DISCOVER

D.3.3
Stakeholder interconnectivity identified

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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
RFQ	Requests for Quotation
EPC	engineering, procurement, and construction

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.

Considering 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 millions 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.

1.2 Interface & requirement management to external service providers/ authorities

1.2.1 Activities

Activities of the DISCOVER project during Work Package 3 center on developing a specific guidebook based on the insights gained from the previous workpackage, 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, 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, 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, as summarized in this report.

1.2.2 Objective and Methodology

The objective of this report is to facilitate the interactions between CEPs initiators and external service providers. Specifically, streamline the communication between them using standardized forms.

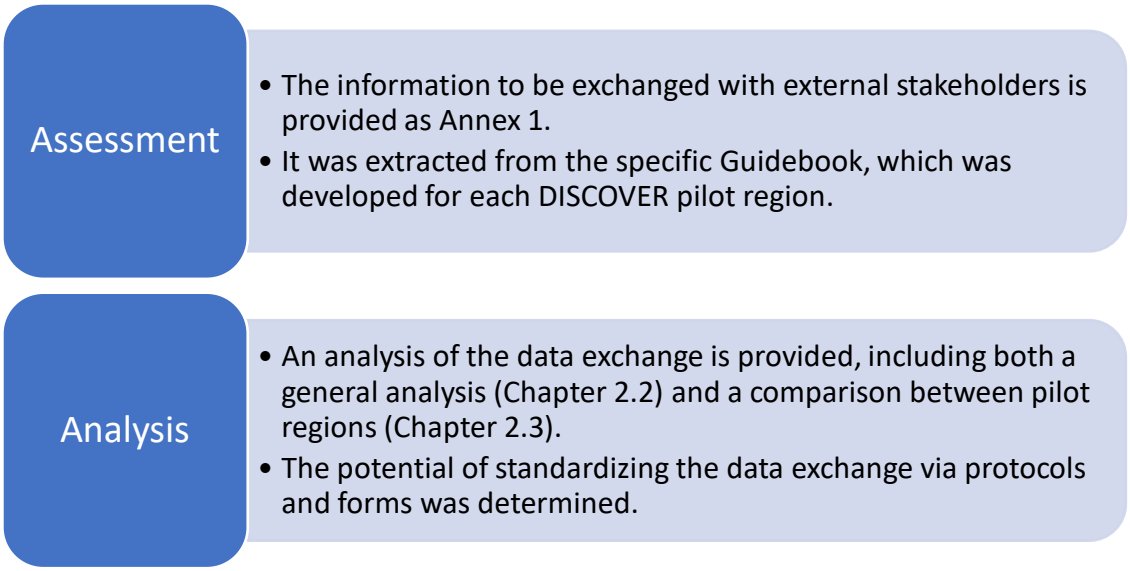

Figure 1: Methodology and Structure of this document

2 Stakeholder Interconnectivity

2.1 Introduction

As CEPs are developed and implemented, they follow a structured process composed of several steps. These steps are outlined in the general guidebook and further detailed in each region-specific guidebook for the pilot areas. The specific guidebooks provide additional context and guidance for each step, including: the support services offered by the local service hub, the stakeholders involved, and the specific information to be exchanged with them. As such, the guidebook serves to coordinate and streamline all support activities provided by the service hub for CEP initiators.

2.1.1 External and internal services

In general, the local service hub functions as an OSS (or a single point of contact) to support CEP initiators. This model works well for self-contained services that can be managed internally. However, certain services require engagement with external parties outside the OSS. The goal is to facilitate these interactions by defining clear information flows and data exchange protocols. This report focuses on these interface requirements for external services.

Distinction between internal and external services:

- **Internal or self-contained services** are those where the required data can be processed within the OSS without involving third parties. Example: Solar yield calculations.
- **External services** require interaction with third-party stakeholders—such as permit approvals from public authorities or cost estimates from technology providers.
  Examples: Permitting by authorities, Grid connection approvals from operators, Inquiries to technology providers, Legal and tax advisory services

2.1.2 Data exchange

Effective collaboration with external stakeholders (e.g., public authorities, suppliers, lawyers, tax advisers) depends on reliable data exchange and a certain level of interoperability. The goal is to harmonize this exchange of information and to do so for each step of the specific guidebook. To achieve this, clear connection interfaces must be established, allowing processes to be standardized. Standardized forms can help automate these interactions, increasing the success rate of CEP initiatives.

The specific guidebooks coordinate all support activities offered by the OSS. Therefore, they capture the following information per each step:

1. Classification as external or internal support service
2. Relevant stakeholders
3. The information to be exchanged (required input, expected outcome)
4. The **form** in which the information should be shared
5. The **channel** through which the information is transmitted

This information was the basis for this report. It was extracted from the specific guidebook and can be found as **Annex 1**.

2.1.3 Standardization

The objective of this task is to analyse external processes in each participating pilot country and assess their level of standardization regarding information flow. Depending on the country's maturity in terms of CEP implementation, some processes may already be standardized, while others may not. This report evaluates the current levels of standardization and highlights opportunities for improvement. These improvements can be realized by enhancing the **preparation** (packaging) and **transfer** (transport) of information.

This study investigates five pilot regions, each demonstrating different levels of standardization. Although these countries share a common general guidebook—which defines the general steps in the CEP lifecycle—their region-specific guidebooks reflect unique local characteristics. While some external services are similar across countries, others are highly specific to local or national contexts. The full data set is provided as **Annex 1**.

The assessment of the potential for streamlining information exchange with external service providers includes evaluating the **content**, **type**, **form**, and **channel** of information shared. The aim is to eliminate non-standardized or ambiguous communication, which can lead to inefficient “ping-pong” processes (Figure 2), delaying or, in the worst case, obstructing CEP implementation altogether.

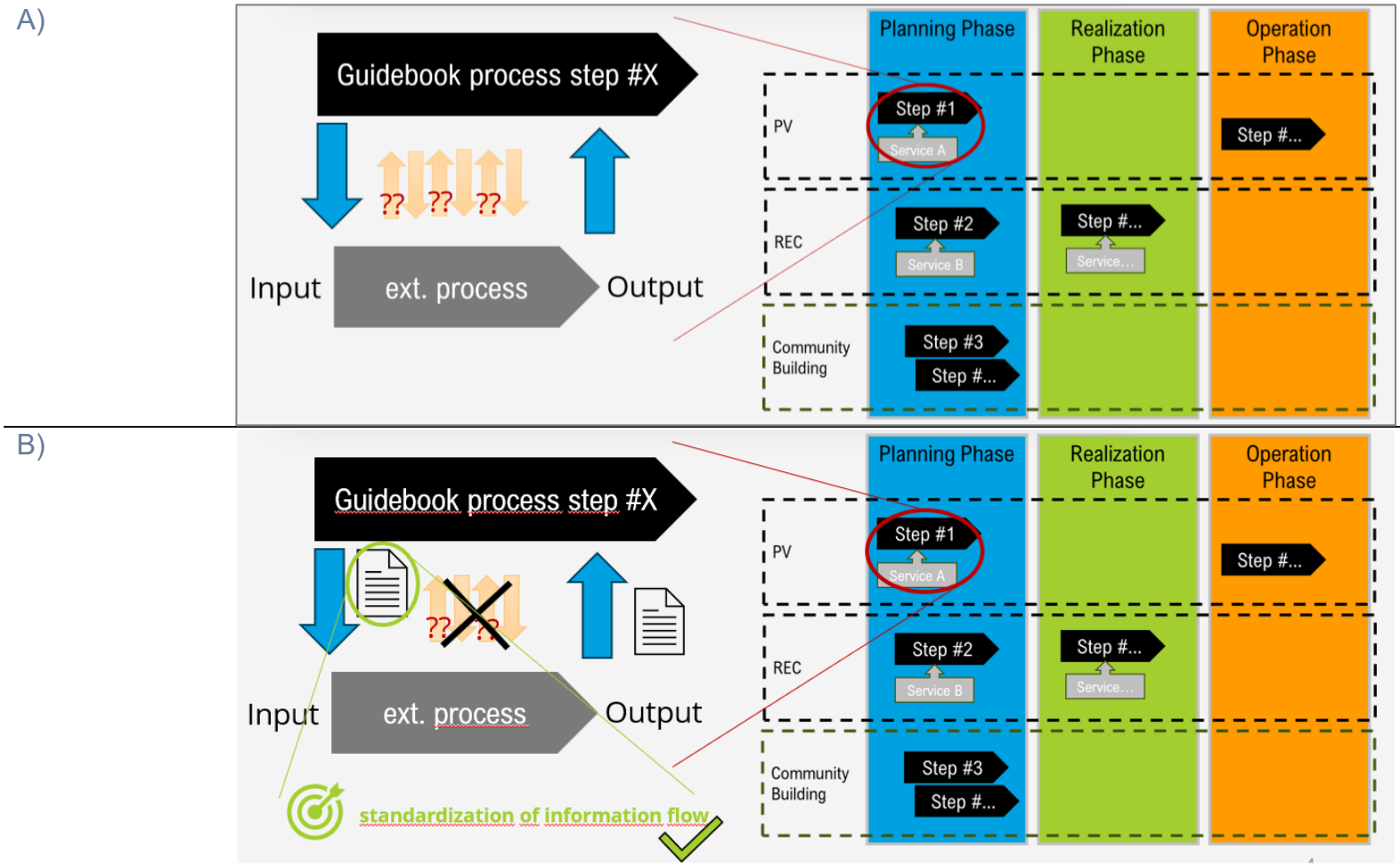

*Figure 2: Why interface standardization is important: A) unclear interfaces B) standardized interfaces. The CEP lifecycle is structured by the DISCOVER guidebook into three main phases: **Planning, Realization,** and **Operation**. Each phase is broken down into steps (black arrows), which are associated with corresponding support services offered by the OSS (grey boxes). These services—internal or external—require specific inputs to generate desired outputs (vertical blue arrows). Ideally, information exchange can be consolidated into a single, standardized form (B), improving efficiency compared to unstructured communication (A), which often results in fragmented and repeated exchanges.*

2.2 Analysis of all Countries

2.2.1 Key external processes

All services involving external stakeholders or service providers were identified and analyzed based on the following criteria:

- the type and description of the external service,
- the stakeholder(s) involved,
- the input information required,
- the form in which the information must be provided,
- the channel through which the information must or can be transmitted to the stakeholder, and
- the current level and potential for further standardization of the information exchange.

The data for this analysis was derived from the specific guidebooks and are provided in **Annex 1**. It is important to note that stakeholder groups may be consolidated within a pilot region where an exhaustive list is not beneficial - for example, local distribution grid operators, which vary by region, but provide the same service.

