinary approach to the problem of energy transition is missing - activation of all potential stakeholders - transition is not only an energy problem but also an economic and social challenge	EC	Organizational, social, legal	Development, Implementation
	Inadequate national regulatory framework collapses the interest in establishing CEP, REC and CEC	EC	Legal, social	Development, Implementation
Finding No. 4	**Related hurdles**	**Object**	**Domains**	**Phases**
Lack of expertise	Lack of experts **in all areas** of energy transition	EC	Legal, technical, economic, financial, organizational	Development, Implementation, Operation

	Establishment of unique **standards** for the implementation of sustainable energy projects, quality control of design, performance and maintenance	EC	Technical	Development, Implementation
	Education of children and students about the needs of energy transition, they can often influence parents to join new initiatives	EC	Social, organizational	Development, Implementation, Operation

Table 3: List of hurdles identified in Croatia

5.2.3 Discussion on hurdles identified

The establishment of energy communities in Croatia faces significant challenges, making it difficult for these communities to reach their full potential.

5.2.3.1 Inadequate legal framework

Improving the legislative framework for the establishment and operation of citizens' energy communities in Croatia is key to encouraging wider citizen participation in energy initiatives and achieving the Sustainable Development Goals. The current legislative framework, while providing basic guidance, faces challenges involving complex and time-consuming administrative procedures for the establishment and registration of energy communities. To facilitate the process, it is recommended to simplify legislative procedures through the development of clearer guidelines and standardized forms. Also, the introduction of single points of contact could significantly speed up the registration process and allow for easier communication with the competent authorities, which would reduce the administrative burden for new communities.

However, laws need to be amended in favour of small and medium-sized enterprises (SMEs), which play an important role in energy communities. Adaptation of legislation to facilitate the integration of SMEs into energy communities may include more flexible conditions for access to finance and participation in energy projects. In this way, SMEs would be able to contribute more actively to the development and expansion of energy communities, which would have a positive impact on local economies and energy independence.

In addition, compliance with European directives remains crucial. Although key European directives have already been transposed into Croatian legislation, it is necessary to continuously monitor changes at the European level and ensure timely harmonization of national legislation with new European regulations. This will ensure that energy communities in Croatia are in line with best practices in the European Union and can effectively use the available funds and support.

Details about legal hurdles:

The primary barrier is the complex and costly process of obtaining a license to perform an energy activity, which is regulated by the Croatian Energy Regulatory Agency (HERA). To apply, an applicant must

submit the Application for the Issuance of an Energy Activity Permit (ZDOED) along with 18 additional documents and pay a fee of EUR 995.42.

Moreover, the regulations mandate that every energy community must employ at least one employee (working at least 5 hours a week), posing a significant financial burden for smaller communities, such as those involving only a few households. To overcome these challenges, citizens are encouraged to collaborate with public entities like cities, municipalities, institutions, or utility companies. This partnership could enhance the potential for producing and consuming (including sharing) internally generated electricity and provide opportunities for financial investment in renewable energy projects, which smaller households often find difficult to fund independently.

Additionally, the complex registration process and stringent requirements make it nearly impossible for citizen groups without professional support or financial resources to establish energy communities. To address these barriers, the inclusion of diverse target groups and support from experts is crucial for the successful development and operation of energy communities in Croatia.

5.2.3.2 Lack of knowledge and expertise

The administrative environment also requires significant improvements to ensure efficiency in the operation of energy communities. One of the key steps in this direction is the digitalization of administrative processes. The deployment of digital tools and platforms can significantly speed up administrative procedures related to energy communities. It is recommended to develop an online portal for the registration and management of energy communities, where members could follow all relevant information, the status of their applications and communicate with the competent authorities. Digitalization could also reduce the possibilities for administrative errors and increase the transparency of the entire process.

Training and education of civil servants working on permitting and managing energy communities is also essential. It is necessary to organize regular trainings that would be focused on the specifics of energy communities and on changes in the legislative framework. The trainings would enable officials to provide accurate and timely information to citizens, which would further facilitate the establishment and operation of communities. Therefore, we believe that the establishment of OSS, which would be specialized in the subject of establishing CEPs, is essential for moving away from the current deadlock. We hope that the OSS that will be established within the framework of this project will help in realizing these needs.

5.2.3.3 Financial hurdles

The financial environment is probably a key challenge for the sustainability of energy communities. Currently, energy communities have difficult access to finance due to complex procedures and a lack of specific financial instruments. It is recommended to introduce specific funds and subsidies to support energy communities, including micro-credits and support for the initial phases of projects. Also, the

possibility of co-financing through the European Structural and Investment Funds should be considered, which would ensure long-term sustainable financing. The introduction of tax breaks for energy communities could encourage greater participation of citizens and small businesses in such initiatives. Tax benefits could be applied to revenues from the production and sale of renewable energy within energy communities, further boosting their economic viability and attracting new members.

5.2.4 Gap analysis

14 gaps with existing services were found.

From hurdle n°1 (Legal framework), two gaps are identified.

- Gap n°1: **There are shortcomings to existing laws and changes to be proposed.**
- Gap n°2: **There is improvement to make to the existing instructions based on the analysis of shortcomings.**

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
Inadequate transposition of EU directives creates numerous additional restrictions for the establishment of the CEP	Work on changing existing inadequate regulations	There is no specific service that would systematically solve the observed problems. Lobbying is present, and the Forum of Energy Communities is also active, consisting of organizations working on the establishment of Energy Communities in the Republic of Croatia.	There is no special integration, the members of the Bez granica association actively participate in the work of working bodies and propose changes to the law	**(1) There are shortcomings to existing laws and changes to be proposed.**

Completely bureaucratic approach of the relevant institutions to the establishment of the CEP, insistence on unnecessary and complicating processes (insistence on "paper" vs. digital documents, etc.), rejection of requests due to minor errors (for example, the stamp is not clear enough)	Better (reasonable) regulatory clarity and a complete legal framework for all possible options	There is no specific service that would systematically solve the observed problems. Lobbying is present, and the Forum of Energy Communities is also active, consisting of organizations working on the establishment of Energy Communities in the Republic of Croatia.	There is no special integration, the members of the Bez granica association actively participate in the work of working bodies and propose changes to the law	
Ambiguities surrounding the **principles of non-profit, commercial and social CEP**.	Better regulatory clarity and a complete legal framework for all possible options	There is no specific service that would systematically solve the observed problems. Lobbying is present, and the Forum of Energy Communities is also active, consisting of organizations working on the establishment of Energy Communities in the Republic of Croatia.	There is no special integration, the members of the Bez granica association actively participate in the work of working bodies and propose changes to the law	
Lack of understanding of the **complex process, rules and numerous documentations** required for project implementation.	Provide high-profile technical/legal/ financial support to individuals or organisation willing to establish CEP	There are numerous instructions on the web pages of associations and as results of EU projects, but in the vast majority of cases they are superficial and general without practical usability.	The recommendation is to create concrete and practical instructions for all steps based on the experience from the establishment of the first communities (for example, the Northern Adriatic Energy Community)	**(2) There is improvement to make to the existing instructions based on the analysis of shortcomings.**

Table 4: gap analysis steps for Croatian pilot (1 out of 4)

From hurdle n°2 (Financial framework), 5 gaps are identified.

- Gap n°3: **There are no adequate educational programs about financial aspects**.
- Gap n°4: **Procedures are too complex and require lot of documentation**.

- Gap n°5: **Lack of focused education in the field of financial literacy and in the domain of RES.**
- Gap n°6: **Lack of education of bankers on the specifics of investing in sustainable energy sources, primarily in the context of risk reduction.**
- Gap n°7: **Missing clear information on tenders - Identify all public announcements and tenders and promptly notify OSS users**.

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
Complete lack of understanding of **innovative and alternative models** funded by CEP (ECaaS, PVaaS)	Education about new financing possibilities for such projects. New funding does not necessarily have to burden the budgets of cities and towns	There is no adequate education at all for innovative methods of financing sustainable energy projects.	Design and create educational programs that will explain the advantages of new investment opportunities.	**(3) There are no adequate educational programs.**
State incentives are rare and inadequately distributed. the rules are often unclear or difficult to reach, a lot of documentation is required	Change in the tender announcement calendar and change in the amount of required documentation	There is no specific service that would systematically solve the observed problems. The Forum of Energy Communities is active in proposing changes, consisting of organizations working on the establishment of Energy Communities in the Republic of Croatia.	Determine the shortcomings of existing laws and propose changes	**(4) Procedures are too complex and require lot of documentation**
Lack of education among citizens about the opportunities provided by investments in renewable energy sources. In addition to energy savings, it is also possible to achieve significant returns on invested capital, significantly higher than the interest rates on savings	Increasing the level of financial literacy of citizens	Until recently, there has been no systematic approach to the financial education of citizens in Croatia, and this work was mainly carried out by non-governmental organizations, at thematic workshops, round tables and seminars. On October 14, 2024, the implementation of the project entitled "Improving the use of digital financial services through increasing	Given that the general issue of investments and project financing will be dealt with within the framework of the above-mentioned project, it is ideal to make adaptations and examples for the needs of financing sustainable energy sources as well.	**(5) Lack of focused education in the field of financial literacy and in the domain of RES**

currently offered by banks.		digital financial literacy in the Republic of Croatia" began. It is a joint project of the Ministry of Finance, the Croatian National Bank and the Croatian Financial Services Supervision Agency, which is implemented by the Organization for Economic Co-operation and Development (OECD).		
Insufficient support from commercial banks, distrust in new investments in the field of renewable energy sources	Education of bankers and the financial sector about the benefits of investing in renewable energy sources and how they can help achieve the goals of sustainable development	Most of the financing schemes are not adapted to the needs of EC, nor are they specifically oriented to EC, but on closely related areas such as renewable energy technologies, energy efficiency, etc. Complex grant awarding processes prevent groups with limited technical and organizational capacity from participating.	Almost all financial instruments defined by commercial banks are not encouraging at all for investments in sustainable energy sources. Interest rates are still too high, and in addition, excessive loan security instruments are being sought. Therefore, it is necessary to invest effort in educating bankers to find more favorable lending conditions	**(6) Lack of education of bankers on the specifics of investing in sustainable energy sources, primarily in the context of risk reduction**
Unclear rules and fiscal support if investing in renewable energy sources, both by citizens and the economy and by cities. Currently, only the VAT reduction is in effect for the construction of the plant	Better regulatory clarity and a complete legal framework for all possible options	In general, in the Republic of Croatia, we have the following forms of co-financing of solar power plants: - VAT rate of 0% on solar power plants. A measure that goes automatically with every installation of a solar power plant. - Public calls from the Fund for Environmental Protection and Energy Efficiency (FZOEU). The fund usually publishes a public call once a year, and the amount of co-financing goes up to 80%. - Public invitations from regional and local self-government units.	The way tenders and information are published is often insufficiently transparent, especially when it comes to regional or local funds. Information is often "buried" on the publisher's website.	**(7) Missing clear information on tenders - Identify all public announcements and tenders and promptly notify OSS users**

Table 4: gap analysis steps for Croatian pilot (2 out of 4)

From hurdle n°3 (Lack of Knowledge), four gaps are identified.

- Gap n°8: **There is no monitoring of education results and education effects. The outdated approach to users and education needs to be modernized**.
- Gap n°9: **There is a lack of quality materials and strategies that are not just "copy-paste" standards without thinking about local peculiarities**.
- Gap n°10: **There is a lack of coordination between projects and incoherence of results, poor quality and repetition without added value**.
- Gap n°11: **There is a lack of focused educations that would deal with specific problems of energy transition**.

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
General lack of knowledge among all participants in energy transition (citizens, companies, municipalities)	Launch information and dissemination policies on the topic, attempting to involve as many citizens, companies and public bodies as possible.	Various courses and educations are organized almost every day, but there is no monitoring of the effects. The fact is that despite dozens of completed EU projects and the same number of produced materials, the understanding of the problem of renewable energy sources and the energy transition is still weak.	Better connection of projects and especially coordination of educational activities is necessary. It is necessary to change the way end users are approached; more advanced communication and educational technologies should be used.	**(8) There is no monitoring of education results and education effects. The outdated approach to users and education needs to be modernized**
Lack of adequate strategies in cities that would facilitate the establishment of CEP. Whether in the context of reserving space for, for example, communal solar power plants or battery plants, or designing various types of incentives for the realization of the energy transition	Draw up a clear municipality energy transition strategy that includes clear objectives, intermediate milestones and monitoring and evaluation mechanisms	Most of the existing strategies are inadequate and do not approach the problem of energy transition in an integral and holistic way. Most of the material is of a high level and without adequate implementation measures.	It is recommended to introduce more advanced tools that would enable more precise modeling, simulations and quantification of results. Monitoring and eventual constant adjustment is mandatory.	**(9) There is a lack of quality materials and strategies that are not just "copy-paste" standards without thinking about local peculiarities**

A multidisciplinary approach to the problem of energy transition is missing - activation of all potential stakeholders - transition is not only an energy problem but also an economic, social and social challenge	Include as many NGO organizations as possible that are specialized in the specified specific issues	There are dozens of EU projects, WEB pages and results that are not usable after a short time. They are often closed in only one domain and there is a lack of coordination between various organizations	More comprehensive projects and organizations should be singled out and directed to work together and create better connections between individual projects. The goal is better interoperability of results.	**(10) There is a lack of coordination between projects and incoherence of results, poor quality and repetition without added value.**
Inadequate national regulatory framework collapses the interest in establishing CEP, REC and CEC	Better regulatory clarity and a complete legal framework for all available options	One of the key problems is the lack of education among government bodies that make decisions. This is often connected with the lack of qualified personnel, which results in inadequate regulation.	It is necessary to organize formal and informal education for employees of state bodies participating in the implementation of the law	**(11) There is a lack of focused educations that would deal with specific problems of energy transition.**

Table 4: gap analysis steps for Croatian pilot (3 out of 4)

From hurdle n°4 (Lack of expertise), three gaps are identified.

- Gap n°12: **Availability of information is not adequate, most of info is not in real time.**
- Gap n°13**: Education methods are outdated, and there is a lack of courses suitable for the Z-generation**.
- Gap n°14: **There is no appropriate content and gamification to promote sustainable energy sources and the education of the youngest**.

