

D2.4 General Guidebook



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Deliverable Information Sheet

Grant Agreement Number	101120622
Project Acronym	DISCOVER
Project Title	Developing Integrated Services for COmmunity energy to accelerate Valid Energy Transition
Project Call	LIFE-2022-CET
Project Duration	36 months
Deliverable Number	D2.4
Deliverable Title	General Guidebook
Deliverable Dissemination Level	PU
Work Package	WP2
Lead Partner	AGENA
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Delivery Date	31 st August 2024

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1 List of Abbreviation and Acronyms

Abbreviation	Meaning
CEP	Community Energy Projects
GB	Guidebook
WP	Workpackage
EC	Energy Community
REC	Renewable Energy Community
CEC	Citizen Energy Community

2 Introduction: DISCOVER Project

2.1 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 catalyze 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 connect 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. Also, 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.

2.2 WP2 – activities

Work package 2 ("Setup of Community Energy Project framework/ guidebook") lays the foundation of the DISCOVER project, which starts with desktop research focusing on existing support initiatives and services addressing CEPs. As the outcome of this research, the potential for synergies with existing initiatives is evaluated to make best use of existing support services and schemes. Furthermore, as the basis for the WP3 (Preparation phase of CEP services) & WP4 (Implementation of support services in service hubs/OSS in pilot region), the CEP framework/guidebook is elaborated. It is a step-by-step manual for realizing a CEP. It will be

used by the service hubs in each pilot region and bundles all support services. The guidebook outlines the life cycle of a CEP and describes all the steps required to realize a CEP. The guidebook links each step to existing support services.

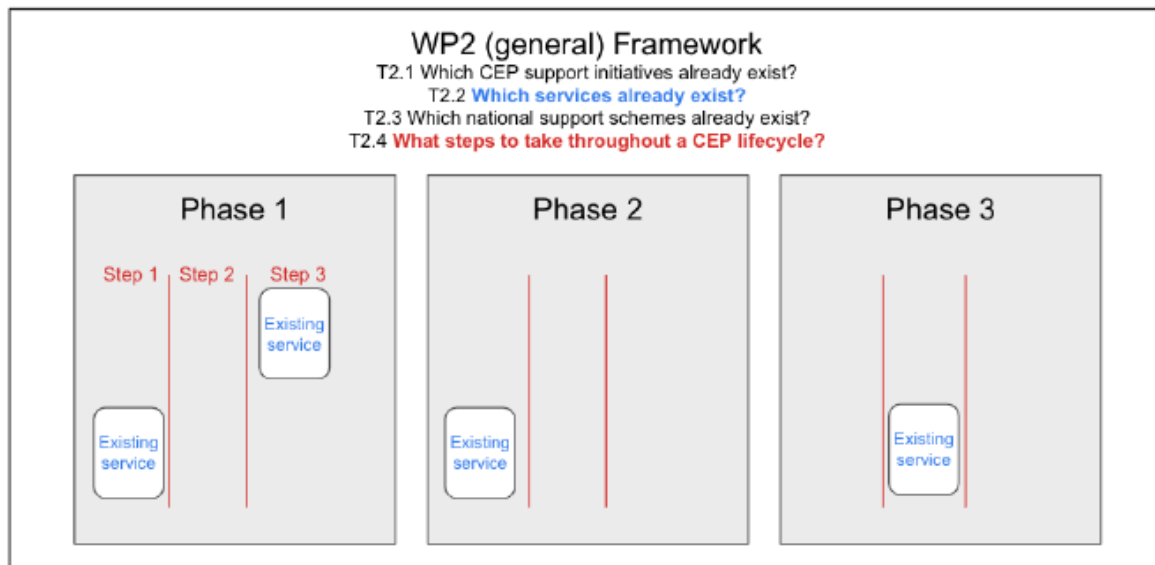


Figure 1: Overview of WP2

3 Overview of the document

This document outlines the concept of a community energy project (CEP) guidebook family, categorizing it into three types: the general guidebook, the specific guidebook, and the interactive guidebook. It clarifies the distinctions between these guidebooks, detailing the transitions between them and how they interrelate and build upon each other.