A total of eighteen key external processes were identified across all pilot regions. Table 1 provides an overview of the most relevant external processes and categorizes them as follows:

- Processes 1–10 are related to the planning and implementation of photovoltaic (PV) plants
- Processes 11–18 focus on the establishment and operational organization of energy communities (ECs)

In the context of PV plant development, a range of external services must be completed. These include technical assessments such as roof structural analysis (for roof-mounted systems), consultations with professionals regarding construction permissions, and the acquisition of permits from local or regional authorities. Additional steps involve evaluating the existing electrical infrastructure, obtaining grid connection approval from the relevant grid operator, securing plant insurance and financing (both from private and public sources), and working with engineering, procurement, and construction (EPC) companies for the realization and commissioning of the plant. Furthermore, agreements must often be made for the sale or management of excess electricity produced by the system.

When it comes to establishing and operating energy communities, several further processes are required. These typically include obtaining legal advice on the optimal structure and legal form of the community, registering the legal entity with the appropriate authorities, and ensuring market registration with the central energy

coordination body. Depending on the regulatory framework, participation in grid operations must also be registered with the distribution system operator, and in some cases, the community must be integrated into a central energy data exchange system. Financial procedures involve registration with the tax authority, setting up contracts with energy service providers for billing and settlement, and arranging for the ongoing accounting and financial management of transactions, often with support from a tax adviser.

2.2.2 Standardization potential

Table 1 summarizes the most relevant external processes across the pilot regions and condenses the information provided in **Annex 1**. For each region, the potential to streamline information exchange was assessed using an indicator ranging from **"low" to "high."** A higher potential indicates a greater opportunity for the OSS to facilitate communication with external stakeholders, thereby enhancing support for CEP initiators.

In cases where a process and its associated information exchange (in terms of content, form, and channel) are already well standardized, the potential for further improvement is considered **"low."** Conversely, if a process is highly individualized and lacks a clear structure, the potential for improvement is rated **"high"**—making it a priority for future development efforts.

Among the identified processes, it can generally be concluded that those involving public authorities are well standardized across all pilot regions. In many cases, dedicated web platforms are used to facilitate these processes, offering clearly structured guidance, defined information requirements, and standardized formats. As a result, these authority-related processes are typically rated as having **"low" potential for improvement**.

Processes and services involving commercial companies (local service providers) tend to show a lower degree of standardization across the pilot regions. This is particularly evident in technical processes, which often lack consistent guidance. Clearer direction at the outset can significantly improve outcomes: the more precisely CEP initiators understand *what* information needs to be collected and *how* it should be structured and shared, the more efficiently professional service providers can deliver their work from the beginning.

The extent to which commercial companies support this process varies significantly. Some offer clear instructions and structured interactions, while others place the burden of clarity on the CEP initiators. As a result, it is crucial for CEPs to make informed decisions when selecting commercial partners, prioritizing quality and transparency. The OSS shall support this decision-making process.

The area with the greatest potential for improvement is the guidance provided to CEP initiators on how to prepare tender documents or Requests for Quotation (RFQs) for

EPC companies. These companies are responsible for engineering, procurement, construction, and commissioning of the energy systems. To ensure fair and effective vendor selection, CEP initiators should be supported in preparing comprehensive and well-structured RFQ documents. Ideally, these documents should enable them to request binding and, where possible, all-inclusive offers from multiple vendors—allowing for a transparent comparison and selection of the best proposal.

2.3 Analysis - Country Specific

In addition to the assessment of improvement potential, the analysis of **Annex 1** revealed several key differences between the pilot regions. These differences are highlighted in **blue** in Table 1 and reflect important variations in national or regional frameworks. Specifically, they include:

1. the possibility of implementing additional power lines independently of the main grid,
2. the procedures and responsibilities related to excess electricity uptake agreements, and
3. the approach to collecting community energy data for billing and financial settlement.

These differences underscore the importance of tailoring support measures and standardization efforts to the specific regulatory and technical conditions in each region.

Concerning Point 1: Energy Communities (ECs) are understood as a framework that enables individuals to trade (sell) electricity without being classified as utility companies, thereby significantly reducing regulatory complexity. Additionally, ECs often benefit from reduced grid fees, a policy incentive designed to encourage effective load management among community members. The overarching goal is to ease the strain on the power grid that can result from increasing levels of decentralized electricity production. However, ECs in Bulgaria operate under a distinctly different setup due to national legislation. Unlike most other European countries, ECs in Bulgaria are not permitted to use the existing public grid infrastructure. Instead, they can establish their own micro-grids and implement private electricity lines between participants within the community. By contrast, in the majority of EU member states, setting up parallel grid infrastructure is either not permitted or not feasible.

Concerning Point 2: In Bulgaria, excess electricity uptake agreements are neither required nor possible. The national electricity provider is not obligated to accept or purchase surplus electricity generated by ECs.

Concerning Point 3: Under EU directives, grid operators are obliged to enable ECs by providing grid connections, implementing systems for data aggregation, and supplying this data in a standardized format. However, not all countries and their energy system operators have implemented centralized energy data exchange systems that can be used by ECs to collect and manage their data. For example,

Bulgaria and Croatia still lack such systems. As a result, ECs in these countries are required to organize their data independently, which eliminates external dependencies related to energy data.

3 Conclusion

The completion of a CEP is divided into multiple steps, each of which is described in detail for every pilot region in their specific guidebook. Among other aspects, the specific guidebook describes the interconnectivity with stakeholders—specifically, the required inputs to perform a service, the expected outcomes, and the form and channel of communication. This document provides an analysis of the interconnectivity between CEPs and external service providers. The analysis is based on the data extracted from the specific guidebook, provided as **Annex 1**.

Across all pilot regions, eighteen key steps were identified that require the exchange of information with external stakeholders. Each step was assessed based on its current form of communication and the remaining potential to improve interconnectivity. The aim was to identify those steps with the greatest potential for standardization. High-potential steps are characterized by both a low current level of standardization and a significant impact on the overall process. Leveraging this potential is expected to streamline communication with external service providers and, in turn, increase the success rate of CEP implementation.

The analysis found that communication with public institutions or large entities such as grid operators is already highly standardized. In most cases, online platforms are available with user-friendly interfaces that consolidate all necessary information into a single, clearly structured form. These standardized interfaces minimize fragmented, repetitive exchanges and leave little to no room for further improvement.

In contrast, communication with engineering, procurement, and construction (EPC) firms responsible for PV plant development was identified as having the greatest potential for improvement across all pilot regions. Streamlining this interaction could significantly enhance the tendering process and improve the likelihood of securing offers with the best price-to-value ratio. Here, the support of the OSS is especially valuable. The OSS typically:

- maintains a vetted list of qualified professionals,
- has the expertise to request quotes for appropriate equipment, and
- knows how to structure these requests in an itemized format that enables a clear comparison of multiple offers.

A comparison of key steps across pilot regions also revealed several region-specific challenges. For instance, current legislation in Bulgaria restricts the functioning of ECs to what is effectively peer-to-peer trading using private power lines, limiting their operational scope. In Croatia, the limited readiness of grid operators to aggregate consumption and generation data creates additional barriers for ECs. This lack of data

infrastructure presents a strong case for the development of standardized information formats and communication channels, which could fill the gap and support the smoother implementation of CEPs.

4 Attachments

Annex 1: List of stakeholder interconnectivities, structured by pilot region and service.

Table 1: Summary of external services and the potential for improvements on the process and information transfer

			Potential to improve information transfer					
No.	**External Service**	**Stakeholder category**	**Austria**	**Bulgaria**	**Croatia**	**France**	**Italy**	**Note/ key issue**
1	**Structural analysis** of roof/building	certified civil engineers	medium	medium	medium	medium	medium	individual, on site inspection
2	**construction preparation** according to building code/environmental/etc	technical engineering companies	medium	medium	medium	medium	medium	Preparation guidance, checklists
3	**construction permission** according to building code/environmental/etc	local authority	low	medium	low	low	medium	
4	**grid connection-, wiring-, distribution cabinet status analysis**	electrical professional, grid operator	medium	Country Specific	medium	medium	low	
5	**grid connection and feed-in permission**	grid operator DSO	low	Country Specific	medium	low	low	
6	**plant insurance**	insurance companies/agents	low	low	low	low	medium	
7	**plant financing - private/bank loan**	banks, private entities, etc.	medium	medium	medium	medium	medium	Prepare business models
8	**plant financing - puplic co-financing/grants**	funding agencies, public bodies	low	medium	low	low	low	
9	**plant engineering, procurement, construction and commissioning (EPC)**	plant EPC companies	high	high	high	high	high	plant EPC tendering
10	**excess electricity uptake agreements**	electricity utility companies; central electricity management entities	low	Country Specific	low	low	low	
11	**legal entity consulting/advisory**	legal consultants, lawyers	medium	medium	medium	medium	medium	Preparation guidance
12	**establishment of a legal entity of the EC**	local/regional authority	low	low	low	medium	low	
13	**energy market - EC participant registration**	energy market coordinator	low	low	low	low	low	
14	**EC grid participation registration**	grid operator DSO	low	low	low	low	low	
15	**EC energy data exchange registration**	energy data exchange operator/grid operator, micro-grid operator(self)	low	Country Specific	Country Specific	medium	low	
16	**tax/VAT-number registration of EC**	local/regional tax authority	low	low	low	low	low	
17	**billing of EC members**	EC service provider	low	medium	medium	medium	low	
18	**accounting of the EC**	tax adviser	medium	medium	medium	medium	medium	Preparation guidance

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Annex 1

For D.3.3 Stakeholder interconnectivity identified

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1 Austria

1.1 AT: Analysis - Structural

If a PV-plant is planned as an on-roof installation, the statics of the roof must be suitable to carry the additional load. The structural analysis must be done by a certified civil engineer.

Stakeholders to be involved: certified civil engineers

Input: Construction Plans that show the roof structure; on-site visit of the civil engineer to capture the status of the roof construction

Form and channel of information transfer: individually specified; electronic/email, paper form

Outcome: Structural analysis approving the PV plant load; required structural improvements and its estimated valuation defined

Standardization: individual process between civil engineer and customer; medium potential for standardized guidance for required information to be collected by CEPs

1.2 AT: Permit - Building Code

PV plants installed on buildings might require a permission from the local authority (e.g. city authorities). In most cases, PV-plants on roofs or facades are permission-free up to a certain scale (e.g. in Carinthia up to 100kWp). Most restrictive cases are related to regulations in historical areas concerning the visual and historical appearance of a city.