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
Lack of experts in all areas of energy transition	Quality verification and establishment of a platform for the creation of value chains in the domain of energy transition	There are a significant number of courses and educations for all levels of participation in the processes of building photovoltaic plants, but their availability is occasional and not adequately advertised.	Choose quality educations and recommend them to OSS users in accordance with their needs. Discuss the use of RIMAP platforms for OSS needs.	**(12) Availability of information is not adequate, most of info is not in real time**
Establishment of **unique standards** for the implementation of	Training courses and available tools to be spread to all stakeholders	There is no standardized training, there are several editions of manuals of variable	Establish methodology for assessing the quality of education.	**(13) Education methods are outdated, and there is a lack of**

sustainable energy projects, quality control of design, performance and maintenance		quality. There are no introduced tests of the quality of delivered education and user satisfaction	Encourage higher quality education (AR/VR technologies)	**courses suitable for the Z-generation**
Education of children and students about the needs of energy transition, they can often influence parents to join new initiatives	Organization of lectures by schools and local committees specifically for children, parents and the elderly population	Significant lack of education about renewable energy sources for children and teenagers.	There are only a few examples available that were developed within the framework of EU projects, but none of them are completely adequate.	**(14) There is no appropriate content and gamification to promote sustainable energy sources and the education of the youngest.**

Table 4: gap analysis steps for Croatian pilot (4 out of 4)

5.2.5 Conclusion for Primorje- Gorski Kotar County

The concept of energy communities offers a significant opportunity for Croatia to move from ideas to concrete actions in the realm of sustainable energy. Energy communities empower citizens by allowing them to become both consumers and producers of electricity, especially from renewable sources like solar power. This model promotes energy sharing, reduces electricity bills, and even includes those without their own power plants, enabling broader access to renewable energy.

However, in Croatia, the implementation of such communities faces substantial barriers. Although there is growing interest in installing PV plants on private and public roofs, CEPs remain limited. The challenges are primarily due to inadequate implementation of European directives into national laws, creating complex administrative obstacles. As a result, Croatia has only three registered energy communities, none of which are fully operational due to ongoing issues with the state-owned energy company HEP, which has not adapted its accounting systems to facilitate energy exchange within these communities. In this sense, all the problems surrounding the organization of energy communities on a local level are the same challenges identified at the national level.

The engagement of local authorities into CEPs will become effective if changes are made at the national scale. The effectiveness of the future OSS in Primorje – Gorski Kotar County and its services to CEPs depends on such evolution.

5.3 France - Paris city

5.3.1 Scope of interviews

5.3.1.1 A focus on condominiums

i. Condominiums, a potential for energy community to unlock

In 2023, the City of Paris gave APC the mission to develop services towards the specific segment of condominiums to increase their PV production. Condominiums represent three quarters of Paris housing stock. APC is already the Parisian OSS for the energy efficiency of condominiums. The launch of DISCOVER has given APC the means to address this new challenge for Paris energy transition.

Condominiums are forms of collective organization. They share a roof and electrical equipements. As such, they are considered potential Energy Communities. Groups buildings (condominiums, schools, shops, tertiary buildings...) in a dense cityscape can make great Energy Communities.

However, turning a standard condominium into an Energy Community, and grouping entities together, requires going through many steps, and facing many hurdles.

The interviews were focused, in this context, on how to engage condominiums in Energy communities and how to foster PV production on their roof.

Today, energy-producing and energy-sharing projects among condominiums are the exceptions and not the norm. The number of PV-equipped condominium buildings in Paris is not known but it must be less than 150 among 45 000. Investigation is under way.

No condominium is known to be involved *per se* in an energy community. However, co-owners of flats within condominiums may be involved *as individuals* in the citizen energy movement, such as the cooperative EnerCitIF (around 20 volunteers).

The solar potential on condominiums roofs is important: solar cadastre highlights 35,000 buildings with an average solar exposure exceeding 800 kW/m²/y, among which a large proportion must be condominiums (investigation is under way to measure it). Moreover, the density of Paris city allows for complementary associations of producer and consumer profiles within collective self-consumption operations.

ii. Demand-offer gap investigated

After interviewing the first PV experts and the main actors of citizen energy in Paris, it was confirmed that hurdles for Paris and condominiums would fall under a demand-offer gap:

- The lack of demand from condominiums – or the difficulty to take decision and invest in PV production within condominiums; also, the difficulty to engage citizen in energy volunteering.
- The lack of a network of qualified professional offer in Paris – related to the lack of demand and the difficulty in sustaining economic models on small-sized roofs under the current support schemes.

Besides, third-party actors were interviewed to understand their potential role in the development of CEPs: the DSO, a bank specialized in energy improvement of condominiums, one of the two leading unions of property management firms in Paris region, the main software developer for Collective Self-Consumption (CSC) facilitation in France, French public research centre on building and technology.

Interviewing such stakeholders resulted in engaging them into new collaborations for the next steps of DISCOVER projects.

Below is the list of the 10 stakeholders interviewed during the period. Paris city officials and Ile-de-France Region energy project managers were also met, not to learn about hurdles, but to develop a new service and discuss an existing service.

5.3.1.2 Stakeholders interviewed

From December 2023 to July 2024, 12 stakeholders have been engaged, and 8 stakeholders have been formally interviewed as shown in the table below. 16 people were met online or in person.

Around 35 stakeholders have been identified by August 2024. New interviews will be conducted throughout DISCOVER.

Enedis, the **Distribution System Operator**, according to the French Law of acceleration of REs of March 2023 should engage in the development of CEPs in France and should act as a facilitator. Enedis has the ability to provide data on buildings' consumption, so as to give the best advice to condominiums at the first steps of their projects. Enedis office in Paris has experience of individual self-consumption projects, but it has no experience of *collective* self-consumption (CSC) communities involving multi-apartment buildings. APC now works with them on this topic.

Energie Partagée is the main support initiative in France for energy communities, helping at every phase. It provides financial aid on top of technical and administrative help. One project is labelled in Paris. Energie Partagée has strong experience of hurdles in Paris on all phases and domains of CEPs.

Enercit'IF is an energy community based in Paris, the only one existing, labeled by Energie Partagée. They operate 16 PV plants on public buildings. Interviews helped figuring out what have been their hurdles since their creation in 2016, and why multi-apartment buildings are not involved in the community so far.

Enercoop is the main cooperative electricity supplier in France. Enercoop is buying the electricity produced by Enercit'IF. They are also a commercial service provider for CEPs. They have just started to develop a service for CSC. However, the size of the projects in Paris is sub-optimal to their service.

Hespul is a 40-years-old association. It operates the national resource centre on photovoltaic (free web service). It is a training school for professionals. Since 2024, it has been running a workgroup on how to foster PV projects in condominiums in France, in which APC takes part.

Unis is one of the most important unions of real estate firms and building administrators in France. They provide legal and executive assistance to condominiums. They have great insight of hurdles faced by condominiums.

Domofinance is a bank associated to EDF, French electricity supplier. It provides *collective* loan for energy renovation projects of housing buildings, and, potentially, for PV projects as well.

AREC Ile-de-France is a regional energy agency that promotes energy efficiency and sufficiency. It is the coordinator for Ile-de-France Region of Les Générateurs network of public advisors for photovoltaic and self-consumption projects.

CSTB is a public institution, Scientific and Technical Center for Buildings in France. It operates in several areas, such as energy performance or material durability. At the time of the interview, CSTB was about to publish a sociological research paper on CSC projects in suburban areas. From the point of view of sociology, they are also interested in the situation in Paris.

5.3.2 List of hurdles

After 8 interviews and according to methodology described in chapter 1, hurdles were synthesized into 4 categories:

1. **The difficulty in including condominiums in citizen projects in Paris city**
2. **The difficulty in developing PV projects in Paris due to perceived spatial and formal constraints, and expected low profitability**
3. **An ecosystem of professionals and local authorities still emerging in Paris region**
4. **Global hurdles: lack of information, legal barriers to ECs, and challenges to community building.**

Below is the detail of each category, with 20 related hurdles identified.

Finding No. 1	Related hurdles	Object	Domains	Phases

Difficulty in including condominiums in citizen projects in Paris city	**Complex decision-making within condominiums**: 1) Lack of knowledge and interest in the general population. Complex technical topic. 2) A usually complex decision making, made more complex for PV because discussion topics, and investment decisions in condominium boards are conditioned by short-term concerns, and short-term return on investment state of mind. 3) Reluctance due to the administrative burden of PV and even more so of CSC operations (legal entity, management of energy exchanges, bills and contracts).	PV, EC	Social, organizational, administrative, technical	Development, implementation, operation
	Access to finance: 1) Lack of appropriate financing tools. For example, because of their small size, condominium PV plants have had no access so far to the Community Energy Financing Scheme operated by Energie Partagée (a result of the EU-funded ACCE project). 2) Need for pre-financing or self-financing solutions to facilitate the investment decision making. 3) Inability to combine investment aids and surplus buyback (as decided by governmental tariff order of October 2021)	PV	Financial, legal	Development
	Challenge of mutualization: need for relevant community models, such as the model of clustering small and big plants together (in order to help smaller ones compensate lower profitability).	PV, EC	Organizational, economic, legal	Development, implementation, operation
	Difficulty of inclusion within the condominium: lack of interest for PV from the viewpoint of landlords (co-owners that rent their flat and do not pay heating bills); prohibition to include tenants in Collective Self-Consumption projects	PV, EC	Social, organizational, legal	Development
	Business model: Absence of an integrated business model, clear and secure, on both legal and technical aspects, that could appropiated by co-owners and building administrators	PV, EC	Economic, technical, organizational, financial	Development, implementation, operation
	Interest of **coupling PV and EVSE** still hampered by the mismatch between PV production and EV charging periods	PV	Technical	Development, operation
	Absence of priority given to the renewable energy production during **energy renovation projects of multiple-housing buildings** (in a context where pressure is put by national bodies on efforts for energy efficiency first)	PV	Organizational, legal	Development

Finding No. 2	Related hurdles	Object	Domains	Phases
Difficulty in developing PV projects in Paris due to perceived spatial and formal constraints, and expected low profitability	**Expected low profitability on many rooftop terraces**: useful surfaces are relatively limited considering a critical size (150 m^2 was calculated by Enercoop - to be confirmed by experience), they are congested with structures and piping. Physical access was not planned and is a challenge, as well as environmental constraints. Considering the limited solar irradiation, the price per Wp installed is still not competitive (2€ per Wp was calculated by EnerCit'IF - to be confirmed as well).	PV	Economic, Technical	Development
	Absence of certified technical solutions and **stronger heritage constraint** on traditional sloped roofs	PV	Technical, legal, administrative	Development
	Competition for roof terrace use with several expected uses to choose from (greenery, other RESs)	PV	Economic	Development
	Supplementary costs induced by the PV project for **roof refurbishment**	PV	Technical, economic	Development
Finding No. 3	**Related hurdles**	**Object**	**Domains**	**Phases**
An ecosystem of professionals and local authorities still emerging in Paris region	**Local authorities**: need for expertise and support to navigate through the complexity of the matter (why developing PV and ECs, how to proceed, etc.).	PV, EC	Technical, Organizational	Development, implementation, operation
	Lack of professionals positioned on the Parisian roof market because of several barriers: lack of visibility about possible implementation of projects after study costs (due to the decision-making process within condominiums), low profitability expected because of the low amount available spaces on rooftops, also concerns about accessibility, technical certifications and insurance.	PV	Economic, technical, organizational	Development, implementation
	Building administrators: the absence of a clear and appropriable legal, technical, and economic model, hampers them from tacking the matter.	PV, EC	Economic, technical, organizational	Development, implementation, operation
	Volunteering: difficulties for existing ECs relying on the associative model to recruit volunteer citizens (the cases of EnerCit'IF, PV producer, and of "Les Economes", an association aiming at promoting energy sufficiency).	EC	Social, organizational	Development, implementation, operation
Finding No. 4	**Related hurdles**	**Object**	**Domains**	**Phases**

Global hurdles: lack of information, legal barriers to ECs and challenges to community building	**Lack of information and awareness** of citizens about the possibilities and advantages in a Parisian context of developing PV and, even more so, ECs.	PV, EC	Social, organizational	Development
	Complexity of administrative processes of PV production and CSC operations for non-professional actors such as condominium boards; There is a challenge to invent the right way for condominiums to associate themselves under a legal entity for CSC operations.	PV, EC	Legal, administrative	Development, implementation, operation
	Complete lack of advantages associated with the EC status in the French law (compared to conventional market actors). Also, no administrative body has been appointed responsible for granting the EC status.	EC	Legal	Development
	Challenge of defining robust EC governance models: should accommodate changes in the community members in the long term, and should clarify the degrees and natures of mutualization (prices, electricity allocation, etc.)	EC	Organizational	Development, implementation, operation
	Few existing solutions for management of energy production and energy sharing (follow up of production, CSC energy exchange management tools, virtual power plants, flexibility, etc.)	EC	Technical	Operation

Table 5: List of hurdles identified in France

5.3.3 Discussion on hurdles identified:

5.3.3.1 General observations and outlook

As expected, considering the very few existing operational ECs in Paris region, most hurdles are situated in the development phase (19 out of 20). More hurdles are related to PV than to EC (8 hurdles are related to PV only, 4 to EC only, and 12 to both PV and EC). EC will be investigated further. Organizational hurdles are the most quoted (11 occurrences), then technical, economic and legal aspects (7, 7, 6 occurrences), then social (4), administrative (3) and financial (2). Financial and administrative aspects will be investigated further.

The next step is to survey a wide range of condominiums (those registered on the CoachCopro platform for an energy renovation project of their building). Other stakeholders will also be consulted: the French National Agency for the Environment and Energy Management (ADEME) the French National Agency for Habitat Improvement (ANAH), EDF the main Electricity supplier in France which has renewable energy solutions, the Departmental Housing Information Agency of Paris (ADIL 75), and professional actors such as the Group of PV professionals of the French Building Federation (FFB).

5.3.3.2 A comparison to the National context

Hurdles can be analysed in the light of the document published by CLER association on 10 June 2021, titled “Renewable energy projects with local governance models and energy communities: identification of obstacles and proposals of support measures.”