The DISCOVER guidebook (framework)

General guidebook

Specific guidebook

Interactive guidebook

Figure 2: DISCOVER Guidebook family

- The general guidebook is “generally applicable” to all pilot regions. It is a list of general steps.
- The specific guidebook is “specific to one pilot region”. It is the build-out of each step with local content.
- The “interactive guidebook” is the web version of the specific guidebook, which will make it accessible to an even wider audience than regular visitors of DISCOVER one-stop-shops.

Following this overview, the focus will shift to the general guidebook, offering a comprehensive listing and description of each step in the CEP lifecycle.

3.1 Structure of the document

Chapter 4 focuses on the DISCOVER guidebook family, detailing its definition, purpose, and structure. It also provides clarity on how to separate the guidebook family and into its three sub categories.

Chapter 5 focuses on the general Guidebook. This list of generic steps outlines the CEP lifecycle and forms the bone structure for the development of the specific and interactive guidebook.

4 Methodology

4.1 Principal Idea of the Guidebook

The DISCOVER project creates a tangible impact by fostering the development of CEPs, with a particular focus on photovoltaic (PV) projects. Its goal is to provide integrated services that support the emergence and growth of CEPs.

DISCOVER aims to develop and deploy support services for CEP initiators, whether they are working on ongoing projects, newly started initiatives, or future endeavors. These support services are referenced in a comprehensive framework.

The DISOCER framework serves as a step-by-step manual for launching a CEP and bundles existing and new support services. It will be utilized in service hubs, accessible both as a written document and as an interactive web platform.

This guidebook will encompass the entire lifecycle of an energy project, from the initial concept through assessment, detailed planning, establishment of mandatory requirements, elimination of knockout criteria, and eventual development and implementation.

4.2 Purpose of the Guidebook

The DISCOVER guidebook will navigate the required steps of the CEP lifecycle, providing project initiators with a structured approach to managing their projects. It will integrate and organize all support services developed within the DISCOVER project, as well as existing services. The (specific) guidebook will align the various steps, services, and stakeholders involved.

It will focus on practical application, aiming to reduce the barriers faced by CEP initiators. The guidebook will simplify decision-making processes, decrease complexity, and stimulate the creation of CEPs.

The guidebook will address multiple dimensions, such as bureaucracy, economics, technology, and legal aspects, and will provide references to local technology providers.

4.3 Structure of the guidebook

The guidebook will be organized into three parts, aligning with the three phases of the CEP lifecycle:

- CEP Development (or planning) Phase

- CEP Execution (or realization) Phase
- CEP Operation Phase

Each phase of the CEP lifecycle is further divided into individual steps. Following these steps sequentially guides the CEP initiator through their project. As shown in Figure 3, these steps are categorized into three main areas:

- The Construction of a Photovoltaic (PV) Plant
- The Formation of an Energy Community and a legal entity as the vehicle for trading electricity
- Community Engagement and Team Building activities to foster collaboration and sustain team morale

For each step, the guidebook will evaluate the following:

- Contextualized Information
- Involved Stakeholders and Their Roles
- Expected Hurdles
- Useful Services and Tools to overcome these hurdles