Stakeholders to be involved: local authority

Input: "- Provide Site plan with roof view showing the PV system - Representation of the location of the inverter (description of the wiring from the PV modules to the inverter) - Specification of the fire protection systems in the building (e.g. fire alarm system) - Construction plan of the top ceiling on which the PV system will be installed"

Form and channel of information transfer: hard-copy, digital service platform of local authorities (each authority with own specific digital platform “Digitales Amt” e.g. city of Graz via https://www.digitalestadt.graz.at/)

Outcome: Permission

Standardization: already high grade of standardization via forms and online platforms; medium potential/need for further improvements esp. for preparation

1.3 AT: Permit - Grid Connection

If a new electricity production plant is planned as an on-grid plant, the local grid-operator must be consulted. The grid operator clarifies the grid capacity and gives permission and/or restrictions regarding maximum feed in power and technical requirements.

Stakeholders to be involved: relevant grid operator according to the region and grid level

Input: "Peak power production in kWp The application for systems < 20 kW shall include (§ 17a Abs 1 & 2 ElWOG): - Name and address - site plan - Desired start date for feed-in - Maximum capacity of the system in kW, Forecasted annual energy output in kWh; - Number and location of meter points - Type of system and operation (full or surplus feed-in)"

Form and channel of information transfer: most of the large grid operators (of more than 200 in total) offer fast-forward online portals, where based on required data instant feedback and grid access documents are provided (given, that no limitations occur)

Outcome: Grid access contract; electricity grid connection confirmation including granted maximum feed-in power and technical requirements

Note: preliminary grid access documents confirm the access in a planning phase; plant construction companies handle grid access documents/requests in the detailed planning/construction/grid connection phases and settle the final grid access documents as implemented.

Standardization: already high grade of standardization via forms and online platforms, low potential/need for further improvements

1.4 AT: Insurance

Electricity generation plants have to/should be covered by an insurance.

Stakeholders to be involved: Insurance agents, insurance companies

Input: data of the entity which owns the plant, address, plant size and specifications, plant documentation

Form and channel of information transfer: filled and signed standardized forms of insurance companies; transfer via electronic transfer (e.g. email with pdf attachments)

Outcome: Insurance Policy

Standardization: already high grade of standardization via forms and online platforms; usually clear guidance by agents on required information etc., low potential/need for further improvements

1.5 AT: Financing – bank loan

The basic possibility to finance renewable energy projects is to go for a bank loan.

Stakeholder: local banks, European banks

Input: full information set about applying entity; full set of information about planned project incl. business case and securities

Form and channel of information transfer: filled and signed standardized forms of banks; transfer via electronic transfer (e.g. email with pdf attachments) or on-site at the bank

Outcome: bank loan approved; loan conditions settled; contracts set up;

Standardization: bank loans with clear requirements by banks (and law); potential for higher grades of standardization regarding project business plans and securities

1.6 AT: Financing - Grant

Several possibilities to receive funding for renewable electricity generation plants exist. The main possibility is based on the “renewable energy expansion act” (ger. “Erneuerbaren-Ausbau Gesetz”). Additionally, specific further possibilities exist in the federal states and some cities.

Stakeholders to be involved: EAG Abwicklungsstelle, Federal state funding agencies, City funding agencies

Input: PV plant information incl. costs

Form and channel of information transfer:

- EAG online portal https://www.eag-abwicklungsstelle.at;
- e.g. Funding portal of the federal state of Salzburg https://sbg.foerdermanager.net/foerderung;
- e.g. funding portal of the city of Graz https://digitaleformulare.graz.at/fs-fdg/start.do?wfjs_enabled=true&vid=b0674a2df8f0face&wfjs_orig_req=%2Fstart.do%3Fgeneralid%3DFDG_A23_TSA&txid=086c55e218e4784165efd4ec831f9657a9791101#;

Outcome: Grant

Standardization: very well standardized processes, very low potential for further improvements

1.7 AT: Enquire binding offer for plant construction

For the best benefit of the plant owner/the energy community, the plant should be implemented by professional companies after a (non-official) tender process. For a tender process

engineering-procurement-construction (EPC) companies are invited to propose an offer based on detailed specifications supplied by the customer entity (e.g. the energy community).

Stakeholders to be involved: plant construction companies (EPC)

Input: base information on customer/plant owner, information about site, type of construction surface and details/documentation of the status (e.g. type of roof, satellite images, actual images of the building/roof/surfaces, actual images of roof details (e.g. roof tiles); plant orientation; slopes; desired plant power; information about existing consumers and related technical and economical details, grid access identification numbers; request for reference projects in the past 6 months

Form and channel of information transfer:

1. Enquiry via email including a specification document with the full set of information
2. Clarification of details via telephone
3. On-site visit by the vendor to clarify status and technical details

Outcome: binding offer by vendors

Standardization: none/individual; high potential to ease tendering via guidances/templates; some vendors offer guidance on required information

1.8 AT: Electricity Uptake Agreement

After a PV plant has been installed and commissioned, an uptake contract for excess electricity must be established with either a utility company or OeMAG GmbH, the state-designated entity responsible for managing renewable electricity in Austria.

Stakeholders to be involved: OeMAG, electricity utility companies

Input: data of the requesting entity, address, grid-access identification number

Form and channel of information transfer: online platform

Outcome: Uptake Agreement/Contract

Standardization: high due to online portal for registration; low potential for improvement

1.9 AT: Metering Device

Smart Meters are required to be able to take directly part in energy communities and related plants and projects. In Austria Smart Meters are rolled out by the grid operators who are required to do so by law. This process is still ongoing. There might be some cases, where a smart meter installation is still outstanding – if this is hindering the participation within an energy community (as producer or consumer) the grid operator can be requested to prioritise the installation.

Stakeholders to be involved: relevant grid operator according to the region and grid level

Input: data of the requesting entity, address, grid-access identification number

Form and channel of information transfer: direct contact via email

Outcome: Smart Meter Installed

Standardization: individual process, rare need, no need for further standardization

1.10AT: Legal Entity - Association

In Austria energy communities must be founded as legal entities to be able to operate in the energy system. The legal form can be 1) a cooperative 2) any legal entity with its own legal personality 3) an association.

Stakeholder: municipal authority, district authority (Bezirks-Hauptmannschaft)

Input: Charter (Statuten); Name of entity; date of birth and place of birth of at least 2 founding members; delivery address

Form and channel of information transfer: via digital platform; in person appointment

Outcome: Approval to commence association activities; Registration Number (Vereinsnummer)

Standardization: individual process; charter templates available; special cases require additional guidance from lawyers etc.; in most cases authority platforms fast-forward

1.11AT: Legal Entity - Cooperative

In Austria energy communities must be founded as legal entities to be able to operate in the energy system. The legal form can be 1) a cooperative 2) any legal entity with its own legal personality 3) an association.

Stakeholder: cooperative association, local company registration authority

Input: Charter (Statuten); Name of entity; date of birth and place of birth of at least 2 founding members; delivery address

Form and channel of information transfer: via a cooperative association

Outcome: founding documents, company register entry and ID

Standardization: individual process; charter templates available; special cases require additional guidance from lawyers etc.; in most cases authority platforms fast-forward

1.12AT: Registration - Market Participant

When a new energy community is founded, the community must register as an energy market participant.

Stakeholder: ebUtilities

Input: online digital registration; name of the energy community

Form and channel of information transfer: via digital platform https://www.ebutilities.at/registrierung

Outcome: Market Partner ID/ RC number

Standardization: fully standardized via online platform

1.13AT: EC Registration - Grid Operator

Once the energy community is registered as a market participant via the ebUtilities platform, the EC can approach the relevant local/regional grid operator to settle the contracts.

Stakeholder: relevant grid operator according to the region and grid level

Input: "RC Number Contract partner data (Name and address of energy community) ID of society (Vereinsnummer) Allocation type (static/dynamic) Grid level (local/regional) ID of substation

Form and channel of information transfer: via digital platform of grid operator (e.g. https://portal.e-netze.at/ of Energie Netze Steiermark)

Outcome: "community ID (Gemeinschafts ID); grid access contract

Standardization: larger grid operators offer platforms with high grade of standardization; standardized contracts

1.14AT: Registration - EDA Portal

After signing up and settlement of the contracts between the EC and the grid operator, the EC can sign up on the energy-data exchange platform.

Stakeholder: EDA Energiewirtschaftlicher Datenaustausch GmbH

Input: "Network operator agreement; extract from the association register (Vereinsregisterauszug); ID document of the user; Power of attorney for signing"

Form and channel of information transfer: EDA Portal - https://www.eda.at/portal

Outcome: EDA account and access to EDA portal

Standardization: fully standardized online platform

1.15AT: Registration - VAT Number

The EC has to register at the regional tax-authority.

Stakeholder: local/regional tax authority (Finanzamt)

Input: details of entity; expected annual revenue; opting for VAT – Y/N

Form and channel of information transfer: online platform, in-person: standardized paper forms

Outcome: VAT ID number, confirmation of VAT free entity (small business scheme)

Standardization: standardized forms, online platform registration

2 Bulgaria

2.1 BG - Analysis - Load bearing capacity for installation of PV systems

Determine whether the roof structure can bear additional load of PV installation and how big the load can be.

Stakeholder: certified civil engineer

Input: Design drawings of the building and the roof. Application of the investor to the certified construction engineer and to the local authority.

Form and channel of information transfer: individual

Outcome: Set of certified constructor's technical drawings, with indication of load-bearing capacity on the roof and other indications required by law

Standardization: individual documents

2.2 BG - Environmental feasibility check

Check with normative base and local environmental institution (RIEW) whether the implementation of roof-top and stand-alone PV installation up to a certain plant size require an environmental impact assessment or any other environmental permit prerequisites for being granted a building permit.

Stakeholder: local authorities e.g. Municipality of Dryanovo

Input: "Environmental normative base; Basic technical project concept of EC"

Form and channel of information transfer: individual contact with environmental institution if necessary

Outcome: Clear understanding of environmental permitting procedure for the EC projects

Standardization: medium (for pre-feasibilty/requirements check)

2.3 BG - Documentation and Approval - Technical projects

Prepare technical documentation for the PV plant/EC to apply for different permits, including: building permit, grid connection permit, etc.

Stakeholder: owners engineer

Input: "Investment concept by the EC (building owners, participants in the CEP/EC), conceptual electrical designs, structural analyses, conceptual architectural designs and design permit by the local authorities. "

Form and channel of information transfer: individual

Outcome: Technical projects, drawn by certified engineers and approved by the chief architect of the municipality and by the utility companies.

Standardization: individual documents

2.4 BG - Preliminary building permit for PV plants and direct power lines in urban environments

Stakeholder: Sofia municipality

Input: Description of PV plant features and construction documentation of the building, on which the PV plant will be installed.

Form and channel of information transfer: web platform
https://nag.sofia.bg/RegisterBuildingPermitsPortal/Index

Outcome: Submission of all applications for PV installations and direct power lines; preliminary building permit

Standardization: high via web-platform

2.5 BG - Analysis - Connection to the power grid for selfconsumption and connection between CEP/EC participants by direct power lines

Identify the nearest connection point to the grid with the DSO and check whether there are possibilities for augmentation of the feed in power. Check if there are any limitations on feed-in power, as well as the hardware requirements for connecting the PV system to the grid.