This document was published 3 years ago. It was before the definition of ECs was stabilized in the French Energy Code with the Decree of 26 December 2023. Taking this into account, it still allows for an interesting comparison between the Parisian context and the National context.

The observations of Parisian stakeholders align with several findings of CLER at the national level regarding the barriers to renewable energy and citizen investment. Several constraints indeed converge in the Île-de-France region.

While decision-making within condominiums is known to be challenging, especially for topics like photovoltaic investment, stakeholders point out not only the specific decision-making structure of condominiums but also the general lack of information among the population about photovoltaics or energy communities—a point CLER already highlighted in 2021—and the perceived or actual complexity of the necessary procedures. Convincing one's neighbours alone is difficult. Realizing that one will have to personally bill the electricity sold to neighbours, among other steps, deters some volunteers. Additionally, to benefit from the state's feed-in tariffs, in the case of self-consumption, the condominium must respond to calls for tender starting at 100 kWp, which can be a barrier for bigger projects that should play leading roles for the larger development of PV and ECs.

Indeed, 100 kWp is a power threshold that several stakeholders have mentioned as a trigger for operational profitability in Paris. During discussions, the idea of developing "cluster" projects was suggested. A condominium or other building that manages to install more than 100 kWp could allow smaller condominiums, which would not have achieved the same profitability on their own, to benefit from investment and operational savings. However, the actual savings and legal structure remain to be tested.

According to CLER, the prohibition on combining regional and local aids with state aids (in effect since the S21 tariff decree issued by the government in October 2021) penalizes low-profitability projects, and the failure to differentiate support mechanisms based on local resources leads, according to CLER, to low profitability for PV and solar thermal projects in the northern half of France.

This appears to be the case in the Paris region. The stakeholders interviewed share this view. According to EnerCit'IF, it has been difficult so far to launch a photovoltaic project without relying on volunteering or local public aid, at a cost less than €2 per Wp installed, which is reputed slightly too high for profitability. How can small private actors carve out a niche?

The stakeholders highlight the limited available space on rooftops, which fragments project spaces, and the relatively low solar exposure (compared to the southern half of France). Photovoltaic installations developed in the northern half of France are generally large to compensate for lower solar exposure.

In Paris, more than 90% of the photovoltaic installations recorded (by Parisian Urbanism Agency APUR in 2021) had opted for total resale of surplus, which was the most attractive option until recently. However, the prohibition on combining resale aids (S21), the rising trend in electricity prices, and the legal provisions since late 2023 (APER law) should favour self-consumption models, which are currently developing primarily in suburban and industrial areas with large flat-roofed buildings and parking lot spaces. The DISCOVER approach aims to work on this lever of action.

While CLER highlighted the complexity of the connection procedure to the public distribution network in 2021, along with the unpredictability of costs, the DSO ENEDIS in Paris seems to be more of a facilitator. Collaboration will be important, especially to ease condominiums' access to their consumption data, a crucial element in the decision-making process.

5.3.4 Gap analysis

13 gaps were found with the existing services known to APC.

From hurdle n°1 (Difficulty in including condominiums in citizen projects in Paris city), three gaps are identified.

- Gap n°1: **Existing services for PV and ECs in France are not tailored to condominiums**, because of, in details:
    - Lack of information and decision-support tools tailored to condominiums
    - Lack of facilitation services for CSC operations for condominiums
    - Lack of financial schemes specific to condominiums
    - Need to tailor the existing municipal financing scheme for PV in Paris.
- Gap n°2: **Stakeholders in Paris interested in PV and ECs report the absence of any business model tailored to condominiums to which they could refer to as a service provider**.
    - Lack of self-financing business models for condominiums
    - Lack of a legal, technical and economic model for the local clustering of producers, and for collective housing units

- Lack of a networking service to facilitate matchmaking and clustering between condominiums and other buildings of the same neighbourhood

- Gap n°3: **Existing services for energy matters in condominiums in Paris do not tackle the PV or EC solutions in a sufficient way**.
  - Lack of PV solutions in EVSE models.
  - Lack of communication and support for PV projects within energy renovation projects of condominiums.

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
Complex decision-making within condominiums: 1) Lack of knowledge and interest. 2) A structurally complex decision making. 3) Administrative burden of PV and CSC operations	Raise awareness and expand knowledge among co-owners motivated by PV and EC Facilitate internal decision-making in condominiums Support condominiums in the long term	Open resources such as the National center of resources on photovoltaic (photovoltaique.info website and online tools) run by Hespul, and guidebooks or other content from national agencies of energy (ADEME), habitat (ANAH) and from associations (Enercoop, Energie Partagée, Hespul, Cler, Amorce...).	Open resources will be referred to as specifically as possible so as to avoid confusing people in the matter. Resources should be expanded so as to address the case of condominiums and the context of dense urban centers. Hespul is currently developing a new chapter dedicated to condominiums for pv.info website.	**(1) Lack of information and decision support tools tailored to condominiums** **(1) Lack of facilitation services for CSC operations for condominiums**
Difficult access to finance: 1) Lack of appropriate financing tools. 2) Need for pre-financing or self-financing solutions. 3) Inability to combine investment aids and surplus buyback (tariff order of October 2021)	Facilitate access to financing schemes for condominiums Promote self-financing models	Community Energy Financing Scheme for ECs (Energie Partagée) National Enercit fund for large citizen projects (Energie Partagée) Regional financing schemes for preliminary studies and for investments (Ile-de-France region) National tariff order scheme for surplus payback Municipal financing scheme for operations	Existing municipal and regional schemes, National Tariff should be eligible. However, no other eligible schemes is beneficial. Paris City is currently developing a municipal scheme for the funding of feasibility studies of PV.	**(1) Lack of financial schemes specific to condominiums** **(2) Lack of self-financing business models**

		of energy efficiency for condominium buildings (Paris city EcoRénovons Paris+)		
Challenge of mutualization (in order to help smaller plants compensate lower profitability).	Target larger and more profitable buildings first Integrate the possibility of clustering larger and smaller buildings in the business model Include adequate consumers in the business model	There is no existing services addressing this hurdle	NA	**(2) Lack of a legal, technical and economic model for clustering of producers.** **(2) Lack of a networking service to facilitate matchmaking and clustering.**
Difficulty of inclusion of all the people of one condominium: especially landlords (co-owners that rent their flat and that do not pay heating bills) and their tenants	Interest landlords and tenants in self-consumption	There is no existing services addressing this hurdle	NA	**() Lack of incentives for landlords** **Need to propose ways of participation to tenants.**
Absence of an integrated business model for building administrators	Define an appropriate operational model in partnership with co-owner representatives and building administrators	Open resources, such as Energie Partagée guidebook for CSC operations (February 2024) and other recent publications.	Existing open resources too rarely address the case of condominiums.	**Lack of business model specific to urban collective housing units**

Coupling of PV and EVSE still hampered by the mismatch between PV production and EV charging periods	Articulate PV model with EVSE models	EVSE models	EVSE models are already operative in condominiums in Paris but PV solutions are not employed for charging electricity.	**(3) Lack of PV solutions in the existing EVSE models.**
Absence of priority given to the renewable production objective during **energy renovation projects**	Target condominiums engaged in comprehensive renovation projects	Municipal financial aid (EcoRénovons Paris +)	The existing municipal financial aid is a bonus which is part of a larger package. Most condominiums are not aware of the bonus and the bonus may not be important enough to compensate for the supplementary costs for PV, considering important expenses engaged otherwise for renovation purposes (thermal insulation, heating system, etc.).	**(3) Lack of communication and support for PV projects within energy renovation projects of condominiums.** **Lack of specific financing scheme for PV.**

Table 6: gap analysis steps for French pilot (1 out of 4)

From hurdle n°2 (Difficulty in developing PV projects in Paris due to perceived spatial and formal constraints, and expected low profitability), four gaps are identified.

- Gap n°4: **Existing engineering services are not tailored to condominiums**.
- Gap n°5: **There is a lack of neutral advisors to private co-owners for PV and ECs**.
- Gap n°6: **There is a lack of guidelines for rooftop use and design**.
- Gap n°7: **There is a lack of financial schemes specific to condominiums and to PV.**

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**

Expected low profitability on many rooftop terraces due to small surfaces, congested with structures, difficult physical access, and environmental constraints. A non-competitive price per Wp installed.	Better integrate physical constraints in the business model	Solar Cadastre of Paris city Mysolar potential Autocalsol online software Les Générateurs consultants Engineering services by Enercoop Private engineering firms	Solar cadastre and Autocalsol will continue to be used at Paris Climate Agency. However, private engineering firms do not innovate when faced with the physical hurdle of Parisian roofs Enercoop service has not proven adjusted to the needs of condominiums so far. User-friendly calculation tool (Mysolar potential) do not take into account the physical constraints of roofs Les Générateurs do not target private buildings for the moment.	**(4) Existing engineering services are not tailored to condominiums** **(5) Lack of neutral advisors to private co-owners for PV and ECs.**
Absence of certified technical solutions and stronger **heritage constraint** on traditional sloped roofs	Integrate heritage constraints into the general model Test new fixation solutions	Cler is currently working on the publication of a guidebook at the national scale to inform on best practices for the integration of heritage constraints in RES development projects (solar, wind).	Cler guidebook on heritage and PV is not addressing the situation of urban centers. However, it will give general useful guidelines.	**(6) Lack of guidelines for rooftop use and design**
Competition for roof terrace use (greenery, other RESs)	Define decision support tools including multiple scenarios of project for rooftop	There is no existing services addressing this hurdle	NA	**(6) Lack of tools and guidelines on which uses to opt for one's rooftop**
Ancillary costs induced by roof refurbishment	Anticipate ancillary costs and support them with subsidies	There is no existing services addressing this hurdle	NA	**(7) Lack of financial schemes specific to condominiums and to PV.**

Table 6: gap analysis steps for French pilot (2 out of 4)

From hurdle n°3 (An ecosystem of professionals and local authorities still emerging in Paris region), four gaps are identified:

- Gap n°8: **Many local authorities are not yet familiar enough with the concept of energy communities**.

- Gap n°9: **Most professional PV and CSC firms are not qualified, nor willing to venture on the market of Parisian condominiums. The few existing firms are not known to condominiums executives. They do not share their experience together**.
- Gap n°10: **Building administrators lack a business model tailored to condominiums**.
- Gap n°11: **There is a lack of information campaigns at National, Regional and municipal scales.**

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
Lack of expertise in local authorities' administration	Continue working with Paris administrations Include Paris Arrondissement municipalities	Paris directorate for energy and climate Les Générateurs consultants Open resources by pv.info, AMORCE (network of local authorities). ASDER School for sustainable building	Paris is well administered in terms of PV but not so much EC. Plenty of services are available but the topic of energy production and management is not integrated enough in the habits and priorities of most of local authorities outside Greater Paris.	**(8) Many local authorities are not yet familiar enough with the concept of energy communities**
Lack of professionals positioned on the Parisian roof market because of several economic and technical barriers	Raise awareness among professionals about opportunities in condominiums Increase opportunities in condominiums for professionals Answer concerns of professionals about technical matters	Open resources (no specific publication was identified) ASDER School for sustainable building QualitEnR directory of certified businesses Enogrid services for CSC operations (paid)	Existing open resources too rarely address the case of condominiums and the context of urban dense centers. ASDER courses are limited in number and scale. Businesses registered at QualitEnR directory are not operational nor reliable enough today. Enogrid services have proven efficient, but they aim at large compagnies or institutions, condominiums are reluctant to pay for such.	**(9) Most professional PV and CSC firms are not qualified, nor willing to venture on the market of Parisian condominiums.** **The few existing firms are not known to condominiums executives. They do not share their experience together.**

Lack of training and tools for building administrators	Elaborate an operational model in partnership with co-owner representatives and building administrators	Open resources, such as Energie Partagée guidebook for CSC operations (February 2024) and other recent publications.	Existing open resources too rarely address the case of condominiums.	**(10) Building administrators lack a business model tailored to condominiums.**
Difficulties of relying on scarce volunteering (feedback from EnerCit'IF and "Les Econome" associations).	Raise awareness among Parisians	Photovoltaique.info ADEME (national scale), ALECs (40 areas in France) and EnerCitIF (in Paris) communication activities and other small scale actors.	Most of communication activities are not pro-active (one has to be curious of the matter), and do not address the case of condominiums neither.	**(11) Lack of information campaigns at National, Regional and municipal scales.**

Table 6: gap analysis steps for French pilot (3 out of 4)

From hurdle n°4 (Global hurdles: lack of information, legal barriers to ECs and challenges to community building), two gaps are identified.

- Gap n°12: **The complexity of administrative processes makes it difficult to navigate through them for non-professional condominium board members and citizens**.
    - Lack of information campaigns at National, Regional and municipal scales
    - Lack of an adequate legal status of ECs
- Gap n°13: **There is a lack of information sharing among condominiums and stakeholders about the governance models of ECs that have proven to work**.
    - Lack of knowledge of the existing resources among citizens
    - Still very few successful initiatives of CEPs in Paris region to learn from.

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
Lack of information and awareness of citizens	Raise awareness among citizens at the national scale	Photovoltaique.info ADEME activities	Not applicable to CEP lifecycle.	**(12) Lack of information campaigns at National, Regional and municipal scales.**
Complete lack of advantages associated with the	Contribute to lobbying	Associations such as Enercoop Cler act in	Not applicable for CEP lifecycle.	**(12) Lack of an adequate legal status of ECs**

EC status in the French law		favor of improving legislation.		
Complexity of administrative processes for non-professional actors, such as condominium boards	Clarify the process in the guidebook, invent legal models for CSC	Open resources, such as Energie Partagée guidebook for CSC operations (February 2024) and PV.info website Enedis grid connection simulator and Enedis collective housing consumption data collection procedure.	Open resources give a clear overview of administrative procedures. Enedis simulator and data collection has to be tested in real conditions.	**(13) Lack of knowledge of the existing resources among citizens.**
Challenge of defining robust EC governance models (long term problems, degrees and natures of mutualization, etc.)	Clarify organizational models	Open resources, such as Energie Partagée guidebook for CSC operations (February 2024) or other publications on citizen energy projects, and scientific publications on CSC, such as CSTB's.	Open resources give insight about challenges and models and will be integrated.	**(13) Still very few successful initiatives of CEPs in Paris region to learn from**
Few existing solutions for management of energy production and energy sharing	Look for SW and HW tools relevant to condominiums	Enogrid services Enercoop services (elo.coop) Rescoop VPP Grid singularity	Services will be tested if they are accessible economically and relevant to the situations arising.	