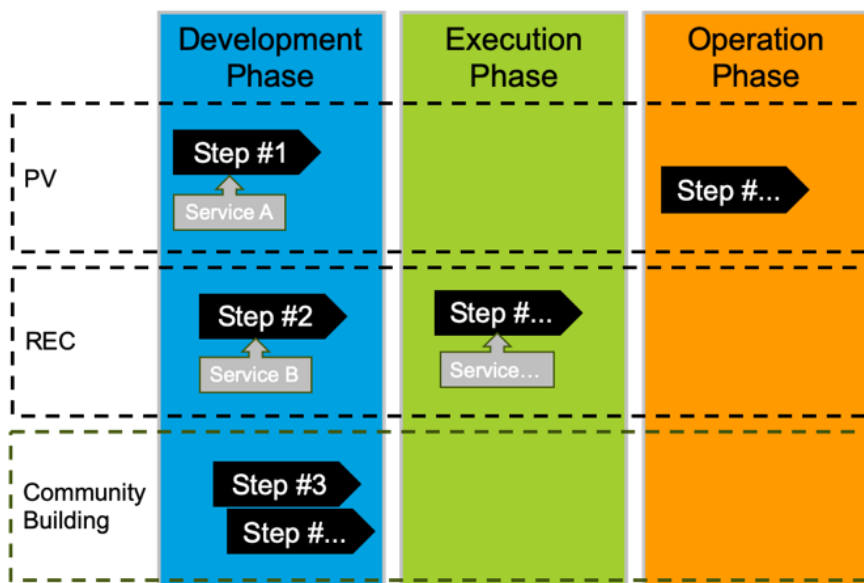


Figure 3: Structure of the guidebook - exemplary presentation. Steps are visualized by a “Pentagon” pointing to the right, services by an “up-arrow callout”.

The steps in Figure 3 indicate the sequence of actions a CEP initiator has to undertake when launching a CEP, e.g. apply for a permission for the installation of a roof top solar plant by filling out form XYZ. The Services (and tools) are understood as a facilitator of a particular step, e.g. an instruction sheet that helps filling out the application form XYZ.

4.4 The guidebook development roadmap


DISCOVER support services are designed to catalyze the creation of CEPs in five pilot regions. By the end of the three-year DISCOVER project, a substantial investment pipeline in renewable energy generation is anticipated. Support for CEPs will commence in the second half of the project, while the first half will be dedicated to developing the guidebook, as visualized in the second line of Table 1:

Table 1: DISCOVER workplan excerpt. The Guidebook development is called out in the center line.

	WP2	WP3	WP4	WP5
Service development	Understand existing services	Understand need for new services	Develop new services	Apply services
Guidebook development	Develop General Guidebook	Develop Specific Guidebook	Develop Interactive Guidebook	Apply Guidebook
Stakeholder engagement		Stakeholders Interviews to learn about Hurdles	Stakeholder workshops to test new services	Stakeholder Support to launch new CEPs

The development of the DISCOVER guidebook comprises three deliverables:

- the General Guidebook (D2.4)
- the Specific Guidebook (D3.4)
- Interactive Guidebook (D4.4)

This report is the General Guidebook, which serves as the foundation for the development of the other two guidebooks, as indicated in 

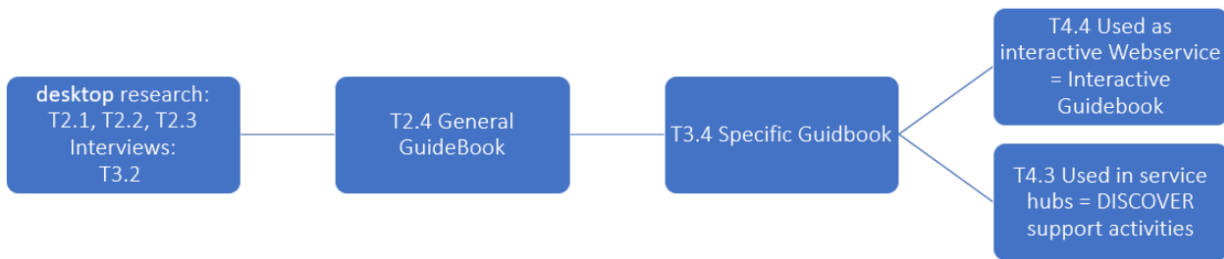


Figure 4.

OB

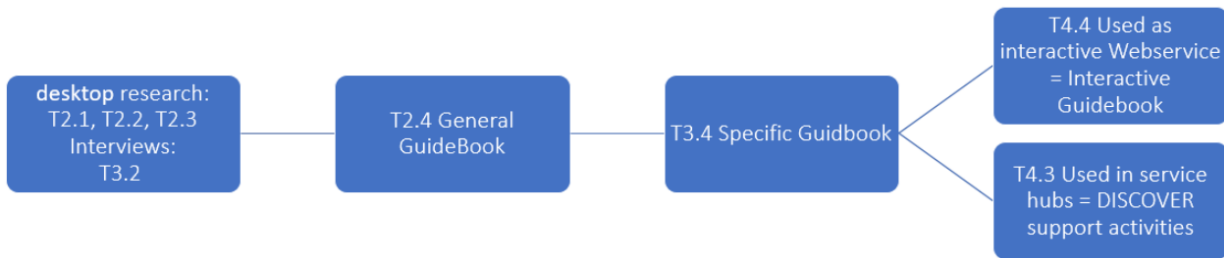


Figure 4: The development roadmap for the DISCOVER guidebook

The findings and conclusions from previous tasks have informed the development of the General Guidebook. However, adaptations will be necessary to account for regional specifics and to design an interactive web service. The role of each guidebook will be explained in the following chapter.