Stakeholder: Electricity System Operator Bulgaria (ESO)

Input: Application for connection to the grid. Wiring schemes and drawings of existing building.

Form and channel of information transfer: https://ermzapad.bg/bg/za-klienta/uslugi/prisedinyavaniya/

Outcome: Wiring schemes (internal and external) for all buildings and direct power lines within the scope of the CEP/EC approved by the DSO.

Standardization: high via web-platform

2.6 BG - Analysis - Power distribution cabinets

Assessment whether the existing power cabinets that service the building are sufficient to handle the current of the PV plant. Determine the ownership of power cabinets. Alternatively, check whether all connected consumers are part of the same private grid, which can impact the integration and efficiency of the PV installation.

Stakeholder: Electricity System Operator Bulgaria (ESO)

Input: "Application by the investor - REC, CEC or building owners. Wiring schemes and drawings of existing building. Block diagram and single pole diagram of existing distribution cabinets. Data of the existing distribution grid connection - type, capacity, leased power in kW, electricity consumption profile for the last 3 years. "

Form and channel of information transfer: individual

Outcome: "Block diagram and single pole diagrams of all required distribution cabinets. "

Standardization: low/individual

2.7 BG - Analysis - Free capacity of the feeder/low voltage grid connection line and of the local transformer unit or substation

Obtain information of the DSO free grid capacity to assess whether it will be possible to sell surplus energy to the electricity market.

Stakeholder: Electricity System Operator Bulgaria (ESO)

Input: "Building location; building drawings, investment concept, notary deed. Provisional capacity of the PV installation estimated hourly annual production, consumption diagrams, energy exchange between CEP/EC participants calculations.

Form and channel of information transfer: https://ermzapad.bg/bg/za-klienta/uslugi/prisedinyavaniya/prisedinyavane-na-proizvoditel-VEI-do-30-kW/

Outcome: "Detailed load diagrams and confirmation/approval by the DSO for sufficient free grid capacity. "

Standardization: high via web-platform

2.8 BG - Obtaining a Permit for connection to the grid

To build a PV plant first of all it is necessary to obtain preliminary permit by the DSO, stating that the connection to the grid in the area is possible and is generally available.

Stakeholder: Electricity System Operator Bulgaria (ESO)

Input: "Existing grid connection points ID (aka Measurement Point) Application to connect to the public power grid. Full set of application documents as per size, purpose of the PV installation (for electricity sale, for self-consumption), connection conditions (urban, non-urban) and RES quota, pre-approved by the energy Regulator for investments into the power grid."

Form and channel of information transfer: dependent on grid operator; web-platform; email exchange

Outcome: Approval for connecting to the power grid in the form of operation contract and power-in permit.

Standardization: generally high in case of trading of electricity

2.9 BG - Contract - Sale of excess electric energy to the market

Identifying, contacting and negotiating favourable off-take terms with consumers in the vicinity of the EC. Provide expert knowledge to EC for understanding and finding a suitable contractual partner that has a consumption profile similar to the profile of the extra electricity volumes in the EC (complementary profile will maximize the potential sales price and income for the EC).

Stakeholder: ESCO Bulgaria

Input: "Grid connection agreement and power-in permit. Consumption profile."

Form and channel of information transfer: individual

Outcome: Offtake agreement (PPA)

Standardization: individual process not currently allowed by the legal framework

2.10BG - Insurance

The planning of the PV system and battery storage solution (technical solution) requires understanding of all risks and costs associated with insurance. It is crucial to be adequately covered for potential issues such as equipment damage, theft, or liability. Compare different insurance offers to find the best coverage and rates. Additionally, some insurance companies offer insurance products on the productivity (estimated annual yield) of the installation. Evaluating these factors will help safeguard the investment of the EC and ensure comprehensive protection of your technical equipment for the estimated life-time of the project (not less than 25 years).

Stakeholder: insurance companies, insurance agents

Input: PV plant basic parameters, other technological equipment, estimated electricity production (yield)

Form and channel of information transfer: https://reib-us.com/en/ , standard formulars

Outcome: Create standardized insurance product for PV plants/technological solutions in ECs

Standardization: generally high

2.11BG - Co-financing mechanisms with ESCOs/Private Banks/Crowdfunding

There are three potential ways to privately co-fund an EC project - getting a loan from a private bank, gathering resources from different rather small-scale investors in the form of crowdfunding and/or attracting one bigger investor in the form of an ESCO that is specialized in financing and implementing EE and RES projects by taking over the risk of the EC participants.

Stakeholder: ESCO Bulgaria

Input: Techno-economic analysis and business plan as well as a commitment from EERSF for covering 50% of financing costs and providing a guarantee to private banks for the co-financing

Form and channel of information transfer: individual

Outcome: The result is a complete realistic financing structure of the projects.

Standardization: medium, individual procedures

2.12BG - Public co-financing for ECs

The public financing will guarantee the overall economic feasibility of the projects and thus support the involvement of private fund in the co-financing structure (private bank/ESCOs). Even the crowdfunding mechanism (the involvement of the project owners in the financing of their projects) will be strongly enhanced once a public entity is backing the entire financing mechanism.

Stakeholder: ENERGY EFFICIENCY AND RENEWABLE SOURCES FUND

Input: EERSF requirements for collateral and guarantee

Form and channel of information transfer: individual

Outcome: Covering of 50% of financing and risk by EERSF

Standardization: individual

2.13BG - Construction & Commissioning - Installing PV System, direct connection lines, battery storage devices and SMART GRID automatic control system

Specify requirements for the PV installation/battery storage solutions detailing the technical and functional needs of the desired equipment, including any performance criteria or standards. Compare prices from different suppliers with the aim to have the best investment value, including warranty

and support.

Stakeholder: plant EPCs

Input: Approved technical drawings and specifications, business plan and financial plan.

Form and channel of information transfer: https://www.solartim.eu

https://bulgarterm.bg/product-category/fotovoltaichni-sistemi/fotovoltaicni-sistemi/

Outcome: "A list of suppliers, price lists for equipment based on specific technical specifications; comparative analysis. "

Standardization: rather low, individual, potential for standard tendering

2.14BG - Legal entity consulting

Review of national regulations for the establishment of a legal entity to set up the REC or operate a CEP, including rules of procedures, limitations and possible (dis)advantages with regards to structure (public-private), participation in energy markets and taxation.

Stakeholder: legal consultants/lawyers

Input: Description of participant - community leaders, citizens, SMEs, NGOs, others to form the EC. Determine which legal entity matches the needs and objectives (eg. non-profit, cooperative, association). Assess production capacities, market operations and prefeasibility studies if available.

Form and channel of information transfer: individual

Outcome: Legal documents prepared, including Articles of Association, Protocol for a General Assembly, Management contracts, Certificate for registration in the Trade Register of Bulgaria, others, as appropriate.

Standardization: low; individual processes

2.15BG - Registration as market participant (ESO and SEDA)

To actively participate in electricity market processes, the REC must be registered with the Electricity System Operator (ESO) and the sustainable energy development agency (SEDA) for reporting purposes. Since the REC will have an uptake agreement via a licensed electricity trader, the experience of this counterparty will be utilized to support the REC for the necessary electricity market registrations.

Stakeholder: Electricity System Operator Bulgaria (ESO)

Input: "Estimated electricity production data (yield) Technological solution (BESS) Uptake agreement for sale of extra volumes of electricity produces by the REC"

Form and channel of information transfer: web platforms

Outcome: All necessary market participation and reporting registrations

Standardization: generally high

2.16BG - Registration with the National Revenue Agency

Registration of the legal entity of the REC with the National Revenue Agency of Bulgaria for tax purposes. The required information might include an economic outlook of the project showing an estimation of expected revenues. Once registered, you will receive a tax verification number, which is essential for fulfilling tax obligations. This number will facilitate accurate reporting and financial transactions related to the REC.

Stakeholder: National Revenue Agency of Bulgaria

Input: "Data about REC participants (natural persons, SMEs, municipality) and general information about the legal entity of the REC Financial model of the REC incl. estimated revenues from the activity"

Form and channel of information transfer: digitally, in person with paper forms

Outcome: Receive VAT number by National Revenue Agency

Standardization: high

2.17BG - Billing

Stakeholder: service providers, e.g. T&D ENGINEERING

Input: Technical documentation on CEP/E.C. energy installations, registration with TSO (ESO A.D.), uptake contracts.

Form and channel of information transfer: individual

Outcome: List of available SMART GRID providers offering billing and clearance solutions.

Standardization: medium/low

2.18BG - Accounting

Once the REC is operational, the actual energy data needs to be processed and accounted accordingly. All members must be addressed according to their unique tax status. Tax reports, invoices etc. must be produced according to the governing legal rules.

Stakeholder: energy data service firms

Input: Financial data from the SMART GRID real time metering.

Form and channel of information transfer: individual, standardized protocols

Outcome: Guidance document on rules and legal requirements for tax reporting of the CEP/E.C.

Standardization: low, depending on vendor

3 Croatia

3.1 HR - Permit - Environmental

Determining whether an environmental assessment is required depends on the specifics of the project. Generally, an assessment is necessary if the plant size exceeds 10 MW and if PV plant is a freestanding object.

Stakeholder: certified civil engineer or architect

Input: "1 Exact location of future project -10MW - less or more –2 reestanding object - yes or no -Bioportal.hr/gis -3 On Croatian Ministry of Ecomomy web page there is official “List of authorized persons and companies for environmental assessment"

Form and channel of information transfer: https://bioportal.hr/gis/ and https://mingo.gov.hr/popis-pravnih-osoba-koje-imaju-suglasnost-za-obavljanje-strucnih-poslova-zastite-okolisa-7646/7646

Outcome:1. Information on the possibility of building a PV plant at a specific location in relation to regulations on the protection of environment 2. Specialist's bid for preparation of assessment and applying for permit"

Standardization: high standardization via platform

3.2 HR - Preparation for Permit - Spatial Planning Legislation

When planning a PV installation, it’s important to consider any limitations regarding the appearance of the building. Some areas have aesthetic guidelines or building codes that restrict changes to a building's exterior, which could affect or even forbid the installation of PV panels. Additionally, review the zoning plan for any restrictions that may impact your project. The building may be subject to heritage protection regulations, which could impose specific design constraints and require consultation with the relevant authorities. Zoning regulations can impose constraints on the type of structures allowed, their height, and other factors that might influence the feasibility and design of the PV system. Considering these limitations and restrictions is essential for ensuring compliance and avoiding potential issues with your installation and needs to be prepared accordingly before

Stakeholder: architect, civil engineer, e.g. Adriaprojekt d.o.o. Rijeka

Input: "Exact location of future PV plant Special protection conditions such as: -restrictions stipulated by the spatial plan -regulations on the protection of cultural and historical sites and protected buildings"

Form and channel of information transfer: https://min-kulture.gov.hr/kontakt-103/konzervatorski-odjeli-16811/16811

Outcome: Considering the limitations, the architect can propose a design that meets the required conditions.