Table 6: gap analysis steps for French pilot (4 out of 4)

5.3.5 Conclusions for Paris city

Considering the importance of condominiums in Paris city (70% of housing stock) and their relative absence in the realm of PV production and energy communities, the Parisian OSS will focus on condominiums. It will rely on the experience as an OSS for energy efficiency.

The new OSS should consider aspects of communication and information about PV and ECs, organizational support and community building, technical, economical and legal expertise, especially in the first steps, administrative facilitation, and advice for financing. It should facilitate private firms in getting into the market of PV and condominiums in Paris. Along with third-party actors such as building administrators, banks, associations or local institutions, it should contribute to determine what can be the business models and models of mutualization of condominiums and citizens as CEPs.

6 Italy – Teramo province

6.1 Scope of interviews

6.1.1.1 A focus on municipalities

Stakeholder engagement is primarily focused on municipalities in Teramo Province for the two reasons explained below.

i. **Municipalities are entrusted by the Italian State with a set of powers and responsibilities for the development of RECs**

The development of energy communities in Teramo province is still in an embryonic state, despite strong interest in the topic. The focus is primarily on municipalities, as they represent the stakeholders with whom AGENA has most to do for its mission, in addition to the fact that municipalities under 5000 inhabitants are interested in the National Recovery and Resilience Plan (NRRP).

Specifically, component 2 (C2—renewable energy, hydrogen, grid, and sustainable mobility) of NRRP's Mission 2 (M2—green revolution and ecological transition) aims to contribute to the achievement of strategic decarbonization goals through five tasks and lines of investments, including one related to the promotion of RES for energy communities and energy self-consumption configurations. Under the M2C2 mission of NRRP, a 2.2 billion EUR fund has been set up to provide financial resources for the installation of 2 GW of RES facilities in REC and self-consumption schemes located in small towns with fewer than 5000 inhabitants.

In addition, some stakeholders (i.e. Cope, University of Teramo, ATER TE) are working with municipalities that won the NextAppennino call. This programme allocated 68 million euros to the seismic areas of central Italy (Abruzzo, Lazio, Marche and Umbria), affected by the earthquakes in 2009 and in 2016, to create energy communities promoted by territorial public administrations.

As a result, local authorities and public administrations are very relevant, because they are entrusted with a set of powers and responsibilities that enable them to promote effective actions and carry out interventions capable of accelerating the decarbonization process of their territories, strengthening their ability to adapt to climate change, and ensuring citizens' access to secure, sustainable, and affordable energy. In any case, it is highly advisable for the Municipality to be able to play the role of planner and manager of these actions as part of its territorial planning and governance activities.

ii. **Municipal properties are potential leverages to the development of self-consumption and RECs**

As stated by “Remote individual self-consumption and renewable energy communities: vademecum for municipalities” by ANCI, with the support of GSE (Manager of Energy Services), with the entry into force of the CACER Decree, the Municipality can reduce and rationalize energy consumption costs by using one or more configurations simultaneously, as further clarified below, depending on whether the objective is to act individually or to initiate a participatory process open to all citizens, aimed at establishing one or more Energy Communities.

With the CACER Decree, municipal spaces potentially suitable for the installation of new renewable energy plants can be leveraged according to a range of possibilities:

1. Individual remote self-consumer using the distribution network, a configuration useful for utilizing municipal areas and surfaces even far from the main consumption hubs of the local authority, often located in restricted areas such as historic centres;

2. Group of self-consumers, applicable where one or more municipal users are located within a building or condominium that includes other final customers/producers different from the Municipality, such as in the case of a mixed public-private building with multiple users.

3. Renewable energy community, which involves the participation of various other final customers and/or producers within the territory.

Each local authority can activate one or more configurations in parallel, provided that the same consumption account or production unit cannot be part of more than one configuration. Remote individual self-consumption has a compensatory impact on the energy costs of local authorities and, together with physical self-consumption, directly helps reduce the Municipality’s energy bill, which can ease the financial burden of energy costs and free up resources for other purposes.

Groups of self-consumers and renewable energy communities are an opportunity for authorities that lack the resources and/or assets to develop their own renewable energy plants, allowing them to participate as consumers in the benefits generated by these configurations.

Promoting their creation, however, is primarily a way to develop policies that benefit the territory and pursue strategic goals within the competencies of local authorities such as enhancing local renewable energy sources for the benefit of the community ; reducing the phenomenon of depopulation and spreading the culture of sustainability, starting with raising awareness and involving citizens.

As a conclusion, RECs are key elements for local authorities, not only because they lead to increased production, use, and share of energy from RES, but also because they allow opportunities for citizens to aggregate and confer with local authorities about the design, purposes, and operation of the future REC.

6.1.1.2 Stakeholders interviewed

The interviews were conducted during August and September 2024. 9 stakeholders have been engaged and formally interviewed. They represent a variety of points of view about ECs (specifically RECs) and PV.

First of all, **Province of Teramo, Municipality of Tortoreto and Municipality of Castelli** represent the local authorities. Local authorities, through information, awareness and training campaigns can act as project facilitators. The Province of Teramo includes 47 Municipalities. 4 of them (Tortoreto, Teramo, Castelli and Martinsicuro) will be directly involved in the pilot.

The **Research Center for green transition, sustainability and global challenges** represents the University. It aims at studying, in a multidisciplinary key, the theme of ecological transition, with a particular focus on the political, institutional and constitutional issues.

ATER Teramo represents the social housing. It can act as facilitator of the energy transition collectively by actively sharing the energy generated through renewable systems installed in buildings.

Cope – Consorzio Punto Europa (European Point Consortium) has the mission to activate and stimulate citizens' demand for information through the organization of local awareness and animation initiatives and through training interventions, tailored for identified targets.

Rete Assist is a non- profit association to fight energy poverty that plays a very important role in the promotion of community energy projects, allowing the development of new skills in the renewable energy sector, enabling the employment of professionals prepared to face energy problems and implement new energy solutions.

Engreen is a technical group that provides innovative and sustainable solutions for energy efficiency and renewable energy systems.

Province of Teramo and Cope were met in person, while for the others it was a call or a written answer.

6.1.2 List of hurdles

Interviews led to a list of hurdles that can be grouped into four categories according to the methodology described in chapter 1:

1. **Lack of knowledge**
2. **Lack of expertise**
3. **Problematic legal framework**
4. **Financial hurdles**

Finding No. 1	Related hurdles	Object	Domains	Phases
Lack of knowledge	**lack of knowledge** and ability to understand all the purposes behind a CEP	EC	Social, organizational, financial	Development
	The unclear national regulatory framework quenched the initial interest in CEPs	EC	Legal	Development, Implementation
	Lack of a medium-term strategy: initiatives are often launched without a clear vision of how to develop and operate the community over time. Without a well-defined strategy, CEPs risk being ineffective or ending prematurely. This lack of medium-term planning limits the adoption of corrective measures and adaptation to new challenges or opportunities, compromising the resilience of communities	EC	Organizational, technical, economic, legal	Development, Implementation, Operation
	Connection with NGOs and other social actors: the absence of a clear strategy to involve these actors can limit the support that CEPs can receive	EC	Organizational	Development, Implementation
Finding No. 2	**Related hurdles**	**Object**	**Domains**	**Phases**
Lack of experties	**Limited technical, administrative, financial and organisational expertise**. Management complexity of EC.	EC	Legal, technical, financial, organizational	Development, Implementation, Operation
	Lack of knowledge in the technical aspects such as design and implementation	PV, EC	Technical	Development, Implementation
	Excessive bureaucracy: the need to obtain numerous authorizations, comply with complex regulations, and deal with bureaucratic procedures can significantly slow down the implementation of projects and discourage the initiative	EC	Legal, technical, financial, organizational	Development, Implementation, Operation
Finding No. 3	**Related hurdles**	**Object**	**Domains**	**Phases**
Problematic legal framework	**Difficulty in understanding the mechanism of CEPs constitution and functioning**	EC	Legal, organizational	Development, Implementation, Operation
	Difficulties in interpreting numerous provisions of the CEP decree and the operating rules of the GSE	EC	Legal, administrative, financial, organizational	Development, Implementation, Operation

	An excess of bureaucracy that discourages the aggregation of promoters	EC	Administrative, organizational, legal	Development, Implementation, Operation
	Problems related to the choice of the most suitable legal model, also based on the different nature of the promoters	EC	Legal	Development, Implementation, Operation
Finding No. 4	**Related hurdles**	**Object**	**Domains**	**Phases**
Financial hurdles	**A need for economic partnership** (public - private partnership)	EC	Legal, economic	Development, Implementation
	Deadlines too tight to have access to State incentives for both amounts and management process	EC	Administrative, financial	Development, Implementation
	Difficulties in the inclusion of private individuals: the barriers relating to the inclusion of private individuals derive mainly from a lack of information, distrust towards the CEP model and legal or financial constraints that make it difficult for private individuals to contribute	EC	Legal, financial, organizational	Development, Implementation
	Insufficient financial support: subsidies are often limited or absent, which compromises the long-term operation of CEPs	EC	Legal, financial, organizational	Development, Implementation, Operation
	Due to the current regulatory systems, there is **high risk for investors**, small and large ones, not to obtain financial incentives	EC	Legal, financial, organizational	Development, Implementation, Operation
	Members' limited financial capacity and willingness to invest	EC	Financial	Development

Table 7: List of hurdles identified in Italy

6.1.3 Discussion on hurdles identified

6.1.3.1 Lack of knowledge

The first aspect identified as a barrier relates to **awareness and information**, in particular, lack of knowledge of the potential outcome of RECs both for local authorities and citizens. In fact, lack of knowledge about energy issues and RECs makes it difficult to explain how they work and what benefits they can bring to stakeholders. Although there is an abundance of information available (especially online) on RECs, and it is constantly increasing, there remains a lack of genuine understanding of the benefits associated with RECs. These are often presented merely as tools for reducing energy bills rather than as drivers of a paradigm shift. This simplistic view risks creating false expectations about short-term economic benefits and solutions to the energy crisis. In reality, economic advantages alone are not a sufficient motivation to join an energy community, as it represents a much broader innovation from social, community, environmental, and local development perspectives. The real cultural renewal

introduced by RECs lies in their social innovation aspects and in promoting new economic models related to the sharing economy and, more broadly, the circular economy.

In addition, the lack of a medium-term strategy: initiatives are often launched without a clear vision of how to develop and operate the community over time. Without a well-defined strategy, CEPs risk being ineffective or ending prematurely. This lack of medium-term planning limits the adoption of corrective measures and adaptation to new challenges or opportunities, compromising the resilience of communities. Also, the gap in time between the time it takes to activate an EC, and the time needed to quantify its positive impacts on the territory, which can only be verified in the medium term, may dampen the interest of the parties involved.

6.1.3.2 Lack of expertise

Municipalities and local authorities have **limited internal resources and lack of specific skills and knowledge (e.g. legal, technical, financial expertise)**. Moreover, many small municipalities, such as Castelli, do not have permanent technicians every day, but share them with other municipalities.

In addition, **an excess of bureaucracy** might hinder the development of RECs, in fact it discourages the aggregation of promoters and slows down the process. The creation and management of a REC involves adhering to numerous bureaucratic procedures that can be burdensome and complex. Operators must navigate specific technical and legal requirements, making the process particularly challenging, especially for small and medium-sized enterprises and local administrations. These bureaucratic obstacles slow down the establishment of ECs and increase management costs.

That is why the coordination of actions by one-stop shops in the province of Teramo should help establish RECs in the form that best aligns with the needs of their members and the specific characteristics of the area. Since RECs are centered on collaboration and relationships, it is essential to properly inform members, citizens, and local authorities about all benefits (economic, environmental, social) of RECs. This foundation of awareness is crucial for creating a REC that is both socially and economically robust and successful.

In addition, the local OSS should simplify and streamline administrative procedures for energy communities through the development of a local guideline, that provides procedures with step-by-step instructions and templates.

6.1.3.3 Problematic legal framework and financial hurdles

Despite the approval of **REC operative decree** at the beginning of 2024 with a significant delay, there are still many hurdles to face.

The decree has outlined the feed-in premium tariff, specified who is eligible to access it, established limitations, and determined how it can be combined with other regional or national funding, but as a

result of the approval delay, energy operators, citizens, public authorities, and other potential REC project proponents have been compelled to hold off on making concrete decisions and investments related to the initiation of RECs.

This expectation has led to the fact that many municipalities, with less than 5000 inhabitants, today have **difficulties in submitting their applications for access to incentives (NRRP)** within the deadline (March 2025).

Another major challenge often encountered during the establishment of a REC is **determining its legal structure**. While the relevant regulations do not mandate a specific legal form, allowing a REC to adopt any type of legal entity (such as an energy cooperative, limited partnership, community trust, foundation, voluntary association, housing association, non-profit organization, or public-private partnership), they do set forth certain objectives and essential characteristics that guide and limit this choice. The REC must be established as a legal entity with a formal statute that outlines all aspects of its operation, governance, and the criteria for distributing benefits. Consequently, setting up a REC requires not only technical expertise but also legal and managerial skills, as well as the involvement of professionals like notaries and lawyers.

Financially speaking, among other hurdles, it should be noted that the fiscal and legal aspects have not yet been clarified by GSE and the revenue agency, leaving too much **risk for investors**, small and large ones, linked to obtain financial incentives.

6.1.4 Gap analysis

12 gaps were identified for the Italian pilot.

From hurdle n°1 (Lack of Knowledge), two gaps are identified.

- Gap n°1: **There is no guidebook specific to the target groups and to the territory**.
    - The new regulatory framework will be made more comprehensible by such a specific guidebook.
- Gap n°2: **There is no aggregator of stakeholders at local level.**
    - Existing networks are at National level. Need to involve local stakeholders (municipalities, businesses, citizens) to be part of a network.