4.5 General vs Specific Guidebook

As an outcome of T.2.4, the General Guidebook is designed to be universally applicable across any pilot region, providing a high-level overview of the lifecycle with generic steps. It does not yet include regional specifics, hurdles or services.

For the Specific Guidebook, the lifecycle must be re-evaluated at the regional level, incorporating details unique to each pilot region. This involves assigning services to each step and linking each step with local stakeholders. Additionally, this stage will detail the interconnections between individual steps and the requirements for interfaces.

Metaphorically, the General Guidebook can be compared to a tree in the winter, providing only the bare branches and structure (

Figure 5). The Specific Guidebook, in contrast, adds the leaves and fruit, providing detailed and region-specific content.



Figure 5: Metaphor for the general guidebook (left) vs specific guidebook (right). The branches symbolize the generic steps of the general guidebook, the leaves and fruit represent local stakeholders and services.

The general guidebook is not a standalone tool; it is specifically designed for use during the initial months of the DISCOVER project. It serves as a precursor to both the specific and interactive guidebooks. The general guidebook is a cornerstone for the work within the DISCOVER team, especially during the initial phase of the project. However, in the replication phase, it also becomes useful to partners outside the DISCOVER team who aim to develop their own specific guidebooks for additional pilot regions not covered by DISCOVER. The specific guidebook will be accessible to OSS operators and visitors.

Table 2: Comparison of general and specific guidebook

General Guidebook	Specific Guidebook
<ul style="list-style-type: none"> • Outlines the high-level process of creating a CEP • General steps, applicable to all pilot regions • Generic 	<ul style="list-style-type: none"> • Follows the storyline of the General Guidebook and adds details • Contains information relevant for each pilot region • Regional specific details: <ul style="list-style-type: none"> ○ Knowhow ○ Services, Tools ○ Stakeholders ○ Technology providers

The development of the Specific Guidebook involves expanding upon the General Guidebook. It requires re-evaluating the CEP lifecycle and replacing generic descriptions with detailed, region-specific instructions.

For example, while the General Guidebook may state the need to "*Apply for permissions*", the Specific Guidebook for Paris would provide detailed instructions such as: "*Obtain approval from the historic town district. Contact Mr. Smith and provide form PaF-01. Typical processing time is two weeks. The service fee is EUR 15.*"

4.6 Synchronization of the general and specific guidebook

Coordinating the parallel development of multiple Specific Guidebooks while maintaining a consistent structure is crucial. This involves enforcing the structure of the General Guidebook in each specific guidebook, while allowing enough flexibility to accommodate regional variations.

For the development of the DISCOVER guidebook family, the following approach was employed: The guidebook is developed using a SharePoint list rather than a conventional Excel sheet. This approach offers several advantages:

- Cross-referencing: SharePoint list entries can be cross-referenced with other SharePoint lists (using look-ups).
- Visualization: SharePoint lists can be visualized using JSON code.
- Data Entry: SharePoint lists can be populated through data request forms.
- Advanced Processing: SharePoint lists support advanced data processing, automated workflows, and integration with interactive applications (apps).

Table 3 displays an excerpt from the general guidebook available to project team members on SharePoint. The three entries listed represent individual steps, each with a defined title, description, and objective. Additionally, the "Phase" and "Topic" columns feature drop-down menus for selecting one of the three phases (Development, Execution, Operation) and one of

the three topics (PV Plant, REC, Community Building or short 'Social'), as outlined in Figure 3 earlier.