Standardization: individual process, guidance by professionals, potential for standard guidelines

3.3 HR - Permit - Spatial Planning Legislation

Analogue to 2.3.2.

Stakeholder: local authority

Input: "-Exact location of future project -Geoportal.kulturnadobra.hr -On Croatian Ministry of Culture web page there is official “List of authorized architects for preparation of conservation study "

Form and channel of information transfer:
https://geoportal.kulturnadobra.hr/geoportal.html#/ and https://min-kulture.gov.hr/izdvojeno/kulturna-bastina/dopustenje-za-obavljanje-poslova-na-zastiti-i-ocuvanju-kulturnih-dobara/376

Outcome: "1. Information on the possibility of building a PV plant at a specific location in relation to regulations on the protection of cultural and historical sites and the protection of cultural heritage 2. Architect's bid for preparation of documents and applying for permit"

Standardization: high via platform

3.4 HR - Analysis - Structural

Before installing a PV system, it’s crucial to assess the quality, structure, and condition of the roof to ensure it can support the installation. Evaluating the roof’s structural integrity will determine if it can handle the weight and load of the PV panels. Assessment whether any repairs, reinforcements, or even a complete rebuild are needed in the short or long term. Additionally, how to access the roof is important to identify any potential constraints for installation and maintenance. In some cases, a metal framework may be necessary to properly align the panels towards the sun. For ground-mounted systems, as well as for auxilary components of your PV system, a concrete base might be required. Furthermore, ventilation and fire protection shall be considered as well.

Stakeholder: certified civil engineering company

Input: "Collection of technical data of the existing building: 1. Architectural data - floor plans of the roof, available area for the construction of a photovoltaic system without shading); 2. Construction data - calculation of the load-bearing capacity of the structure, possibly necessary repairs and/or reinforcements, cross-section of the roof, general condition of the roof; 3. Electrical data - block diagram of distribution cabinets, single-pole diagrams of distribution cabinets; 4. Data on the existing connection (billing metering point) - connection type 1f/3f, leased power in the direction of take-off from the grid, electricity consumption profile through

the reference year; 5. Safety in the event of fire – existing and required roof layers, photovoltaic systems (connection, etc.) "

Form and channel of information transfer: https://www.hkig.hr/Imenici-i-upisnici/Imenici/Razred-revidenata/Razred-revidenata/

Outcome: "Load-bearing Capacity on the roof in kg/m2 Opinion of Certified Civil Engeineer about additional load of PV plant on existing roof. "

Standardization: individual process

3.5 HR - Permit Building Regulations

In order to even begin construction of a solar power plant, all construction and ownership documents must be up-to-date and in accordance with the law. Also, ownership of the building must be precisely determined and cannot be burdened by any dispute.

Stakeholder: local authority

Input: "It is necessary to have the cadastral number of the plot on which the building is built. Collection of legal data of an existing building: 1. Evidence of legality of the existing building – building/use permit; 2. Proof of ownership of the existing building (legal interest);"

Form and channel of information transfer: https://oss.uredjenazemlja.hr/

Outcome: "Information about legality of the existing facility and about ownership of land and building. "

Standardization: high via online platform

3.6 HR - Analysis - Meters and Distribution Cabinets

Many households in Croatia have old electricity meters. New meters can be read remotely.

In many houses meters and distribution cabinets are located inside the apartment. Now, in line with new legislation it is necessary to provide access to the distribution cabinets to authorized persons and put cabinets on the outside wall of the house.

Stakeholder: professional electrical installation company/EPC, certified by HEP ODS

Input: "Electrical diagrams of existing connection of distribution cabinet; Wiring Schemes of existing building"

Form and channel of information transfer: individual

Outcome: New cabinets on the exterior of the house

Standardization: individual

3.7 HR - Analysis - Power Grid

Stakeholder: professional electrical installation company/EPC, HEP ODS

Input: "1Document of legality of existing building 2Document (proof) of ownership of building 3Constuction plans 4Structural analysis 5Electrical installation project for PV plant 6Block diagram of distribution cabinet 7Data of existing connection (billing metering point, connection type - one or three phases, leased power, electricity consumption profile) 8Special permits (environmental, spatial, fire protection, heritage...)"

Form and channel of information transfer: individual

Outcome: "- 1Special Conditions Verification of the Possibility of Connecting a Household with its own Production obtained from HEP ODS - 2Offer for equipment for billing metering point from HEP ODS "

Standardization: individual, potential for standardized guidelines

3.8 HR - Uptake Agreement

Before integrating a PV system, verify if you qualify as an electricity vendor, as this status will determine your ability to sell excess energy back to the grid or to other members of CEP.

Note that selling electricity within an energy community will result in higher compensation compared to selling electricity back to grid (HEP Elektra) It is also essential to understand any contractual constraints, including obligations and limitations, to ensure compliance and avoid potential issues.

Stakeholder: HEP Elektra d.o.o.

Input: "-Price for selling KW/hour - beck to grid (HEP Elektra d.o.o.) -Price for selling KW/hour to community member - natural person - lower than business member but higher than back to grid -Price for selling KW/hour to community member - small business or municipality - higher than selling to other members "

Form and channel of information transfer: https://www.hep.hr/elektra/

Outcome: "1Status - an electricity vendor 2Differences between potential off-takers "

Standardization: high via platform

3.9 HR - Analysis - PV System - Documentation and Approval - Main Project

Generate a description or a graphic presentation or a conceptual design

Document shall include:

- a map of the electrical design

- a map of the construction project
- the structural analysis of the roof
- architectural design

Performance representations necessary for the implementation of works are required, in accordance with the Ordinance on the Mandatory Content and Equipment of Construction Projects (Narodne novine No. 118/19, 65/20)

Stakeholder: NETeko d.o.o.

Input: electrical design, structural analysis, architectural design

Form and channel of information transfer:

Outcome: "1Main Project Approved 2Project contains: - components for PV plant (panels, inverter, battery) - requirements for interconnections, - requirements for location (footprint, ventilation, fire protection) - technical documentation (block diagram, conceptual design, graphic presentation) - compliance with technical standards and norms"

Standardization: individual

3.10 HR - Insurance

When planning your PV system, it's important to understand the risks and costs associated with insurance. Ensure that you are adequately covered for potential issues such as equipment damage, theft, or liability. Compare different insurance offers to find the best coverage and rates. Additionally, explore bundling options, which may include combining insurance with maintenance services or other related coverage, to potentially reduce costs and simplify management. Evaluating these factors will help safeguard your investment and ensure comprehensive protection for your PV system.

Stakeholder: Insurance companies, insurance agents

Input: PV plant data

Form and channel of information transfer: direct communication with insurance company representatives

Outcome: "1Understand the risks and costs of insurance -2 Compare offers -3 Understand bundling options"

Standardization: rather high, standard forms/procedures from insurances

3.11 HR - Financing - Private Capital

Stakeholder: banks, private institutions

Input: "1Project value and proposed timeline for construction. 2Preferred method for financing projects"

Form and channel of information transfer: direct communication with financial institutions and private investors

Outcome: "- 1Application for a bank loan – 2Investors found - 3Crowdfunding"

Standardization: medium, individual business case preparation and set of information, securities

3.12 HR - Financing - Public Funding

Stakeholder: funding agencies etc.

Input: "1Project value and proposed timeline for construction. 2Preferred method for financing projects"

Form and channel of information transfer: web platforms

Outcome: "- 1Application for grants - 2Application for state loans"

Standardization: rater high

3.13 HR - Sourcing - Professionals

Stakeholder: 3tCable d.o.o. or another certified installer

Input: "List of certified installers for PV plants - 1Communicate project characteristics -2 Find professionals - 3Compare prices - 4Negotiate contractual agreements"

Form and channel of information transfer:

https://einstalaterioie.mpgi.hr/api/reports/instalateri/izvadakIzRegistraCertificiranihInstalatera

Outcome: "Execution of works on the photovoltaic system by certified installers - register published on the official website of the MPGI in accordance with the Ordinance on the conditions and criteria for determining the quality system of services and works for the certification of installers of renewable energy sources - photovoltaic systems (Narodne novine No. 56/15). Execution of works on the existing connection to the power grid. Professional supervision of the execution of works. Often, a range of steps in this Guidebook (from 4 to 22) is offered as a complete service on the market. After equipping the existing connection and building a photovoltaic system in accordance with the Rules on connection to the distribution network, the system is put into permanent operation."

Standardization: medium, individual business case preparation and set of information

3.14 HR - Establish Legal Entity

Stakeholder: authorities

Input: "-1List of Founders (at least 3 members) -2Purpose and goals of association -3Activities, rules"

Form and channel of information transfer: https://udruge.gov.hr/najcesca-pitanja/124

Outcome: REC or CEC Established

Standardization: high

3.15 HR - Registration - Market

Stakeholder: HERA - Croatian Energy Regulatory Agency

Input: "1Data on unitholders/members. 2Data on power/investment/project type. 3Complete documentation in accordance with the Ordinance on permits for performing energy activities and keeping a register of issued and revoked permits for performing energy activities (Narodne novine No. 44/2022), including evidence of professional, technical and financial capacity "

Form and channel of information transfer: https://www.hera.hr/hr/html/registar_dozvola.html

Outcome: Licence for performing energy activity issued by Croatian Energy Regulatory Agency HERA

Standardization: high

3.16 HR - Registration - Tax

Stakeholder: tax authority

Input: Statute of organization

Form and channel of information transfer: https://saznaj-oib.porezna-uprava.hr/

Outcome: "-1Tax number - OIB -2Entry in the Register of Non-Profit Organizations"

Standardization: high

3.17 HR - Billing

Stakeholder: EC service provider

Input: "As defined in Membership –Administration step there should be data of members, their consumption, leased power for a simple or so-called static sharing key; In the case of a dynamic sharing key, the software tools and the DSO-level system supported by it are required; energy measurement data"

Form and channel of information transfer:

Outcome: "- 1Collecting energy data - 2Rate Application & Updates - 3Invoice Generation - 4Payment monitoring and processing - 5Record keeping"

Standardization: medium/in progress

3.18 HR - Accounting

Stakeholder: tax adviser

Input: "-1All legal documents (at the beginning) -2Up-to-date delivery of financial documents and other related documents "

Form and channel of information transfer:

Outcome: "- 1Prepared financial statements - 2Ensured compliance with legal and regulatory requirements - 3Balancing accounts "

Standardization: medium, individual but with guidance

4 France

4.1 FR - Getting permit - Urbanism and heritage protection

A permit is needed from the local authority, Paris City administration, according to urbanism and heritage protection rules.