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**

Lack of knowledge and ability to understand all the purposes behind a CEP	Launch information and dissemination policies on the topic, attempting to involve as many citizens and public bodies as possible. Promote meetings in person, but also launch information campaigns on social media and through traditional radio and television channels, still widely used by those in the 40-70 age group	Several guidebooks by GSE (National manager of Energy services), Energy Community HelpDesk of Emilia Romagna Region The info package and informative platform on RECs by Compagnia San Paolo; Vademecum for local authorities by ANCI (new resource)	Existing guidebooks will be adapted to the target groups	**(1) There is no guidebook specific to the target groups and to the territory**
Lack of a medium-term strategy from the community side of CEP, and adaptability to long-term challenges	Draw up a clear medium-term strategy that includes clear objectives, intermediate milestones and monitoring and evaluation mechanisms	Not known	NA	
Unclear national regulatory framework has quenched so far the initial interest in CEPs from people.	Better regulatory clarity and a complete legal framework for all available options	From February 2024 new Operating rules for access to the widespread self-consumption service and the NRPP contribution are in place	The framework is better clarified by new rules, in GSE website, at national level only though.	**(1) The new regulatory framework is still lacking in a local and specific guidebook.**
Absence of strategy to connect with NGOs and other social actors, limiting the support CEP can receive.	Potential interest from NGOs to be stipulated by creating support and communication networks to facilitate the sharing of resources and expertise between CEPs and NGOs	Network for supportive and renewable energy communities and National observatory to promote Renewable Energy Communities	Existing networks are at National level. Need to involve local stakeholders (municipalities, businesses, citizens) to be part of a local network.	**(2) There is no aggregator of stakeholders at local level.**

Table 8: gap analysis steps for Italian pilot (1 out of 4)

From hurdle n°2 (Lack of expertise), three gaps are identified.

- Gap n°3: **There is a need for a list of experts on the territory.**
- Gap n°4: **There is a need for support during development phase to help using technical tools of project simulation.**

- Gap n°5: **There is a need for local OSS.** Services provided by Energy Community helpdesk for Emilia Romagna and Compagnia San Paolo are dedicated to citizens of their region/ territory.

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**
Limited technical, administrative, financial and organisational expertise. Management complexity of REC.	Organize training courses and research centers for experts. Maintain a public list of the main actors at a local level supporting CEPs.	The info package by Compagnia San Paolo. RECON simulator and GSE simulator. Rose Map platform; Vademecum for local authorities by ANCI (new resource)	Existing services will be useful to CEPs.	**(3) Need for a list of experts on the territory.**
Technical aspect such as design and implementation	Training courses and available tools to be spread to technicians	RECON simulator and GSE simulator	Both simulators will be useful to CEPs and should be used with support from AGENA (initial phase).	**(4) Need for support during development phase (simulation of project)**
Discouragement due to excessive bureaucracy: numerous authorizations, complex regulations, bureaucratic procedures.	Facilitate the administrative process for renewable energy and energy communities by creating one-stop shops or online platforms that centralize all the procedures necessary for the registration and management of CEPs. Train dedicated staff to assist communities in administrative processes	GSE website, Vademecum for local authorities by ANCI (new resource); Energy Community HelpDesk for Emilia Romagna Region; Online platform "Compagnia San Paolo"; Guidebooks by Emilia-Romagna region about energy-sharing and RECs.	Services provided by Energy Community helpdesk for Emilia Romagna and Compagnia San Paolo are dedicated to citizens of their region/ territory.	**(5) Need of a local OSS**

Table 8: gap analysis steps for Italian pilot (2 out of 4)

From hurdle n° 3 (Legal framework), one gap is identified.

- Gap n°6: **A supervisor is needed to guide the CEP through the process and use the existing resources.** Many resources are available, but there is a need to interact directly with stakeholders to advocate the new paradigm of energy sharing.

Related hurdles	**Solutions**	**Existing services and schemes** (identified in WP2)	**Analysis of existing services** (integration in CEP lifecycle or not, recommendations)	**Gaps**

Difficulty in understanding the mechanism of CEPs constitution and functioning	Work more focused and spend more time on understanding the complexity of REC and its many benefits, not only economic	Energy Community HelpDesk of Emilia Romagna Region: guidebooks on energy sharing and RECs. The info package and informative platform on RECs by Compagnia San Paolo.	The Emilia-Romagna guidebook introduces Energy Sharing models, main legal models for the establishment of the RECs legal entity, and the participation of public bodies. The info package includes administrative templates for the establishment of a CER by a local authority, the deed of incorporation and statute of the legal entity. Many resources are available, but there is a need to interact directly with stakeholders to advocate the new paradigm of energy sharing. Information will be selected in the specific guidebook according to the target groups.	**(6) A supervisor is needed to guide the CEP through the process and use the existing resources**.
Problems related to the choice of the most suitable legal model, also on the basis of the different nature of the promoters	Better regulatory clarity and a complete legal framework for all possible options	The info package by Compagnia San Paolo. Vademecum for local authorities by ANCI (new resource)		
Difficulties in interpreting numerous provisions of the CEP decree and the operating rules of the GSE	Provide high-profile technical/legal advice that is easily accessible to any stakeholders, accompanied by an adequate information campaign on the benefits associated with the establishment of a CEP	GSE website (FAQ, templates, interactive guidebook for REC registration)		
An excess of bureaucracy that discourages the aggregation of promoters	Better regulatory clarity and a complete legal framework for all possible options			

Table 8: gap analysis steps for Italian pilot (3 out of 4)

From hurdle n°4 (Financial framework), six gaps are identified.

- Gap n°7: **There is a need to aggregate public and private bodies in partnership**
- Gap n°8: **Securing funding is not ensured, and projects lack viability**
- Gap n°9: **There is a need to create trust for consumers.**
- Gap n°10: **Lack of access to all eligible public fundings**
- Gap n°11: **Private REC project initiators often lack financial solutions on their own**.
- Gap n°12: **Some fiscal and legal aspects are not clarified**.

Related hurdles	Solutions	Existing services and schemes (identified in WP2)	Analysis of existing services (integration in CEP lifecycle or not, recommendations)	Gaps
Hurdles in making economic partnership (public - private)	Increase the knowledge on how to deal PPP	Not known	NA	**(7) Need to aggregate public and private bodies together**
Deadlines too tight to have access to incentives for both amounts and management process	Modify the national deadline for incentives. Ensure stable organisational and financial viability for projects	Feed in tariff (deadline 31th December 2027); Capital contribution - NRRP measure (deadline 31st March 2025) for municipalities with a population <5000 inhabitants.	New national/regional fundings are not ensured because of deadline problem.	**(8) Securing funding is not ensured, and projects lack viability.**
Difficulties in the inclusion of private individuals (lack of information, distrust towards...)	Exploit the advantages of photovoltaic systems for private individuals	Energy Community HelpDesk of Emilia Romagna Region. The info package and informative platform on RECs by Compagnia San Paolo.	Existing resources explain the fiscal and financial incentives that exist for private individuals who wish to participate in CEPs (such as tax deductions for the installation of photovoltaic systems or subsidized energy tariffs). However, in the end, public and private financing lack certainty, predictability and accessibility	**(9) Need to create trust for consumers.**
Insufficient financial support (subsidies are often limited or absent, which compromises the long-term operation of CEPs)	Subsidize the maintenance of an energy community by establishing dedicated funds at the national or regional level to, including subsidies for initial costs and incentives for the production of renewable energy	Feed in tariff (deadline 31th December 2027); Capital contribution - NRRP measure (deadline 31st March 2025) for municipalities with a population <5000 inhabitants	Financial support provided by National Government (MASE, GSE) can be used However, it won't be possible for the Structural Funds provided by Emilia Romagna and by Compagnia San Paolo.	**(10) Lack of access to all eligible public fundings**
Members' limited financial capacity /willingness to invest	Maintain incentives in the long term	Feed in tariff (deadline 31th December 2027); Capital contribution - NRRP measure	New national/regional fundings are not	**(11) Lack of financial solutions for RECs by privates**

		(deadline 31st March 2025) for municipalities with a population <5000 inhabitants	answering this problem.	
Excessive risk for investors caused by uncertainty of getting financial incentives	Better regulatory clarity and a complete legal framework for all possible options	Not known	NA	**(12) Clarification of some fiscal and legal aspects**

Table 8: gap analysis steps for Italian pilot (4 out of 4)

6.1.5 Conclusions for Teramo Province

The identified hurdles at local level are in line with the hurdles at national level, but the local ones cover primarily the development phase of a REC, because the stakeholders are currently involved in this step.

According to the interviewees, the local One Stop Shop in the province of Teramo should provide basic information, outreach, training, maps of existing and emerging initiatives, guidance on technical, legal, financial and administrative issues, and to facilitate access to expertise.

A first recommendation concerns the aspects related to disseminating and communicating the benefits of Energy Communities. Communication should not focus on economic aspects but rather on the social innovation aspects introduced by RECs, which can serve as valuable tools for cultural renewal and the redesign of public and/or shared services, becoming primary objectives for the sustainability of the region.

Moreover, it' is important to inform about the regulatory context to help energy communities identify the best legal set up for their organisation and project.

The local OSS should provide information on obtaining funding, template contracts and agreements that must be entered into with different actors, as well as brochures and guides on this topic and tools for economic and technical feasibility of the investments. Moreover, it should provide the list of professionals involved in REC setting up.

The idea for the Teramo OSS is to take the customer by the hand and create a place (virtual and physical) where energy communities pioneers can get in contact with. Thanks to the needs analysis, carried out in WP3, the Teramo OSS can ensure a thorough understanding of the requirements and priorities of the local energy communities. As a result, Teramo OSS should develop an effective action plan and provide expert support (internal by AGENA staff and external) during the lifetime of the community energy projects.

7 Conclusion

Hurdles for CEPs in pilot regions align with hurdles identified at the European scale by the European Energy Community Repository (ECR) in their report of January 2024, “Barriers and action drivers for the development of energy communities and their activities” (see chapter 2, page 11).

The DISCOVER stakeholders highlight the same obstacles as those highlighted by the ECR report although there are of course some regional specifics or exceptions.

Hurdles observed in pilots can be summarized and categorized as follows:

1. Hurdles external to the CEP

- An unsuitable legal framework, either blocking, fluctuating, or incomplete.
- Challenges in navigating unstable and/or complex administrative systems.
- Difficulties in accessing finance for community projects.
- Lack of information and interest within the population.

2. Hurdles internal to CEPs

- Insufficient expertise for developing appropriate projects.
- Difficulty in building and sustaining communities

Legislative environment, when inadequate, is the number one barrier. Financial and administrative environments are key elements too, and they often pose problems along the way. Physical environment may in some cases pose great challenges too.

However, the key to start anything, is to mobilize locally all relevant stakeholders – citizens, local authorities, and businesses – around the benefits and the common goal of creating an energy community. This would be the role of a local OSS.

While national information campaigns are too rare and in demand, it is the local level where information should be disseminated, and momentum be built.

Internally to CEPs, challenges are often to get the right expertise, technical, economical, and legal, and to build a sense of community strong enough to cope with the many hurdles of the environment, and to last as a coherent group in the long run.

Learnings about hurdles for each pilot region

All regions face barriers mainly at the development stage. Supporting the first steps of CEPs are the clear priority for all pilots. While stakeholders in Bulgaria, Croatia, and Italy report barriers at the

implementation and operation phases, stakeholders in France hardly identify any at this stage, though they anticipate them.

The province of Teramo stands out from the other three pilots and from the European context in general as it is not confronted so much to an inadequate legislation. Nevertheless, the administrative application of certain provisions poses problems for stakeholders (such as deadlines given to call for answers). On top of inadequate or insufficient legislation reported in the other three pilot regions, such administrative difficulties are shared everywhere and extensively reported (procedures, forms, status restriction, etc.).

Stakeholders in Sofia region and Primorje – Gorski Kotar County do not report much internal barriers to CEPs beyond a lack of expertise. These two regions are mainly concerned with external obstacles (legal, administrative, informational, and financial) which need to be addressed on a broader scale than the regional level. An evolution of the legislation is the priority for these two regions.

Stakeholders in Paris highlights strong barriers to the development of photovoltaic projects, while stakeholders in the other three regions do not. Sofia region, Primorje – Gorski Kotar County and Teramo province are mainly concerned with hurdles to energy communities. The prominence of hurdles to PV projects in Paris is due to the city's environment (being entirely a dense urban centre) and it is also explained by the fact that targeting condominiums is a novelty. Adapting to such context is a major challenge for the Paris pilot.

8 Annex

8.1 Synthesis of 35 stakeholder interviews about hurdles

Below is the synthesis of information about hurdles for CEPs collected during the interviews of 35 stakeholders in each pilot region from December 2023 and September 2024.

Information is laid out into two tables.

The first table goes from page 74 to page 86.

It gives the situation of the stakeholder, its activities, and the hurdles it identifies for CEPs. Hurdles are analysed according to the domain of activity, the phase of CEP and the geographical scale. The chapter 4 of the present document is based entirely on the information laid out in this first table.

The second table goes from page 87 to the end of the document.

It gives for the same list of 35 stakeholders, the potential leverages to address the hurdles identified, the stakeholder's expectations about CEPs, the potential role of a local OSS according to the stakeholder, and its interface with other stakeholders. Its content was not analysed in the present document, it serves as a precursor for future deliverables within WP3.