Table 3: Excerpt of the general guidebook SharePoint List

Title	Description	Phase	Topic	Objective
Analysis - Wiring	Investigate existing wiring within property.	1_Planning	PV Plant	<ul style="list-style-type: none"> - Is the Power rating of existing wires in your building sufficient - Are there wiring schemes available - Ownership of wiring and wiring paths - Are consumers connected within the same private grid?
Analysis - Construction Synergies	Think about construction work that can be done in parallel while installing a PV plant.	1_Planning	Social	<ul style="list-style-type: none"> - Work on the roof: Insulation, new shingles,.. - Work on the facade - Work on infrastructure: New wires channels, new piping
Community Roles	Define the core team and their responsibilities.	2_Realisation	Social	<ul style="list-style-type: none"> - How to share workload and responsibilities

The visualization of the data within this SharePoint list can be customized using JSON formatting. An excerpt of the interactive view¹ for the general guidebook is shown in Figure 6. In this view, steps are listed in chronological order. When collapsed, only the title appears next to a bullet. Clicking on the bullet opens a detail window that displays additional information.

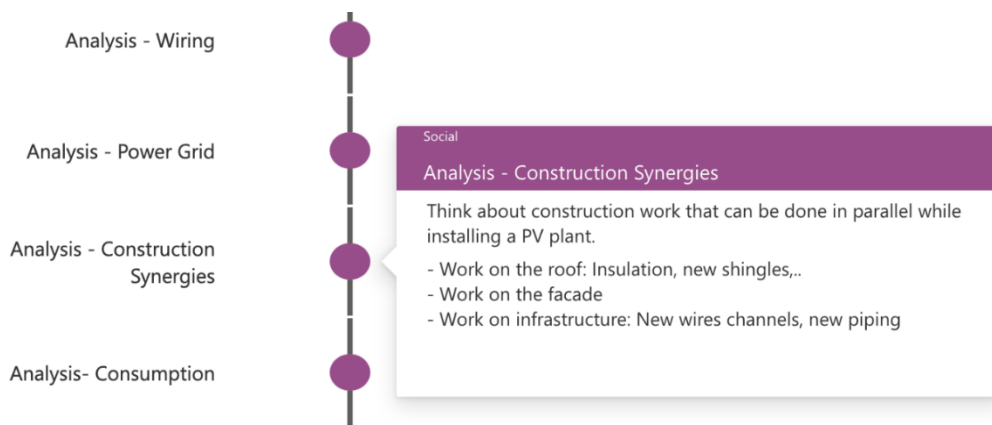


Figure 6: Interactive visualization of the general guidebook (excerpt)

Similar to the general guidebook, the specific guidebook is developed as a SharePoint list. Each entry in the list represents a step in the specific guidebook. The columns in this list correspond to various categories, as illustrated in Table 4 and Table 5:

¹ Note: The interactive view of the general guidebook shall not be confused with the interactive guidebook.

Table 4: Excerpt of the specific guidebook SharePoint List (part 1). Two list entries are provided as examples.

Step in g... ▾	Step in general GB: Description ▾	Pilot ... ▾	Title ▾	Service Description ▾	Service Web... ▾
Analysis - Yield	What is the max possible size and outcome of my PV plant?	Austria	Annual Solar Radiation and Electricity yield	Determine the Annual Solar Radiation for your address. This can be expressed as full load hours per year.	Solarpotential Kataster Wien
Analysis - Power Grid	Investigate the prerequisites for connecting your PV to the grid.	Austria	Power Input - Netze Steiermark	Request approval from power grid operator for your PV plant. This confirms that the grid can handle the power output of your PV plant.	Online Leitungsauskunft der Energienetze Steiermark

“Step in the general guidebook”: The first column is a look-Up field which links the specific guidebook with the general guidebook. When creating an entry in the specific guidebook, the corresponding step in the general guidebook must be selected from a drop-down menu. Following the earlier metaphor (

- Figure 5): One needs to choose a branch before adding a leaf. This step is essential to synchronize the specific and the general guidebook.
- “Step in general guidebook: Description”: The second column is also a look-up field that pulls more information from the general guidebook. This aims to remind the user about the Description of the selected general step.
- “Pilot” specifies the pilot region this step refers to.
- “Title” of this step in the specific guidebook.
- “Description” and “Service Web-Link” of the relevant service for this step.