Your PV plant will be located on rooftops in most cases and may cause changes in the aspect of your building and its landscape. Paris City provides a webpage to get to know the local regulations (Plan Local d'Urbanisme), and the necessary steps for getting a permit.

- Getting a permit is usually the responsibility of your Professional (architect or engineer).

- Paris City, Directorate for Urbanism is responsible for granting the building permit according to urbanism rules;

- Decentralized State administration, Paris Department Unit for Architecture and Heritage (UDAP 75), is consulted in State heritage protection zones. Its strict approval is required in a limited number of cases within these zones.

- The installation of PV plant on rooftops are not subject to environmental evaluation, whatever their size (Article R 122-2 of Environmental Code).

Stakeholder: Paris City

Input: "Address of the buildings. If available : any document describing the project

Form and channel of information transfer: Démarches d'Urbanisme - Paris - Accueil (application portal to make a demand for permit) and Règles d'urbanisme de Paris - Accueil (information to determine which rules apply).

Outcome: "Authorized volume. List of restrictions and incitations."

Standardization: Medium. Fully digitalized but dependent on case by case exchanges with administrations

4.2 FR - Getting permit - Focus on heritage protection

Stakeholder: UDAP 75

Input: "Address of the buildings "

Form and channel of information transfer: http://atlas.patrimoines.culture.fr/atlas/trunk/%20;%20https://www.culture.gouv.fr/fr/Thematiques/transition-ecologique/Concilier-protection-des-patrimoines-et-transition-ecologique (information to determine which rules apply. It is not an application portal.)

Outcome: Qualification of heritage protection and guidelines.

Standardization: Low. Application is made through the local authority process for permit (4.1) but very much dependent on case by case interpretation by heritage protection agents.

4.3 FR - Studying the feasibility of the project - Roof structure

If a PV-plant is planned as an on-roof installation, the statics of the roof must be suitable to carry the additional load.

Stakeholder: certified civil engineering company

Input: Information of the roof structure

Form and channel of information transfer: individual, data transfer + on-site visit

Outcome: Advice on how to order a structural feasibility study

Standardization: individual

4.4 FR - Analysing opportunity - Wiring

The goal of this step is to anticipate possible works of adaptation of your building wiring infrastructure to a future PV plant (can it support the power the plant will generate?).

The wiring infrastructure in your building connects the public grid to each of the private apartment and each of the collective equipment (lifts, lightings...).

Its power capacity and characteristics will have to be assessed by Enedis before connecting to the grid your future PV plant. Enedis owns it, except if your condominium formulated an opposition to it. This way of ownership was decided by the Law ELAN of 20 november 2020.

At this stage, it is advised to prepare for the procedure with Enedis:

- what is the electric scheme of the building?

- how many meters does the building count?

- where are they located?

- are they smart meters or traditional meters?

- what are their caracteristics?

Stakeholder: Enedis

Input: Wiring scheme and relevant information about wiring infrastructure

Form and channel of information transfer: https://www.enedis.fr/loi-elan-colonnes-montantes-electriques

Outcome: "Knowledge of the current capacity of your wiring infrastructure Anticipation of necessary works to adapt it to a future PV plant "

Standardization: low. No process known.

4.5 FR - Requiring connection to the grid

Connection to the grid is required for any PV plant. You have to go through a standard procedure with your DSO, Enedis in Paris (ENEDIS PRO-RAC 20E).

Stakeholder: ENEDIS

Input: "Specifications about the system hardware and its power. Permit from local authority."

Form and channel of information transfer: https://www.photovoltaique.info/fr/realiser-une-installation/raccordement/demarches-de-raccordement/demandes-de-raccordement-pour-les-installations-36-kva/injection-de-la-totalite-ou-du-surplus/

https://connect-racco.enedis.fr/prac-internet/custom/C5E/accueil

Outcome: Complete Connection Requirement ("Demande Complète de Raccordement" DCR)

Standardization: high. Process fully pre-defined.

4.6 FR - Getting a Proposition for grid connection

Once you have completed your demand for grid connection (Demande Complète de Raccordement, DCR), you will receive within a defined timeframe a Proposition with a price to pay for connecting to the grid (Proposition Technique et Financière, PTF or PDR) that you will have to accept to launch construction work.

Stakeholder: ENEDIS

Input: Demande Complète de Raccordement, DCR

Form and channel of information transfer: via platform; related to “requiring connection to grid”- process

Outcome: getting and accepting the financial and technical Proposition (PTF or PDR)

Standardization: high. Process fully pre-defined.

4.7 FR - Contracting purchase contract

You can contract a purchase contract if you choose to sell part or totality of your electricity. Either you sell it or give it away to members of a collective self-consumption operation (CSC) or to an independent buyer (PPA), or to an obliged buyer to benefit from fixed feed-in tariff for 20 years.

To access feed-in tariff, a purchase contract is to be made according to a standard procedure with an obliged buyer. The tariff you get depend on your installation attributes and the type of injection. Tariff are set each trimester by the Energy Regulation Commission (CRE). This is done according to the tariff order of 6 October 2021. The main obliged buyer in France is EDF Obligation d'Achat (EDF OA). Other electricity provider are also obliged buyer.

You can start the procedure once you have a complete demand for grid connection (DCR), and the procedure will finish when you have a Certificate of conformity of your plant (Consuel) and once your plant has been put into service by Enedis.

Stakeholder: EDF

Input: "Complete Connection Requirement (""Demande Complète de Raccordement"" DCR) Certificate of conformity (Consuel) Service activation (Enedis)"

Form and channel of information transfer: https://www.edf-oa.fr/content/preparer-un-projet-photovoltaique

Outcome: Obligated Purchase Contract for 20 years if you choose so.

Standardization: high. Process fully pre-defined.

4.8 FR - Getting insurance

Once you have validated quotes for installation works, you need to check three types of insurance. Two are mandatory and one is optional.

/ Mandatory:

- first, the installation enterprise must be insured for the systems it will install;
- second, as an electricity producer, you must contract a liability insurance;

/ Optional:

- third, you can contract an insurance against damage during the construction period which avoids delay in case of damage.

Stakeholder: insurance companies, insurance agents

Input: Validated quotes and work plans.

Form and channel of information transfer: standard forms

Outcome: Insurance contract.

Standardization: high

4.9 FR - Getting a collective loan

Financing a PV installation in a condominium or community may require to contract a loan.

Certain banks offer collective loans with low or zero rates, such as Eco Prêts à Taux Zéro (EcoPTZ) for collective housing.

Stakeholder: banks

Input: Investment needs and business model

Form and channel of information transfer: individual, standard forms of banks

Outcome: Loan contract

Standardization: medium. Depends on the bank.

4.10 FR - Accessing public aids

Access to finance is a challenge. Collective decision within condominium councils is generally facilitated if return on investment is made after less than 10 years, and all the more if the initial investment is lowered thanks to public aids.

Depending on the economic model of your future PV plant and community, public aids vary.

Stakeholder:

Input: Plans of the future installation.

Form and channel of information transfer: https://www.photovoltaique.info/fr/tarifs-dachat-et-autoconsommation/tarifs-dachat/arrete-tarifaire-en-vigueur/conditions-dapplication/ (information webpages)

Outcome: Starting demand for public aids.

Standardization: high

4.11 FR - Choosing an installer

An installer must be certified by the State as RGE (Reconnu Garant de l'Environnement). Certification is mandatory to access public aids.

An installer must be qualified for the right category of work for your installation to be connected to the grid. Several qualification firms exist such as Qualit'ENR, Qualibat or Qualifelec.

The professional that made your feasibility study may have integrated or be associated to an installer.

Stakeholder: plant engineering, procurement, construction companies (EPC)

Input: all boundary conditions on the project

Form and channel of information transfer: individual

To help you find installers and choose among them and their quotes, you can find information and a quote evaluator here:

- https://france-renov.gouv.fr/annuaires-professionnels/artisan-rge-architecte
- https://www.photovoltaique.info/fr/preparer-un-projet/quelles-demarches-realiser/choisir-son-installateur/sinformer-pour-comparer/
- https://evaluer-mon-devis.photovoltaique.info/

Outcome: Contract with an installer

Standardization: low.

4.12 FR - Putting the plant into service

Stakeholder: ENEDIS

Input: finalized plant

Form and channel of information transfer: https://www.consuel.com/

Outcome: "Certificate of conformity Contract for exploitation (Contrat d'Acces et d'Exploitation CAE)"

Standardization: high. Fully pre-defined process.

4.13 FR - Establishing legal entity for collective self-consumption (CSC)

A legal entity gathering producers and consumers that will exchange energy among themselves is mandatory in the French law (Article L.315-2 of Energy Code). It is called a Moral Organizing Persona ("PMO" in French).

The PMO has several roles

- serve as an interface with the DSO Enedis;
- define the allocation rule for electricity between members;
- define the perimeter of the operation;
- administrate newcomers and leavers.

French law leaves certain freedom in the form and actual roles of a PMO.

A PMO may be an already existing structure whose purpose is modified, or a new one created on purpose

More information here: Resource: https://adherents.energie-partagee.org/wp-content/uploads/2024/02/guide-acc-citoyenne-fevrier-2024-1.pdf

Stakeholder:

Input: "Sufficient proof of technical, legal and economic feasibility of the project. "

Form and channel of information transfer: individual, platforms

Outcome: Legal entity PMO established.

Standardization: medium. Depends on the legal form of the entity.

5 Italy

5.1 IT - Application for environmental permit

Determining whether an environmental assessment is required depends on the specifics of the project. Generally, an assessment is necessary if the plant size exceeds certain thresholds set by regulatory agencies or if the plant is located in areas subject to landscape or environmental constraints.

Stakeholder: authorities

Input: "Consult the constraint map or the interactive maps of the Urban Planning Regulation on the website of the Municipality. Go to your municipality geoportal. In general the website is https://nameofthe municipality.geoportal.it. For example: https://teramo.geoportal.it/ for Teramo Municipality, https://castelli.geoportal.it/ for Castelli municipality. As part of the feasibility checks for the individual system, it is recommended to request the urban destination certificate with constraints from the competent Municipality to verify the presence of municipal requirements and all sectoral regulations impacting the construction activity (particularly, seismic regulations, safety, fire prevention, health standards, energy efficiency regulations, hydrogeological risk protection, and provisions contained in the Cultural Heritage and Landscape Code, as per Legislative Decree no. 42 of 2004). This verification allows, depending on the characteristics of the system (power, type of installation, surface area, etc.), the building, and the area in which it is located, to determine the regulatory framework for installing a system, and to create a timeline and a business plan that integrate the times and costs of the potential authorization process. As part of the verification of constraints, it will be necessary to check the characteristics of the surface designated to host the production system concerning the areas suitable for the installation of renewable energy systems ("*aree idonee*") and the corresponding authorization regime foreseen."