8.1.1 Table 1. Hurdles identified by each stakeholder.

Title of the stakeholder	Pilot	State of the art of CEPs according to the stakeholder	Aims and activities of the stakeholder	Hurdles and challenges identified by the stakeholder	Details about hurdles	Type of hurdle	Phase of CEP	Geographical scope
Bulgarian Development Bank (BDB)	Bulgaria	Not exisitng yet	The BDB is the first and only financial institution in the country with such accreditation. Its participation in the InvestEU programme provides an opportunity to create new products with high added value in sectors with market mismatches. The InvestEU programme is being implemented for the period 2021-2027 as the EU's main investment instrument for economic recovery, environmental progress and jobs in Europe. It will invest, through an EU budget guarantee, €26.2 billion in projects.	Needs to be interconnected	Need to simplify the application process and to make the loans more accessible to CEC. Needs to cooperate closer with the local authorities on funding opportunities	Administrative, organizational	Development	National
Eenergy Efficiency and Renewable Sources Fund (EERSF)	Bulgaria	Not existing	Provides loans and sessions and guarantees to municipalities, corporate clients and private individuals.	Need of equity contribution; cumbersome loan application process.	Need to simplify the application process and to make the loans more accessible to CEC. Need to cooperate closer with the local authorties on funding opportunities	Administrative, organizational, financing	Development	National

Bulgarian Energy and Mining Forum (BEMF)	Bulgaria	Few concept exisitng, need promotional campaign regalrdless of the legal hurdles	Consultation on development of community energy projects, detailed design, facilitation of application process, drafting opinions and advice on legal amendments, trainings, analysis of the energy market in Bulgaria, green transiiton etc.	Updating/detailing the legislation with regards to CEP/E.C. Lack of knowledge and information from the local authorities on legal, technical and financial aspects.	Cooperating closely with the legislative bodies and law enforcement agencies; needs to organise indormation and traning sessions with local authorties, need to serve as a mediator in the triple helix	Legal, organizational, technical, economic	Development	National
Chamber of Energy Auditors	Bulgaria	Not existing yet	Collection and systematization of problems arising on the methodology and software for surveying energy efficiency of buildings. Conducting seminars with companies performing energy surveys and audits in order to share experience in organizing and conducting surveys and certification. Meetings with municipal and regional managements in order to study and consider the possibilities for joint work on the energy survey of municipal and state buildings, proposing energy-saving measures and providing financial means for the implementation of these measures, discussing common actions regarding the efficiency of proposed energy-saving measures and control in their application.	Updating/detailing the legislation with regards to CEP/E.C. Lack of knowledge and information from the local authorities on legal, technical and financial aspects.	The problems of energy auditors in Bulgaria and in Europe are quite serious. These problems mainly concern the fact that energy audits are not carried out in every member state according to the same unified methods and in the same way. There is also a divergence in the regulatory framework, which is not good for investors who would invest in energy efficiency, building stock renovation and industrial systems investments.	Legal, technical, economic	Development	National

Energy Agency Plovdiv (EAP)	Bulgaria	Emerging, few existing	Assists local authorities in initiatives and projects related to energy efficiency and ecology, including research, initiation and development of projects, normative acts and standards, implementation of projects, consultations and programs in the field of energy efficiency and ecology, implementation of ecologically proven energy technologies, training, publication and distribution of information materials on energy sector.	Updating/detailing the legislation with regards to CEP/E.C. Lack of knowledge and information from the local authorities on legal, technical and financial aspects.	Cooperating closely with the legislative bodies and law enforcement agencies; needs to organise indormation and traning sessions with local authorties, need to serve as a mediator in the triple helix	Legal, technical, economic	Development	National
Municipality of Dryanovo	Bulgaria	Business plan developed	Policymaker, Pilot municipality in previous IESDI project	Needs advice to support decision making Lack of information/ knowhow	Lack of access to consultancy and financing	Technical, economic, financial	Development	Local
Municipality of Panagyurishte	Bulgaria	First concept under discussion	Policymaker, Pilot municipality in previous IESDI project	Needs advice to support decision making Lack of information/ knowhow Needs continuous guidance/support	Lack of access to consultancy and financing; Lack of expertise in legal, technical and financial topics. Sometimes lack of initiative, vision and decision making power.	Technical, economic, financial, social	Development	Local
Municipality of Pazardzhik	Bulgaria	First concept under discussion	Policymaker and potential pilot	Needs advice to support decision making Lack of information/knowhow Needs continuous guidance/support	Lack of access to consultancy and financing; Lack of expertise in legal, technical and financial topics. Sometimes lack of initiative, vision and decision making power.	Technical, economic, financial, social	Development	Local

Municipality of Slivnitsa	Bulgaria	First concept under discussion	Policymaker, Initial contact was established in order to plan the creation of E.C.	Needs advice to support decision making Lack of information/knowhow Needs continuous guidance/support	Lack of access to consultancy and financing; Lack of expertise in legal, technical and financial topics. Sometimes lack of initiative, vision and decision making power.	Technical, economic, financial, social	Development	Local
Sofia municipality	Bulgaria	First concept under discussion	Implements the national Energy Efficiency and Clean Energy Transition policy on local level, piloting innovative initiatives and business models, develops exemplary business and social models.	Needs advice to support decision making Lack of information/knowhow Needs continuous guidance/support	Lack of access to consultancy and financing; Lack of expertise in legal, technical and financial topics. Sometimes lack of initiative, vision and decision making power.	Technical, economic, financial, social	Development	Local
Vitosha Region (Sofia Municipality)	Bulgaria	First concept under discussion	Policymaker and potential pilot	Needs advice to support decision making Lack of information/knowhow Needs continuous guidance/support	Lack of access to consultancy and financing; Lack of expertise in legal, technical and financial topics. Sometimes lack of initiative, vision and decision making power.	Technical, economic, financial, social	Development	Local
Bulgarian Cities and Regions Association (BCRA)	Bulgaria	Emerging, at concept level	Supporting the development of local self-government and local democracy in cities; Support of city authorities and administration to increase the efficiency of management in cities in the interest of citizens and in accordance with European values and standards; Creation of prerequisites for introducing a second level of self-government in Bulgaria at the level of the planning regions; Creation of prerequisites for sustainable development of cities and regions.	Lack of information/knowhow	Local authorities need more information and capacity building in legal, technical and financial aspects	Technical, financial	Development	National

Municipality of Matulji	Croatia	No EC registered	Developer, designer and activator of CEP. Energy transition is an objective of the municipality which, in addition to the construction of sustainable energy sources, also works on traffic optimization	Lack of understanding of the complex process, rules and numerous documentation required for project implementation.	Bureaucratic approach of the relevant institutions to the establishment of the CEP, insistence on unnecessary and complicating processes (insistence on "paper" vs. digital documents, etc.), rejection of requests due to minor errors (for example, the stamp is not clear enough). Inadequate transposition of EU directives creates numerous additional restrictions for the establishment of the CEP	Administrative, legal	Development	Local
Municipality of Jelenje	Croatia	No EC registered	Developer, designer and activator of CEP. Aims at building a large solar power plant 13 MW in industrial area where all citizens from municipality could participate	State incentives are rare and inadequately distributed. the rules are often unclear or difficult to reach, a lot of documentation is required	Insufficient support from commercial banks, distrust in new investments in the field of renewable energy sources Unclear rules and fiscal support if investing in renewable energy sources, both by citizens and the economy and by cities. Currently, only the VAT reduction is in effect for the construction of the plant. There is great uncertainty about choosing the optimal investment model, as well as the easiest way to involve citizens	Financial, legal, economic, administrative	Development	Local
City of Delnice	Croatia	No EC registered	Developer, designer and activator of CEP. Aims at organizing a social CEC, the key goal is to help energy-poor citizens (it is a mountainous area)	Lack of understanding of the complex process, rules and numerous documentation required for project implementation.	Ambiguities surrounding the principles of non-profit, commercial and social CEP How profitable is the installation of photovoltaic plants in mountainous areas, does the installation of heat pumps make sense compared to the ubiquitous pellet stoves in which citizens have already invested?	Legal, administrative, economic	Development	Local
City of Kastav	Croatia	No EC registered	Developer, designer and activator of CEP. Its goal is to enable all citizens who, due to conservation restrictions, cannot install photovoltaic plants on their roofs in the old town to participate in CEC and the construction of plants on public grounds	Lack of education among citizens about the opportunities provided by investments in renewable energy sources	Lack of konwledge about energy savings, and the possibility to achieve significant returns on invested capital, significantly higher than the interest rates on savings currently offered by banks. Lack of understanding of innovative and alternative models funded by CEP (ECaaS, PVaaS). Opposition from citizens for the abolition of internal combustion engine vehicles	Social	Development	Local

					in the old town. How can the electrification of the vehicle fleet help in this? Is it possible to ensure free charging of vehicles from the municipal photovoltaic infrastructure? How could KASPI (entrepreneurial incubator) be involved?			
City of Opatija	Croatia	No EC registered	Developer, designer and activator of CEP Given that it is a tourist town with a large number of protected cultural monuments and a very limited space, its goal is to optimize the possibilities of installing photovoltaic systems on public areas.	Lack of experts in all areas of energy transition. The perception that sustainable energy sources require too much administrative effort for relatively small gains.	The lack of standardization means that the city has five different equipment suppliers for five facilities, which will create maintenance problems in the future. Some of the key buildings owned by the city with potential and large areas for the establishment of photovoltaic plants are unusable because the load-bearing capacity of the roof construction is too low.	Technical, technical, economic, administative	Development	Local
ENEDIS	France	In France, Collective Self-Consumption (CSC) operations have been multipied by 6 in 3 years. Most CSC operations are observed in suburban or industrial areas, not city centers. In Paris city, ENEDIS have not observed any form of such a growth. Social housing firms and the City of Paris do operate a few CSC operations, but no CSC operation exist with private builings or condominums. Recently one condominum and one property management firm have got in contact with ENEDIS about CSC.	ENEDIS operates 95% of French distribution system. It is involved in connecting to the grid, metering, and taxing. ENEDIS aims at facilitating CSC operations in Paris by raising awareness about it. ENEDIS has uploaded guidebooks on their website. A local advisors is to work with local authorities and CEPs.	Difficulty in administrative procedures for CSC operations Technical difficulties	Condomiums, and the individuals, are dettered by the administrative heaviness of a CSC operation. Technically and economically, the small size of parisian building roofs makes it difficult too. The exclusion of tenants may also be a problem for condomiums.	Administrative, technical, economic	Development	national local

Energie Partagée	France	One PV cooperative has been labelled in Paris (EnerCit'IF) and one PV-equipped condomium has been labeled (the only one labelled in Ile-de-France region. It was built recently, in 2017, and does not represent the context of the vast majority of condomiums which are already built and have to be adapted).	Energie Partagée is the main citizens' movement in favour of renewable energy in France. Energie Partagée gives technical and legal support to any renewable energy project with a citizen spirit. It grants a "citizen label" to projects that abide by their charter. Labeled projects have to be of a relatively big size. Labelled projects may benefit from a co-funding by Energie Partagée.	Integrating condominiums into citizen-lead CEPs is difficult. Installing PV panels is technically challenging in Paris. Lack of access to their funding tools for citizen renewable energy projects.	The decision-making process, and the nature itself of condomiums make it difficult to integrate them into Energie Partagée's usual support activities aimed at citizen projects. There are technical and economical topics to resolve; namely the acceptance of extra costs for roof refurbishment for example, property of the installation, accessibility to the roof for workers, or the technical certification of installation techniques needed by insurance firms. Condominium PV plants being relatively small, they have had no access so far to the Community Energy Financing Scheme operated by Energie Partagée (called Energie Partagée Investment, it is a result of the EU-funded ACCE project), neither had they have acces to the Government-driven Enercit fund (about which information is scace, see Deliverable D2.3 of DISCOVER projet).	Social, technical, financial	Development	national local
Enercit'IF	France	EnerCit'IF was born in 2016 as a group of motivated people and now operates 16 PV plants in Paris, with a cumulated power of around 700 kWp. PV plants are located on large buildings belonging to the City of Paris and Parisian social housing firms. Their funding is cooperative, they belong to Parisians. They are not registered as an Energy Community but they can be considered one as a matter of fact. They are the only energy producing citizen cooperative in Paris. Although it had been a target at the start of their project, no condominium has been involved in the cooperative.	Enercit'IF aims at recruiting volonteers and develop new PV plants on public buildings. They do not plan to integrate condominium buildings due to the complexity of it. They raise awareness about PV and EC in Paris.	Very constrained business model in Ile-de-France Lack of professional firms in Paris	Business model for PV in Ile-de-France is constrained due to low radiations and generally small sized roofs. The price per Wp installed (2 € / Wp) is therefore difficult to make competitive compared to market prices. Bigger sized roof have to be targeted, or local consumption has to be mobilized to buy at lower prices. Hence the interest in developping Community approaches (CEPs) and CSC operations. However, CEPs are still facing hurdles on their own. Professional firms able to work on the Parisian market are almost non existant (especially for condominiums which are not professional clients). No private engineering firm, no public-private firm neither. Investment branch of Energie Partagée is not targeting Paris (it targets large plants (5 MWp))	Economic	Development, implementation, operation	local

Les Générateurs IDF	France	Les Generateurs IDF are familiar with PV projects on logistics centers, public facilities and individual houses in suburban areas of IDF region. As fas as they know, no condominium participate to an energy community or a collective self-consumption operation in IDF region.	Les Generateurs Ile-de-France are advisors to local authorities for RES energy in Ile-de-France Region. It was created in 2022 by the French National energy agency ADEME and the IDF Region. Les Générateurs IDF supports municipalities for training public agents and officials on RES and especially PV. They help local authorities define a local strategy and identify opportunities. They support actual development of PV projects regarding administrative steps for example.	Lack of expertise and support Landuse competition for rooftops Supplementary costs induced (reinforcement...) Specific hurdles to condominiums	Local authorities need expertise and support: why should we develop PV, how? Competition on land use in IDF is high and does not benefit PV productions in all cases. The need for reinforcement of rooftops induces supplementary costs and is a potential hurdle. 90% of logistic centers need reinforcement. What about condominium rooftops? Hurdles specific to condominiums are: PV decision are long term decisions compared to their usual topics; a collective decision is necessary; they lack funds...	Technical, economic, social	Development	local
Unis	France	Demand for PV from their network of condominiums is almost zero but Unis believes in the interest of developping PV in Paris and that Energy community is a means to achieve it.	Unis is the second biggest regional association of building administrator firms. Unis represents their interest and develops common projects. Building administrators execute the decisions taken by condominium boards and co-owners that imply the building itself. They take part in the energy renovation projects of condominiums.	Need for information and awareness Lack of an integrated business model for condominiums and their administrators Need for self-financing solutions to avoid typical investment barriers in condominiums Need for models that help smaller buildings join the communities	The lack of a integrated business model makes PV and EC difficult for condominiums. Technically speaking, the topic seems too complex and needs to be simplified. Legally the definition of the legal entity, for a CSC operation for example, is difficult to solve: condominium syndicates and their associations are not commercial entities and therefore not allowed to sell electricity. That hampers their interest in becoming an EC. Also, forming an association of syndicates requires unanimous vote in all syndicates, which are practically hard to obtain, and signature before a civil-law notary. PV and EC are not a priority in a national context that already puts pressure on energy savings (minimal energy performance becoming gradually an obligation to be allowed to rent one's flat in France). Seen as an investment, it is a challenge. According to Unis experience, co-owners generally avoid invetsing when return on investment gets longer than 7 years.	Social, legal, economic, technical	Development	local