Table 5: Excerpt of the specific guidebook SharePoint List (part 2). Two list entries are provided as examples.

External Service	Stakeholder...	Dependency	Service in...	Result	Remainin...
✓			PV plant size (m2) Address	kWh per year	
✓	Energy Netze Steiermark	Annual Solar Radiation and Electricity yield	To request approval, you will be asked for your smart meter's ID (aka Measurement Point) and the peak power production in kWp.	Approval for feed in. If the grid infrastructure is limited however, your feed-in power may be restricted. Typically, the minimum feed-in power matches the withdrawal power of your metering point.	Some regions only allow a small feed in power

- “External Service” classification: Yes/No
- “Stakeholder”: Look-up field to cross-reference a stakeholder relevant for the selected service².
- “Dependency”: Look-up field to cross-reference another step in the specific guidebook which needs to be completed before this one. In the example given, the bottom step depends on the top one.
- “Service Input”: Information needed (from another service) to initiate this support service.
- “Result”: Expected outcome from this service.
- “Remaining hurdles”: Pain points that cannot be fully addressed by the selected service.

4.7 Work done within the consortia

The contents of the general guidebook result from thorough brainstorming and agreement among all partners, as it serves as the foundation for their specific guidebooks.

² A stakeholder index was developed as deliverable D.3.1.

5 General Guidebook

This chapter will list all the steps outlined in the general guidebook, which contains 27 entries. Given that the general guidebook is intended as a foundation for creating the specific guidebook, it is regarded as complete and not subject to ongoing updates. While no further changes are anticipated at this time, modifications may be necessary under certain circumstances. To structure the content of this chapter, the list entries are organized into three groups, each representing a phase in the general guidebook.

5.1 Development Phase

5.1.1 Community building

Build your community	Social	<ul style="list-style-type: none"> - Build a team of motivated people - Identify key members - Foster strong relationships and establish effective team dynamics - Secure support
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Assemble a team of motivated and skilled individuals. Organize a steering committee to make major decisions during the planning phase and keep other members informed. Ensure you have a project spokesperson and a coordinator. These key members will drive group dynamics, build mutual trust, and ensure that everyone has a voice. Engage local individuals interested in photovoltaics and community projects. Additionally, seek support from external sources or, at the very least, secure a favorable attitude towards your project. Reach out to elected representatives and officials to introduce your community project to local authorities.

5.1.2 Community assessment

Get to know your community.	Social	<ul style="list-style-type: none"> - How do you define your community? - How big is your community and who are your members? - Who are the potential candidates for future membership? - What are their needs and motivation? <p>What are they willing to share within the community?</p>
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Understanding the dynamics of your community involves assessing several key aspects. First, evaluate the purpose of your community, and its size to gauge its overall reach and potential impact. Next, identify the members of your community to understand its composition. Consider potential future members if you aim to expand. Explore the needs and motivations of your

members, and potential members, to better align community initiatives with their interests and objectives.

Finally, consider what members are willing to share within the community, as this will shape the level of collaboration and resource exchange. By addressing these elements, you can develop a more effective strategy for engaging and supporting your community.

5.1.3 Value Proposition

Define the purpose and the vision for forming a community.	Social	<ul style="list-style-type: none"> - What is the (first) vision of your project? - What are the potential outcomes? - How would the members benefit from it? - How would the community benefit from it? - How do you present your community?
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The initial vision of your project should clearly outline its overarching goals and aspirations. Consider the potential outcomes of the project to define its success criteria and impact. Reflect on how the members will benefit from the project—whether through receiving cheaper electricity, a revenue for their investment, income from renting out roof top space, or other valuable gains. Additionally, assess how the community at large will benefit from the project, such as through strengthened networks, improved resources, or broader social impact. Draft an initial presentation of your community to facilitate outreach to potential partners and authorities. By articulating these aspects, you can align the project’s objectives with the needs of both individual members and the community as a whole.