Form and channel of information transfer: online map / in person request at "Sportello Unico per l'Edilizia - SUE" or the "Sportello Unico per le Attività Produttive – SUAP"of the municipality

Outcome: Apply for environmental permit.

Standardization: low, individual forms (it depends on the municipality)IT - Authorisation for PV plants in existing buildings and on the ground after the SUER platform set up

The SUER platform is designed to centralize and digitize the procedures related to authorization requests for renewable energy plants. It aims to streamline bureaucratic processes. The platform is currently under development and will be fully interoperable with existing IT systems at the national, regional, and local levels. Additionally, it will be connected to the Platform for Suitable Areas, ensuring an integrated management of areas designated for the development of renewable energy sources.

Stakeholder: GSE

Input: The platform is still under construction. Local authorities shall comply with the principles of this decree within 180 days from its entry into force. In the meantime, the previous regulations shall apply.

Form and channel of information transfer: not yet available. Standardised online form.

Outcome: Submission of all applications for new renewable installations (except in presence of landscape constraints) and management

Standardization: medium. It needs the interoperability between the platform used by the municipality and the SUER platform, in order to have a direct transfer of the information.

5.2 IT - Establish PV wires connections

Before proceeding with a PV installation, it's essential to evaluate whether the power rating of the existing wiring in the building is sufficient to handle the current of the PV plant.

Stakeholder: Professionals

Input: Check the power rating on the energy bill. Arrange a site visit with a professional, who will create a wire path scheme.

Form and channel of information transfer: online/ in person request

Outcome: Wiring schematic and description of the planned connections

Standardization: low grade of standardisation,

5.3 IT - Critical areas map

It is necessary to assess the capacity of the local electrical grid to accommodate the power generated and fed into the grid. This aspect represents a determining factor that could hinder the actual connection of new production systems to the grid. To facilitate the identification of critical connection points for renewable electricity systems, DSOs have prepared maps of critical areas. The maps define the criticality of each area based on color (Red for high criticality, Orange for medium criticality, Yellow for low criticality, White for very low criticality).

Stakeholder: E- distribuzione

Input: "Go to https://www.e-distribuzione.it/a-chi-ci-rivolgiamo/produttori/aree-critiche.html. Zoom in extensively on the region of interest until the areas are coloured. Select the province of interest by clicking within the area, whose borders will be highlighted in light blue. "

Form and channel of information transfer: online. In the Province of Teramo, there is only one DSO, https://www.e-distribuzione.it/a-chi-ci-rivolgiamo/produttori/aree-critiche.html.

Outcome: "The areas will be colored as follows: 1- White to represent very low criticality; 2- Yellow to indicate low criticality; 3- Orange to highlight an area with medium criticality; 4 - Red

to include areas with high criticality. For the selected province, you will also be able to consult: - A list of critical municipalities; - A list of non-concessionaire municipalities; - A list of AT/MT sections with energy flow reversal; - A list of municipalities covered by the selected area, along with their saturation level."

Standardization: high grade of standardisation in the province of Teramo. Low potential/ need for futher improvements.

5.4 IT - Permit: grid connection

If a new electricity production plant is planned as an on-grid plant, the local grid-operator must be consulted. The grid operator will assess the available grid capacity and provide approval, along with any limitations or technical specifications related to the maximum feed-in power and connection requirements.

Stakeholder: E- distribuzione

Input: "Sign up on the e-distribuzione website: https://private.e-distribuzione.it/PortaleClienti/s/registrationpage . Enter the location, general system data, and the required attachments, including the cadastral map, electrical diagram, and the fee for obtaining the quote. Accept the quote and pay the connection cost."

Form and channel of information transfer: Standard electronic form. In the province of Teramo, there is only one DSO. https://www.e-distribuzione.it/servizi/Allacciamenti-e-connessioni/domande-di-connessione.html

Outcome: "After submitting the connection request to the grid, you will receive the corresponding quote. The timeframes prescribed by ARERA (the Regulatory Authority for Energy, Networks, and Environment) are as follows: 20 working days for requested input power up to 100 kW; 45 working days if the requested input power exceeds 100 kW and is up to 1,000 kW; 60 working days for all requests exceeding 1,000 kW. Following the acceptance of the quote, it is necessary to report the progress of the authorizations and works and proceed with the signing of the Operation Regulation. It is important that the information provided is consistent with the actual implementation of the system, as it will be verified during the activation phase. After the installation of the system and the completion of all activities required by the applicant as part of the preparatory steps for activation, and after the completion of any works carried out by e-distribuzione, you can select the activation date. The timeframes established by TICA (Resolution 99/08 and subsequent amendments) are 10 working days. When you request the grid connection, don't forget to register your system in the GAUDI platform, managed by TERNA. The connection cost depends on the distance from the MV/LV substation and the power of the system. The connection fee is paid by the applicant to the network operator: a) 30% upon acceptance of the quote b) 70% upon notification of completion of the works strictly necessary for the physical creation of the connection."

Standardization: high grade of standardisation in the province of Teramo. Low potential/ need for futher improvements.

5.5 IT - Contract - sale of excess electricity to GSE

The "Ritiro Dedicato" consists of the transfer to GSE of the electricity fed into the grid from photovoltaic systems. The GSE pays the producer a specific price for each kWh injected into the grid. The revenues obtained by producers from selling electricity to GSE are added to those generated by any incentive mechanisms (except all - inclusive tariff and net metering).

Stakeholder: GSE

Input: "For PV< 200 kW, fill in the "Modello Unico" , which allows for a simplified process for the construction, connection, and operation of new photovoltaic systems that simultaneously request access to the "Ritiro Dedicato" service. Submit the form to the grid operator. Once the GSE receives the data from the grid operator, it will activate the contract and provide the user with the necessary information to access and view all data through the "Ritiro Dedicato - RID" portal in the GSE Customer Area. The contract will be activated from the date of connection activation. For PV>200 kW, within 60 days from the system's commissioning date, submit the request through the "Ritiro Dedicato - RID" service, accessible from the GSE Customer Area, by entering all technical and administrative data directly into the online portal. The contract has a one-year duration (calendar year) and is automatically renewed, regardless of the request method. Producers may terminate the contract at any time by submitting a cancellation request through the dedicated online portal at least 60 days before the intended termination date."

Form and channel of information transfer: online platform https://www.gse.it/servizi-per-te/fotovoltaico/ritiro-dedicato/come-accedere

Outcome: Agreement with GSE to sale the excess of the electricity

Standardization: high due to online portal for registration; low potential for improvement

5.6 IT - Contract for sale of excess of electricity to the market

After a PV plant has been installed and commissioned, an uptake contract for excess electricity must be established with an utility company

Stakeholder: electricity utilities/ companies

Input: Grid connection agreement and consumption profile.

Form and channel of information transfer: individual on line/ in person request

Outcome: Agreement with utilities or businesses.

Standardization: individual process; low potential for improvement

5.7 IT – Insurance

Electricity generation plants have to/should be covered by an insurance.

Stakeholder: insurance agents, insurance companies

Input: Owner's personal information: Technical details of the system Insured value: Selection of the desired coverage options. Additional Documents: installer's qualification certificate, declaration of conformity, invoices, photographs, etc.

Form and channel of information transfer: individually specified; electronic/email, paper form

Outcome: "- Understand the risks and costs of insurance - Compare offers - Understand bundling options – insurance policy"

Standardization: already high grade of standardization via forms and online platforms; usually clear guidance by agents on required information etc., low potential/need for further improvements

5.8 IT - Mandate of the contact person (soggetto referente) for REC

The representative of a Renewable Energy Community (REC) is the natural or legal person responsible for managing the technical and administrative aspects of the application for the shared self-consumption service. In practice, this person acts as the point of contact between the REC and the GSE).

Stakeholder: GSE

Input: Identify the "Soggetto Referente" and fill in the mandate.

Form and channel of information transfer: forms available on online platform https://www.gse.it/servizi-per-te/autoconsumo/gruppi-di-autoconsumatori-e-comunita-di-energia-rinnovabile/mandati-e-liberatoria

Outcome: Mandate ready to be sent to GSE for the completion of all activities aimed at submitting the application to the GSE for access to the service for collective self-consumption

Standardization: high due to the forms on the online portal; low potential for improvement

5.9 IT - Financing - Access to private capital

A common way to fund renewable energy projects is by obtaining a loan from a bank.

Stakeholder: banks, private entities

Input: Feasibility Study: Photovoltaic System Documentation (Detailed technical information about the photovoltaic system); Energy Community Documents (proof of the establishment of the energy community, including its internal regulations, list of participating members, and their agreement to share renewable energy); Business model; Legal Documentation (project's compliance with current regulations, including all necessary permits for the construction of the photovoltaic system and the establishment of the energy community).

Form and channel of information transfer: individual, standard forms and guidelines; via electronic trasfer or on site at the bank

Outcome: bank loan approved

Standardization: bank loans with clear requirements by banks; potential for higher grades of standardization regarding project business plans and securities

5.10 IT - Access to the capital contribution - NRRP measure (National Recovery and Resilience Plan) for municipalities <5000 inhabitants

Several possibilities to receive funding for renewable electricity generation plants exist. One of the possibilities is based on the National Recovery and Resilience Plan.

Stakeholder: GSE

Input: The request for access to the contribution must be submitted, exclusively by electronic transmission, by 31st March 2025 through the SPC portal - Energy Communities and Self-consumption, available in the customer area. The request must be done only by the beneficiary (The REC and the Self Consumer Groups must already be established. using the credentials (User ID and password) provided by the GSE during registration or via SPID, and then using the application "Production and Consumption Systems - SPC" present within the Portal and following the instructions for sending requests for access to the NRPP contribution in the appropriate User Manual called "Guide to use the SPC application", also accessible from the menu within the application. The beneficiary must attach the documentation related to the installation/PU and the community/group listed in Annex 3 and download, sign and send a self-

declaration generated automatically by the GSE Portal at the time of the request (access request), accompanied by a photostatic copy of a valid identity document.

Form and channel of information transfer: online forms – information transfer through the GSE platform – customer area

Outcome: Application for access to capital grant.

Standardization: high due to online portal for registration; low potential for improvement

5.11 IT - Capital grant for citizens beneficiaries' national energy income

Several possibilities to receive funding for renewable electricity generation plants exist. One of the possibilities is based on the Capital Grant for citizens beneficiaries of national energy income.