					Small buildings will face more hardships than big ones.			
CSTB	France	A research program on Collective Self-Consumption (CSC) operations in economic activity zones has shown the existence of two types of operations, from a sociologist point of view: - mutualizing operations: citizens and local authorities, and small businesses group themselves to develop their community. They bring support to the smaller members. - capitalizing operations:private businesses offer ready-made business solutions without emphasis on equity between members.	The CSTB (Scientific and Technical Center for Building) is a French public organization specializing in research in the construction sector. CSTB has been researching the social dimension of Collective Self-Consumption operations in France for several years. Suburban economic activity zones have been the focus of CSTB so far. Lan development zones in city centers are a new focus as CSC operations in city centers start to emerge. One case study is located in Paris, 18e arrondissement.	Taking into account the social dimension of an EC and defining a robust governance model.	Energy communities involves mutualization. The main challenge is to define a robust governance model that will accomodate changes in the community in the long run, where it is clear what is mutualized and who bears the responsability of this mutualization. The social dimension is as important as the technical aspects according to CSTB research team. Excessive capitalistic approaches to ECs may be a barrier to the mutualization that is proper to an EC.	Social, organizational	Development, implementation, operation	national
Domofinance	France	Domofinance has not worked for ECs nor CSC operations, however Domofinance has seen a surge in PV operations in individual houses within their portofolio (20 000 in 2023). These operations are practically not involving condominiums, and when so, exclusively in the southern regions of France.	Domofinance is a loan firm associated to EDF, French main electricity supplier. It is one of the two two banks in France that offer collective loan services (zero-interest green loan) for energy renovation projects on residential buildings. Domofinance provides loans for PV projects in residential buildings and, wishfully in condominiums.	Lack of interest among co-owners and codominiums, lack of demand		Social	Development	national

Enercoop	France	So far in France, most CSC operations have been supported by Enercoop, or by energie Partagée. Enercoop has experimented the incubation of an EC in Paris which aim is to raise awareness on energy sufficiency.	Enercoop is a network of cooperatives in 11 regions of France that provides energy from RES suppliers to its clients, operates a fex energy production facilities, and in some regions provides energy services (engineering, training...). Enercoop aims at developping its energy services for PV projects in Ile-de-France region. At the national and european levels, Enercoop is involved in several projects in favour of ECs: flexibility services (Virtual Power Plants - VPP project), financing services and energy poverty (SIS project), guidebooks for citizen energy communities (SCCALE project).	Inherent hardships for condominiums and professionals of PV to get projects profitable and secure. Legal issues with the EC status in France and hardhips in promoting energy sufficiency and developping tools to manage intermittancy.	As a service provider for PV installation, Enercoop has experienced hurdles from the first steps when working for condominiums: - difficulty of getting all actors involved aligned for decision - low profitability because of small available space (most rooftops are under the critical size of 150 m²) - risk for professional entreprises due to a lack of visibility (no guarantee of implementation after preliminary studies) - lack of interest for landlords (co-owners that rent their flat and do not pay heating bills). Enercoop has extensive experience on EC in France and the hurdles faced by them. - The current legal definition of RECs and CECs is insufficient. It does not grant any particular adavantages to ECs compared to conventional economic actors. And no administration has been appointed to actually grant the status of ECs. - The Rescoop VPP project aimed at creating a SW-HW solution (box) for operating production and consumption daily from an household PV plant. Algorithms and the beta-box were developped. However, installing such tools at home has proven costly and difficult to spread wide. - By experimenting the incubation of an energy suffiency EC in Paris (SCCALE project) it was hard to get citzen volunteering. Nevertheless, ECs aiming at producing electricity from PV plants could mobilize volunteer citizens in a more effective way due to the economic interest of people.	Social, economic, technical, legal	Development, implementation, operation	national local

Province of Teramo	Italy	Currently, the Province of Teramo is not carrying out any specific activity concerning CEPs.	Identify potential communities, offer technical assistance, facilitate networking and knowledge sharing, and encourage collaboration with businesses and institutions.	Lack of knowledge and ability to understand all the purposes behind a CEP, as well as the difficulty in understanding the mechanism of its constitution and functioning.	The citizen who should join a CER is only interested in saving on bills and not also the other advantages that the CER itself would bring (reinvestment of profits in social activities, less pollution, participation in a community that has a common goal to share). All this makes some important values behind the establishment of a CER lost	Social	Development	Local
Cope	Italy	Currently, COPE is working to support around 10 municipalities (with a population withless than 5000 inhabitants) in the Province of Teramo and Province of L'Aquila to set up a REC. COPE is supporting municipalities that have already been financed by the Next Appennino (a complementary fund dedicated to Abruzzo, Molise, Lazio, Umbria and Marche Regions) for the creation of legal entity. At the same time, COPE is supporting other municipalities to access NRRP funds.	Support municipalities in seizing funding for the creation of RECs as well as facilitating the administrative process	Lack of expertise Challenge of economic partnership (public - private partnership) Deadlines too tight for both amounts and management process (administrative)	Perception is still focused on economic benefits, not social innovation aspects. The critical point is the time gap between the activation of a REC and the time needed to quantify the positive effects on the territory, which can be verified in the medium term. This long time horizon may dampen the interest of the parties involved. Municipalities can certainly play an important role, but the current framework has revealed difficulties in playing a role as a community manager and leader.	Social, economic, administrative	Developement, implementation	Local

ATER TE	Italy	Currently ATER TERAMO, a management company for local social housing, is involved in the development of a energy community. The technical office was involved in presenting the application to a tender which allowed the organization to obtain funds financed by Next Appennino. In this phase of planning the energy community, the ATER TERAMO technical office offers technical and legal support, as well as undertakes to find the economic funds required by ATER TERAMO	Sole responsible for the devolopment of the Energy Community project on the buildings owned by ATER TERAMO. Coordinates the activities of private individuals for the construction of the works and for the subsequent management phase of the energy community.	Hurdle in administrative procedure	In particular, we are referring to the entire design phase which includes, among other things, rigorous documentation to be presented to local and national control bodies. One of these is the environmental impact assessment.	Administrative	Development	Local

RETE ASSIST	Italy		Rete Assist deals with combating energy poverty through a holistic and transversal approach, in particular through training and the dissemination of good practices aimed at different actors (public, private and third sector). Rete assist has dialogued with CEP managers and other actors to promote the social component of CEP and make them inclusive towards people in conditions of energy poverty by offering them services and benefits (economic and otherwise). Through a workshop held as part of the PEnTrEn project (funded by the Ministry of Environment and Energy Security as part of the Strategy for Sustainable Development), the different perceptions of subjects and stakeholders in the creation of CEPs were identified.	Lack of a medium-term strategy Difficulty in including private individuals Insufficient financial support Uncertain legal framework Excessive bureaucracy Connection with NGOs and other social actors	- Lack of a medium-term strategy: initiatives are often launched without a clear vision of how to develop and operate the community over time. Without a well-defined strategy, CEPs risk being ineffective or ending prematurely. This lack of medium-term planning limits the adoption of corrective measures and adaptation to new challenges or opportunities, compromising the resilience of communities - Difficulties in the inclusion of private individuals: the barriers relating to the inclusion of private individuals derive mainly from a lack of information, distrust towards the CEP model and legal or financial constraints that make it difficult for private individuals to contribute - Insufficient financial support: was identified as an obstacle as workshop participants assessed how subsidies are often limited or absent, which compromises the long-term operation of CEPs - Uncertain legal framework: in many contexts, regulations are complex, unclear or constantly evolving, creating confusion among CEP participants and operators - Excessive bureaucracy: the need to obtain numerous authorizations, comply with complex regulations, and deal with bureaucratic procedures can significantly slow down the implementation of projects and discourage the initiative - Connection with NGOs and other social actors: the absence of a clear strategy to involve these actors can limit the support that CERs can receive	Organizational, social, financial, legal, administrative, economic	Developement, implementation	National

Director of Centro di ricerca "Transizione ecologica, sostenibilità e sfide globali"	Italy		Provide training, legal support, networking activities. In particular the center has a research group on CEPs. The activities include editoring of publications on this topic; They are promoter of dissemination and of discussion initiatives with stakeholders; They as well organize of scientific conferences on CEPs and relatives energy laws.	Bureaucracy and difficulties on how to apply laws and decrees. Financial aspects and availability of sufficient funds are another hurdles. Restrictions on beneficiaries of CEPs. Legal nature of CEPs.	The cultural/temporal obstacles are certainly significant. The technical/regulatory obstacles are equally or even more important. For the last it cannot be said to have decreased even following the adoption by the Ministry of the implementing decree of 23 January 2024. There are many technical/regulatory obstacles; purely by way of example, the following may be mentioned here: the difficulties in interpreting numerous provisions of the CEP decree and the operating rules of the GSE; an excess of bureaucracy that discourages the aggregation of promoters; the challenges linked to the transition from the secondary to the primary cabin (challenges, in this case, mainly of a financial nature, connected to the need to raise capital); the problems connected to the restrictions on the beneficiaries of the contributions provided for by the CER decree; Furthermore, problems related to the choice of the most suitable legal model remain, also on the basis of the different nature of the promoters.	Social, administrative, legal, technical	Development	National
Researcher of Centro di ricerca "Transizione ecologica, sostenibilità e sfide globali"	Italy		Collaboration activities (internship) with AGENA, and the Energy and Environment Agency of the Province of Teramo. Production of reports and scientific publications on the topic in collaboration with the "Ecological transition, sustainability and global challenges" research center	Lack of awareness and information	Greater emphasis is often placed on the technical/economic/legal obstacles, but frequently the first obstacle that stands between potential promoters and CEPs is of a cultural/informative nature: in other words, little is known about the opportunities that CEPs offer (in terms of obtainable incentives and reduction of emissions, for example) and this severely limits the number of initiatives that could be launched.	Social	Developement, implementation	National

Engreen	Italy		Specific activities on CEPs: Training and raising awareness of citizens, businesses and public administration Technical-economic feasibility analysis Financing and fundraising support Legal assistance and establishment of a legal entity Electrical design Supply and installation of renewable systems Supply of monitoring system Management of practices with GSE	Hurdles in administrative procedures	The unclear national regulatory framework quenched the initial interest in CEPs. The fiscal and legal aspects have not yet been clarified by the GSE and the revenue agency, leaving too much risk for investors, small and large ones, linked to obtaining financial incentives	Administrative, legal, economic	Developement, implementation	National
Municipality of Tortoreto	Italy		Promoter of information and awareness campaigns on REC. Contacts made with industry and private individuals interested in setting up a REC.	Lack of konwledge Lack of expertise Difficulty in the planning phase	Lack of proper information on the concept of CER, in fact it is often referred to only energy savings, without considering the complexity surrounding them for their social value, environmental and land development. Difficulties for the municipality to play a role of driving and managing the community. Need for specific expertise (technical, legal and managerial) on a topic in constant evolution The obstacles concern all phases, but for now it mainly concerns the planning phase, conceptualization (e.g. on which buildings to make the installation), available resources, involvement and aggregation of potential participants and definition of a governance. The next issue to be addressed is that of the constitution of the most appropriate legal form.	Social, organizational, technical, legal	Development	Local

Municipality of Castelli	Italy		REC promoter	Hurdle in administrative procedure DIfficulty in defining the legal status Operational hurdles	Currently, the major obstacle is the time factor, because in order to benefit from NRRP funds, the application for access to the grant must be submitted, exclusively online, by 31 March 2025 and the plants shall be put into operation no later than 30 June 2026. The REC must be established before the request for access to the NRRP contribution is sent. Here, the second obstacle comes in, which is to identify the best legal form for the REC. Finally, once the installations are in place, the problem will be how to manage them and how to allocate incentives.	Administrative, legal, organizational	Development	Local

8.1.2 Table 2. Solutions discussed during stakeholder interviews.

Tite of the stakeholder	Pilot	Hurdles and challenges identified by the stakeholder	Leverages to tackle the hurdle or challenge	Expectations of the stakeholder	Potential role of a local OSS	Interface with other stakeholders
Bulgarian Development Bank (BDB)	Bulgaria	Needs to be interconnected	Needs restructuring and new experts to deal specitically withh REC and not only with SMEs	New financial engineering to CEP/REC if initiated by the business	Financial support	Cooperates with the business as CEP initiators
Eenergy Efficiency and Renewable Sources Fund (EERSF)	Bulgaria	Need of equity contribution; cumbersome loan application process.	Design specific projects for funding with combined instruments	Will be restructured next year to become a Green Transition Fund	Financial support	Cooperates with the business as CEP initiators
Bulgarian Energy and Mining Forum (BEMF)	Bulgaria	Updating/detailing the legislation with regards to CEP/E.C. Lack of knowledge and information from the local authorities on legal, technical and financial aspects.	BEMF works closely with the Bulgarian legislative bodies - ME, SEDA, the Parlimentary commission on Energy; has impact on decision making, participates actively in social media	Actively participating /contributing to awareness raising and training workshops	Full support with information, consulting and REC deployment	Cooperates with all others
Chamber of Energy Auditors	Bulgaria	Updating/detailing the legislation with regards to CEP/E.C. Lack of knowledge and information from the local authorities on legal, technical and financial aspects.	The chamber of Energy Auditors has an impact on energy efficiency of buildings, engineering, retrofitting	Can provide information, suggestions to improve the Condominium Management Law, influence the Owners associations, close contact with the Sate	Adviser on REC and CEC on residential buildings	Has daily contacts with Owners associations, service providers, suppliers on one hand and the State regulators, on another
Energy Agency Plovdiv (EAP)	Bulgaria	Updating/detailing the legislation with regards to CEP/E.C. Lack of knowledge and information from the local authorities on legal, technical and financial aspects.	EAP organises energy forum on different thematic areas; provides consultancy and support, works as a mediator between implementers and regulators, actively working on EU projects, especially for cooling and hearing RECs	To cooperate with the Institute on joint information, consulting and REC deployment	Full support with information, consulting and REC deployment	