5.1.4 Permit - Environmental

Apply for an environmental permit.	PV Plant	<ul style="list-style-type: none"> - Is an environmental assessment required? - What plant size requires an assessment? - How much does it cost? - How long does it take?
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Determining whether an environmental assessment is required depends on the specifics of your project. Generally, an assessment is necessary if the plant size exceeds certain thresholds set by regulatory agencies. The cost of an environmental assessment can vary widely based on factors such as the project’s scale, location, and complexity. Similarly, the time required to complete the assessment can range from several weeks to several months, depending on the depth of the study and the efficiency of the review process. Understanding these factors is essential for ensuring compliance with environmental regulations.

5.1.5 Permit – Appearance

Apply for permit.	PV Plant	<ul style="list-style-type: none"> - Are there limitations regarding the appearance of the building? - Are there restrictions imposed by the zoning plan?
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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 the installation of PV panels. Additionally, review the zoning plan for any restrictions that may impact your project. Your 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. Understanding these limitations and restrictions is essential for ensuring compliance and avoiding potential issues with your installation.

5.1.6 Analysis – Structural

Investigate the structural prerequisites for your PV installation.	PV Plant	<ul style="list-style-type: none"> - Is the roof sturdy enough for a PV installation? - Is a concrete basis required for the PV panels or auxiliary components? - How is the roof accessible?
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Before installing a PV system, it's crucial to assess the quality, structure, and condition of your 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. Assess whether any repairs, reinforcements, or even a complete rebuild are needed in the short or long term. Additionally, understanding 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 auxiliary components of your PV system, a concrete base might be required. You should also consider factors such as ventilation and fire protection.

5.1.7 Analysis – Wiring

Investigate existing wiring within property.	PV Plant	<ul style="list-style-type: none"> - Is the Power rating of existing wires in your building sufficient? - Are there wiring schemes available? - Ownership of wiring and wiring paths - Are consumers connected within the same private grid?
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Before proceeding with a PV installation, it's essential to evaluate whether the power rating of the existing wiring in your building is sufficient to handle the current of your PV plant. Check if wiring schemes are available to understand the current electrical setup and ensure compatibility with the planned system. Determine the ownership of wiring, wire conduits and wiring paths to identify any potential issues related to access or modifications, particularly for condominium buildings. Additionally, assess whether all connected consumers are part of the same private grid, as this can impact the integration and efficiency of the PV installation. Addressing these factors will help to identify the proper type of energy community.

5.1.8 Analysis – Power Grid

Investigate the prerequisites for connecting your PV to the grid.	PV Plant	<ul style="list-style-type: none"> - What is the nearest connection point to the grid? - Is the feed-in power limited? - What are the hardware requirements for connecting your PV to the grid? - What are the hardware requirements for metering energy?
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When planning a PV installation, it's important to identify the nearest connection point to the grid to determine how the system will integrate with the existing infrastructure. Check if there are any limitations on feed-in power, as some utilities impose restrictions on the amount of electricity that can be fed back into the grid. Additionally, review the hardware requirements for connecting your PV system to the grid, including inverters, switches, interrupters and other connection equipment. Similarly, ensure you understand the hardware requirements for metering energy, which may involve specific meters or monitoring equipment to accurately track energy production and consumption.

5.1.9 Analysis – Construction Synergies

Think about construction work that can be done in parallel while installing a PV plant.	Social	<ul style="list-style-type: none"> - Work on the roof: Refurbishment, insulation, new shingles, water proofing... - Work on the façade - Work on infrastructure: New wires channels, new piping
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When installing a PV plant, it's beneficial to consider construction work that can be done concurrently to maximize efficiency and minimize disruptions. For example, roof work such as refurbishing the roof, or adding insulation, or installing new shingles can be completed alongside the PV installation, ensuring that synergies are benefited from. In some cases, roof work may be required, such as when insurance policies mandate it. Similarly, any facade work can be undertaken simultaneously while only paying for scaffolding once. Additionally, plan for infrastructure improvements such as installing new wire channels or piping, which can be integrated into the overall project to streamline both the PV system setup and other necessary

upgrades, e.g. lightning rods. Coordinating these parallel tasks can enhance project efficiency and reduce overall costs.