Stakeholder: GSE

Input: "Check if you meet the requirements (your ISEE is below €15,000, or below €30,000 for households with at least four children; verify that you are the holder of an electricity supply contract and have a legal property right). Select an installer from the list (https://www.gse.it/servizi-per-te/fotovoltaico/reddito-energetico/mappa-realizzatori-impianti-fotovoltaici) and get in touch. The application for the benefit must be submitted by the Beneficiary, with the support of the Installer on GSE Customer Area Both the Beneficiary and the Installer must first register in the GSE Customer Area. Enter beneficiary details, installer details, and PV system data."

Form and channel of information transfer: GSE online platform

Outcome: Application for the grant submitted. The result of the request is within 60 days from the sending

Standardization: high due to online portal for registration; low potential for improvement

5.12 IT - Access to financial contributions

The feed-in tariff has been established to promote energy sharing through RECs. It consists of two parts:

- a fixed part, which varies depending on the size of the plant,
- a variable part, which varies depending on the market price of energy.

Additionally, there is a tariff increase linked to the geographical location of the plant concerned, which takes into account the lower energy production of plants in central-northern Italy compared to those in southern Italy. The feed in tariff remains fixed for the entire period in which the producer is entitled to the incentive, which is 20 years from the date the plant becomes operational, excluding any shutdowns caused by force majeure or carried out to implement non-incentivised enhancement and upgrading.

Stakeholder: GSE

Input: Register on GSE portal. Access the GSE customer area via the SPC (Production and Consumption Systems) application. Enter the installation start date of the system and the creation date of the legal entity. Enter the Censimp Code, TERNA Request Identifier, POD code of the final customers, and cadastral references of the plot where the production systems are installed. Enter a copy of a valid identification document of the Referent or their legal representative, the Articles of Incorporation and/or Statute of the renewable energy community, the DNSH checklist, the decision granting capital contribution and/or other forms of support. Enter an electrical diagram indicating any storage systems and the location of the meters. For systems with a power rating greater than 20 kW: a copy of the electrical workshop license(s)/company code issued by the Customs Agency. For systems with a power rating less than or equal to 20 kW: a copy of the operating regulations and the activation report for the electricity meter issued by the network operator. For photovoltaic systems, include: a photo of the photovoltaic module label, a photo of the inverter label, a photo of the storage system label if present with the main technical data, and a list of the serial numbers of the modules for each system/power upgrade.

Form and channel of information transfer: online platform at GSE – customer area

Outcome: Access to incentives

Standardization: high due to online portal for registration; low potential for improvement

5.13 IT - Support for the investments - Bonus casa for citizens

Several possibilities to receive funding for renewable electricity generation plants exist. One of the possibilities is based on the “Bonus Casa”.

Stakeholder: ENEA

Input: data of the beneficiary; building data; data of PV plant; additional pdf documents

Form and channel of information transfer: standard electronic form, online platform https://www.efficienzaenergetica.enea.it/detrazioni-fiscali/bonus-casa.html.

Outcome: Information of the financing support and how to apply.

Standardization: high due to online portal for application; low potential for improvement

5.14 IT - Procurement procedures for PV systems for public bodies

Public bodies can simplify the procedures for purchasing and installing photovoltaic systems directly on MePA (Electronic Market of Public Administration) or alternatively they can contact a technical partner operating in their territory.

Stakeholder: MEPA - Mercato Elettronico (Electronic marketplaceof Public Administration)

Input: Register on https://www.acquistinretepa.it/opencms/opencms/index.html, enter with SPID (Public Digital Identity System), select the typology of product (PV system), compare different solutions and purchase your PV system. It is also possible to negotiate directly with a PV provider.

Form and channel of information transfer: For purchase from the catalogue: online form on online platform https://www.acquistinretepa.it/opencms/opencms/index.html

For provider negotiation: individually specified

Outcome: Purchase of PV system

Standardization: For purchase from the catalogue: high due to online portal; low potential for improvement

For provider negotiation: low standardisation; preparation guidance

5.15 IT - Companies authorized to build PV plants only for "energy income" beneficiaries

Sourcing - Professionals: Find and hire Service Providers and Technicians for the installation of PV plant for energy income beneficiaries

Stakeholder: GSE

Input: Go to https://www.gse.it/servizi-per-te/fotovoltaico/reddito-energetico/mappa-realizzatori-impianti-fotovoltaici, select your region and your province.

Form and channel of information transfer: standard electronic form, online platform https://www.gse.it/servizi-per-te/fotovoltaico/reddito-energetico/mappa-realizzatori-impianti-fotovoltaici

Outcome: List of companies, that meet the requirements, registered on GSE portal (name, e-mail, phone number).

Standardization: high due to online portal; low potential for improvement

5.16 IT - Registration on GAUDI portal

The registration of a photovoltaic system on Gaudì Terna is a fundamental and binding step for connecting the photovoltaic system to the national electricity grid. Without a valid registration on the Gaudì portal, in fact, it is not possible to connect the photovoltaic system to the national electricity grid.

Stakeholder: TERNA

Input: Panel type; Inverter; Installation characteristics (panel orientation and tilt, occupied surface area, etc.); Peak power; POD (Point of Delivery) code; Personal details of the system owner/manager; Additional information: Project documentation (layout plans, electrical diagrams, technical reports, etc). And Documentation related to connection approval (authorizations, permits, etc.) **Form and channel** of information transfer: standard electronic form https://www.terna.it/it/sistema-elettrico/gaudi

Outcome: Attribution of CENSIMP code. The plant can be connected to the national grid.

Standardization: high due to online portal; low potential for improvement

5.17IT - Commissioning PV system

After getting the permission to start operation, the installer has to install the plant correctly, check if it operates safely and meets all regulatory requirements. The general and specific requirements that PV systems must meet in order to access the distributed self-consumption service and incentives are detailed in the GSE Operational Rules

Stakeholder: CNA - National Confederation of Crafts and Small and Medium Enterprises (local Association of Teramo)

Input: PV plant size, typology and location.

Form and channel of information transfer: individually specified; in person/ online request

Outcome: Construction of PV System completed. The plant is correctly installed, operates safely and meets all legal requirements.

Standardization: individual process between installers and customer; medium potential for standardized guidance for required information to be collected

5.18 IT - Establish legal entity

An energy community needs to become a legal entity. REC must assume a legal form compatible with the pursuit of an ideal or mutualistic purpose, rather than a profit-making one, such as associations, third sector entities, cooperatives, benefit cooperatives, consortia, partnerships, and non-profit organizations. Each REC is therefore characterized by a deed of incorporation and bylaws. Additionally, it is necessary to adopt an internal regulation containing the operational rules for the functioning of the CER and for the sharing of economic benefits (incentives) and a "Reference Person" must be identified.

Stakeholder: University of Teramo - Research Center for green transition, sustainability and global challenges

Input: Identify the members of the REC, identify the best typology of legal entity. Present to the core team some templates of the legal documentation required. Engage with legal advisors, accountants, and regulatory bodies, to ensure that all aspects of the establishment are handled correctly and efficiently.

Form and channel of information transfer: in person request/ via mail

Outcome: Deed of incorporation and articles of legal entity.

Standardization: individual process, templates available, additional guidance from lawyers; standardisation medium (in Italy many legal entities are recognised)

5.19 IT - Registration of REC on GSE portal

The GSE plays a crucial role in managing incentives and verifying compliance for CERs. To access the economic incentives outlined in the law, the CER must register with the GSE and provide documentation demonstrating adherence to the eligibility criteria, including the type of renewable energy sources used, the location of the production and consumption points, and the internal regulations of the community. The GSE will then monitor the energy production and consumption patterns to ensure continued eligibility for incentives.

Stakeholder: GSE

Input: Access the GSE Client Area using your User ID and Password or through SPID. Subscribe to the SPC service (Energy Communities and Self-Consumption). The request must be submitted by the Reference Entity after the legal entity has been established. Select the type of configuration (REC). It is necessary to upload the mandate from all members for access to incentives; the REC statute; data of the subjects who adhere to the configuration (consumer,

producer, prosumer) and POD; declaration that the plants meet the required requirements for the community.

Form and channel of information transfer: online form and pdf documents on GSE platform – customer area

Outcome: Identification code assigned by the GSE.

Standardization: high due to online portal; low potential for improvement

5.20 IT - Registration on the business registry

While not always mandatory, depending on the chosen legal form, registering with the Registro delle Imprese (Business Registry) at the local Chamber of Commerce may be necessary. This is typically required for CERs structured as commercial entities like cooperatives or limited liability companies.

Stakeholder: Chamber of Commerce Gran Sasso d'Italia

Input: Typology of legal entity and members.

Form and channel of information transfer: standard electronic form online https://www.registroimprese.it/

Outcome: Registration in the Business Registry provides public information about the REC, its purpose, directors, and financial status.

Standardization: high due to online portal; low potential for improvement

5.21IT - Registration VAT number

This is the primary registration point for the legal entity itself. Whether the REC is formed as an association, cooperative, or limited liability company, it must obtain a tax identification number (VAT number) from the Revenue Agency. This registration is fundamental for conducting business and accessing tax benefits

Stakeholder: Revenue Agency

Input: Establish the legal entity

Form and channel of information transfer: online https://www.agenziaentrate.gov.it/portale/schede/istanze/aa9_11-apertura-variazione-chiusura-pf/quando-utilizzare/ in person request

Outcome: Receive aVAT ID number

Standardization: high due to online portal; low potential for improvement

5.22 IT - Billing

The Billing Process includes:

1. Metering and Data Collection
2. Data Aggregation and Processing.
3. Calculating Self-Consumption and Shared Energy
4. Determining Energy Injected and Withdrawn
5. Applying Incentive Mechanisms.
6. Generating Member Bills
7. Settlement with GSE

Stakeholder: GSE

Input: all the documentation to be attached to the application for access to the service for widespread self-consumption

Form and channel of information transfer: online form on GSE platform

Outcome: "- Hourly and monthly shared electricity amount - hourly and monthly self-consumed electricity amount; - contribution for the valorisation of self-consumed electricity on a monthly basis - contribution for electricity subject to incentivization on a monthly basis, - fees covering the administrative costs of the GSE"

Standardization: high due to online portal; low potential for improvement

5.23 IT - Accounting

Effective accounting and bookkeeping involve preparing financial statements to provide a clear overview of the project's financial health. Ensure compliance with all legal and regulatory requirements to avoid any legal issues. Regularly balance accounts to maintain accuracy and integrity in financial records. Additionally, report to tax authorities as required to ensure proper tax filings and adherence to financial regulations.

Stakeholder: Contact person ("Soggetto referente")

Input: Type of configuration, identification of members through PODs.

Form and channel of information transfer: individual

Outcome: The data related to the PODs that are part of the energy community are monitored through meters controlled by the grid operator, who is then required to regularly send the data to the GSE. On the basis of data of energy consumption, energy sharing, energy selling to the market, GSE calculates the revenue of the REC. The revenue distribution plan should be divided according to what is defined in the REC regulation.

Standardization: individual process; in most cases management platform fast-forward.

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