Municipality of Dryanovo	Bulgaria	Needs advice to support decisionmaking Lack of information/knowhow	Increase awareness, get consulting support to decide on the legal form, technical issues, organise financing	To decide on the business model and start the process	Full support	
Municipality of Panagyurishte	Bulgaria	Needs advice to support decisionmaking Lack of information/knowhow Needs continuous guidance/support	Increase awareness and prepare business plan	To work proactively on developing/approving a business plan	Potential pilot	
Municipality of Pazardzhik	Bulgaria	Needs advice to support decisionmaking Lack of information/knowhow Needs continuous guidance/support	Increase awareness and prepare business plan	To work proactively on developing/approving a business plan	Potential pilot	
Municipality of Slivnitsa	Bulgaria	Needs advice to support decisionmaking Lack of information/knowhow Needs continuous guidance/support	Increase awareness and prepare business plan	To work proactively on developing/approving a business plan	Potential pilot	
Sofia municipality	Bulgaria	Needs advice to support decisionmaking Lack of information/knowhow Needs continuous guidance/support	Regulatory changes	To become an example and reference model	Potential pilot with pivotal role	
Vitosha Region (Sofia Municipality)	Bulgaria	Needs advice to support decisionmaking Lack of information/knowhow Needs continuous guidance/support	Increase awareness and prepare business plan	To work proactively on developing/approving a business plan	Potential pilot	
Bulgarian Cities and Regions Association (BCRA)	Bulgaria	Lack of information/knowhow	BCRA can particpate in working groups, public consultation, lobbying	Actively participating /contributing to awareness raising and training workshops	Promoter, Lobbyist	

Municipality of Matulji	Croatia	Lack of understanding of the complex process, rules and numerous documentation required for project implementation.	Provide high-profile technical/legal/financial support to individuals or organisation willing to establish CEP. Target citizens, municipalities, entreprises.		Complete support through consulting in all phases of the energy transition towards renewable energy sources. From defining the municipal strategy to concretizing individual initiatives	Citizen Energy Community Forum (CECF)
Municipality of Jelenje	Croatia	State incentives are rare and inadequately distributed. the rules are often unclear or difficult to reach, a lot of documentation is required	Provide high-profile technical/legal/financial support to individuals or organisation willing to establish CEP. Target citizens, municipalities, entreprises.		Complete support through consulting in all phases of the energy transition towards renewable energy sources. From defining the municipal strategy to concretizing individual initiatives	Citizen Energy Community Forum (CECF)
City of Delnice	Croatia	Lack of understanding of the complex process, rules and numerous documentation required for project implementation.	Provide high-profile technical/legal/financial support to individuals or organisation willing to establish CEP		Complete support through consulting in all phases of the energy transition towards renewable energy sources. From defining the municipal strategy to concretizing individual initiatives	Citizens, municipalities and also enterprises Citizen Energy Community Forum (CECF)
City of Kastav	Croatia	Lack of education among citizens about the opportunities provided by investments in renewable energy sources	Provide high-profile technical/legal/financial support to individuals or organisation willing to establish CEP	Convincing entrepreneurs to participate in the energy community, what exactly are the benefits for them Education of children and students about the needs of energy transition, they can often influence parents to join new initiatives	Complete support through consulting in all phases of the energy transition towards renewable energy sources. From defining the municipal strategy to concretizing individual initiatives	Citizens, municipalities and also enterprises Citizen Energy Community Forum (CECF)

City of Opatija	Croatia	Lack of experts in all areas of energy transition. The perception that sustainable energy sources require too much administrative effort for relatively small gains.	Provide high-profile technical/legal/financial support to individuals or organisation willing to establish CEP Target citizens, municipalities, entreprises.	Establishment of unique standards for the implementation of sustainable energy projects, quality control of design, performance and maintenance.	Complete support through consulting in all phases of the energy transition towards renewable energy sources. From defining the municipal strategy to concretizing individual initiatives	Citizen Energy Community Forum (CECF)
ENEDIS	France	Difficulty in administrative procedures for CSC operations Technical difficulties	Develop a OSS Raise awareness and show the interest for users A techno-economic model has to be found for small sized-roofs like in Paris.		Support condomiuims in the process Incite other actors to act, and firstly to raise awareness about it Accompagny citizens in the necessary evolution of behaviours regarding energy consumption	In other regions of France, associations or public-interest guided entreprises such as Enercoop act as facilitators for CEPS. They become the legal entity of local CSC operations.
Energie Partagée	France	Integrating condominiums into citizen-lead CEPs is difficult. Installing PV panels is technically challenging in Paris. Lack of access to their funding tools for citizen renewable energy projects.	Mutualize PV plant projects within local perimeters, like clusters of projects, in order to lower investment cost and pool costs between large, profitable projects, and smaller, less profitable projects.	Municipalities are able to do clusters of PV plants within the variety of their properties, but models of clusters are to be invented for private actors and multiple owner operations, such as condominiums.	Determine what are the condominium buildins in Paris that can have PV plants on their roof, and target them specifically in order to foster their implication. Give support to condominiums on all aspects (decision, technical, economic, legal…).	Energie Partagée has partly transfered EnerCit'IF the role of developping the parisian energy community and raising awareness. Energie Partagée now focuses on the rest of Ile-de-France region.
Enercit'IF	France	Very constrained business model in Ile-de-France Lack of professional firms in Paris	Mutualize PV plants between large and small projects (this was shared with Energie Partagée, see above) Work with PV professionals	Keep being associated to DISCOVER project and CEP support		EnerCit'IF has developped a partnership with the City of Paris and its administration. They were incubated by Energie Partagée.

Les Générateurs IDF	France	Lack of expertise and support Landuse competition for rooftops Supplementary costs induced (reinforcement...) Specific hurdles to condominiums				
Unis	France	Need for information and awareness Lack of an integrated business model for condominiums and their administrators Need for self-financing solutions to avoid typical investment barriers in condominiums Need for models that help smaller buildings join the communities	An integrated business model could make PV and EC a serious topic in condominium boards. Technical complexities and legal incertainities would be lifted. Access to finance would be solved by self-financing or third-party financing tools. Clusters of condominiums could be made so that small and big buildings share the benefits. Eletric vehicle supply equipement (EVSE) existing self-financing solutions could serve as a model for PV business. EVSE coupling with PV could be researched too.	The business model shoud be clear, secure, simple and financially interesting with relatively short-term profitability. For building administrators, a guidebook to help them support co-owners in their projects.	contribute to the definition of the business model, and the guidebook.	
CSTB	France	Taking into account the social dimension of an EC and defining a robust governance model.	Working on a community convention from the start, taking time to create consensus. Eventually changing the convention at the right steps of the project lifecycle. Defining rules to the community. Having general assemblies for important decisions.	Linking the social and the technical models to Energy Communities	Differentiate approaches depending on each condominium in order to reveal its potential within its community. Call upon sociologists. Ensure a core team to the community, before reaching out for other members.	Paris & Metropole Amenagement (PMA) public land developper SAMOA public land developper (Nantes)

Domofinance	France	Lack of interest among co-owners and codominiums, lack of demand	More information and support during the first steps. Targetting condominiums engaged in an energy renovation project of their building.	Demand for PV in condominiums and city centers is expected to increase, and Domofinance will be able to respond to it. EVSE is expected to develop and be associated to PV development. EVSE has been discussed over in condominium boards for 5 years but no significative concrete development has been made so far.		Building administrators and their union
Enercoop	France	Inherent hardships for condominiums and professionals of PV to get projects profitable and secure. Legal issues with the EC status in France and hardhips in promoting energy sufficiency and developping tools to manage intermittancy.	Promoting the guidebooks for EC published as a result of SCCALE project Continue developping operating tools (elo.coop CSC management tool was developped by Enercopp Midi-Pyrénées) Continue developping their services to PV projects	Partenerships with Agence Parisienne du Climat in Paris	Support to condominiums and awareness raising among citizens	Enedis DSO
Province of Teramo	Italy	Lack of knowledge and ability to understand all the purposes behind a CEP, as well as the difficulty in understanding the mechanism of its constitution and functioning.	Work more focused and spend more time on understanding the complexity of REC and its many benefits, not only economic		facilitation role: Raise awareness on REC benefits Provide general information on REC. First advice at the 'orientation stage	facilitators in the discussion of stakeholder groups (able to lead group work) and subject matter experts able to communicate easily what a REC is. Also technicians or citizens who have already experienced the establishment of, or access to, a REC
Cope	Italy	Lack of expertise Challenge of economic partnership (public - private partnership) Deadlines too tight for both amounts and management process (administrative)				

ATER TE	Italy	Hurdle in administrative procedure	Simplify and facilitate the drafting of projects and in particular that of strategic environmental assessment.		Mainly for information support	Municipal or regional bodies

RETE ASSIST	Italy	Lack of a medium-term strategy Difficulty in including private individuals Insufficient financial support Uncertain legal framework Excessive bureaucracy Connection with NGOs and other social actors	Possible solutions to reduce/cancel the obstacles detected could be: - Draw up a clear medium-term strategy that includes clear objectives, intermediate milestones and monitoring and evaluation mechanisms; - Exploit the advantages of photovoltaic systems also by private individuals by providing fiscal and financial incentives for private individuals who wish to participate in CEPs, such as tax deductions for the installation of photovoltaic systems or subsidized energy tariffs; - Subsidize the maintenance of an energy community by establishing dedicated funds at the national or regional level to support the creation and maintenance of CEPs, including subsidies for initial costs and incentives for the production of renewable energy - Potential interest from NGOs to be stipulated by creating support and communication networks to facilitate the sharing of resources and expertise between CEPs and NGOs - Have a clear legal framework based on the analysis of the context where the CEPs are located; - Facilitate the administrative process for renewable energy and energy communities by creating one-stop shops or online platforms that centralize all the procedures necessary for the registration and management of CEPs. Train dedicated staff to assist communities in administrative processes	The stakeholders that make up the Community Energy Project (CEP) are local authorities, private individuals, NGOs and other actors involved in their creation. They wre given a training on ECs. It is excpected that citizens in vulnerable conditions should benefit indirectly from the training, as they will be supported by individuals and organizations trained specifically to address the challenges of energy poverty.	The creation of a one-stop shop would have the role of informing and training citizens and other actors regarding the issue of energy poverty and how the creation of a renewable energy community can solve this problem. Furthermore, the aim is to provide a service that continues over time and becomes a point of reference for vulnerable subjects and beyond. In fact, the help desk should operate together with social workers active in the area.	RETE ASSIST has created an ATLAS with all the national initiatives on energy poverty. It could be used as a tool to identify existing CEPs in Italy that deal with energy poverty just as the ATLAS could be used to promote future CEPs (born / supported) within DISCOVER by inserting them into the ATLAS (https://www.atlaspovertaenergetica.it/)

Director of Centro di ricerca "Transizione ecologica, sostenibilità e sfide globali"	Italy	Bureaucracy and difficulties on how to apply laws and decrees. Financial aspects and availability of sufficient funds are another hurdles. Restrictions on beneficiaries of CEPs. Legal nature of CEPs.	Provide high-profile technical/legal advice that is easily accessible to any stakeholders, accompanied by an adequate information campaign on the benefits associated with the establishment of a CEP.	All possible promoters of a CEP and in particular the Municipalities as aggregating subjects are interested in the service.	An OSS could aggregate consultancy services, which by their nature are diversified (financial, legal, technical consultancy, etc.), in a single place (physical, but if necessary also virtual), thus contributing to "facilitating the work" of interested parties (potential promoters), saving them the time consuming in interviewing individual consultants (time which, moreover, very often discourages the start of ambitious projects from the beginning).	Energy and environmental agencies, in synergy with public and private bodies (e.g. with the University and its specialized research centres), can certainly make a significant contribution in this sense.
Researcher of Centro di ricerca "Transizione ecologica, sostenibilità e sfide globali"	Italy	Lack of awareness and information	Launch information and dissemination policies on the topic, attempting to involve as many citizens and public bodies as possible. Promote meetings in person, but also launch information campaigns on social media and through traditional radio and television channels, still widely used by those in the 40-70 age group. Target citizens, municipalities and also enterprises.		An OSS could play a fundamental role in the cultural/informative field, being able to act as a reference "hub" for launching campaigns aimed at promoting awareness of the benefits connected to the establishment of a CER	Institutional actors at all levels of government (from national to municipal, although municipalities can act both as promoters of information campaigns and as recipients of them); ANCI (national italian municipaities association); the Energy and Environment Agencies; environmental associations
Engreen	Italy	Hurdles in administrative procedures	Better regulatory clarity and a complete legal framework for all possible options. Target citizens and entreprises.		Training and design support, as well as support for financing aspects	National actors who provide the legal and incentive framework, such as the energy services manager (GSE), the revenue agency, the Ministry of the Environment and Energy Security (MASE)

Municipality of Tortoreto	Italy	Lack of konwledge Lack of expertise Difficulty in the planning phase	Strengthen the competences within the municipality, make an exploration of the available surfaces for PV installation, identify a technical partner and be supported by professionals or desks dedicated to the implementation of the REC. Target citizens, municipalities and also enterprises.		Ideally, an OSS should provide technical support as well as economic, financial, legal, organisational, communication and educational support to citizens and stakeholders, assistance and information through a set of integrated services and digital tools for the development of energy communities in the territories, Also to create greater awareness among citizens about the potential and benefits of energy production and sharing initiatives.	AGENA energy agency for technical aspects; University of Teramo for legal aspects; GSE - Energy services manager for incentives management; ESCOs for the realisation of the PV plants
Municipality of Castelli	Italy	Hurdle in administrative procedure DIfficulty in defining the legal status Operational hurdles	Identify a technical partner and be supported by professionals or desks dedicated to the implementation of the REC. Target citizens, municipalities and also enterprises.		Complete support (technical, economic, legal, managerial, informative	

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