5.1.10 Analysis - Consumption

Understand your electricity demand.	PV Plant	<ul style="list-style-type: none"> - What is your daily/monthly/annual consumption? - What is the consumption profile and expected peaks? - How will consumption change over the next years, e.g. due to a change of your heating system?
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Understanding your energy needs is crucial for optimizing a PV installation. Start by assessing your daily, monthly, and annual consumption to determine the system size required to meet your energy demands. Analyze your consumption profile, including expected peaks, to understand when your energy use is highest and ensure the PV system can accommodate these fluctuations. Additionally, consider how consumption patterns might change over the coming years, such as through the adoption of a new heating system or other significant changes. Consumption analysis might also be extended to potential community members that you expect to profit from the PV installation.

5.1.11 Uptake Agreement

Find someone who will buy your excess electricity. (Grid)	PV Plant	<ul style="list-style-type: none"> - Do you qualify as an electricity vendor? - Who are potential consumers (off-takers)? - Agree on tariff model - Understand contractual constraints - Find and understand feed-in premiums and other subsidies for selling electricity
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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. Identify potential off-takers who might purchase your excess electricity, such as local utilities or businesses. Next, agree on a tariff model with these off-takers to establish favorable terms for the energy you supply. Note that selling electricity within an energy community can result in higher compensation compared to conventional offtake agreements with electricity suppliers/utility providers. It is also essential to understand any contractual constraints, including obligations and limitations, to ensure compliance and avoid potential issues.

5.1.12 Analysis - Yield

What is the size and outcome of my PV plant?	PV Plant	<ul style="list-style-type: none"> - What area is available and how much PV does it fit? - What is the solar radiation? - What is the efficiency of the panel? - What is the annual solar yield?
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		<ul style="list-style-type: none"> - What is the generation profile and expected peaks? - What is the optimal size for the PV system?
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When planning a PV installation, start by evaluating the available area for panel placement to determine how much photovoltaic capacity can be accommodated. This may require a prior analysis of other roof usage concepts that could compete with the installation of PV panels. Complementary uses of the available space of your roof may include usage of solar thermal panels, greenery, etc. Assess the solar radiation at your location, as this will influence the system's performance and energy production. Consider the efficiency of the PV panels you plan to use, as higher efficiency panels will produce more energy from the same amount of sunlight. Calculate the annual solar yield based on these factors to estimate the total energy output of your system. Additionally, consider the expected load dynamics, including fluctuations in energy demand, to ensure the PV system is adequately sized to meet your needs throughout the year.

Once you determine the maximum size of the PV plant you can install, evaluate whether it may be advantageous to reduce the size based on factors such as energy demand, available incentives, regulatory requirements, grid connection limits, or other local constraints.

5.1.13 Preassessment Financing and Financing Concept

Initial assessment about financing possibilities	PV Plant	<ul style="list-style-type: none"> - How much financing can be raised through subsidies - How much financing can potentially be raised within the community - How much financing has to come externally (e.g. banks) - Can 'PV as a Service' be considered an alternative
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The feasibility of a PV installation is very much dependent on the possibility to finance the endeavor. After having gone through the previous steps, initiators should have an estimate about the investment volume of the CEP that needs to be financed. In this step, financial possibilities shall be assessed, consisting of own funding (equity), public funding and subsidies, as well as third party funding like bank loans, leasing and other instruments. If some of the financial instruments used require approval of third parties like banks, it is useful to conduct initial discussions with those parties during this step. Alternatively, consider 'PV as a Service,' a subscription model that allows customers to avoid large upfront investments."

5.1.14 Analysis – Economics

Calculate the expenses and earnings for your PV.	PV Plant	<ul style="list-style-type: none"> - How much of my electricity can I use myself, sell or donate to others? - What is the cashflow generated? - What is the break-even point? - Is my project economically feasible?
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When evaluating a PV system, determine how much of the generated electricity you can use personally versus how much can be sold or donated to others. Assess the cash flow generated by the system, considering 1) the savings from reduced electricity bills, 2) the revenue from selling excess power and 3) costs associated to maintenance and repair. Calculate the break-even point to understand how long it will take for the initial investment to be recouped through these savings and revenues. Finally, evaluate the overall economic feasibility of the project by comparing the costs, financial returns, and potential risks. This comprehensive analysis will help ensure that the PV system is a sound financial investment.

5.2 Execution Phase

5.2.1 Insurance

Find an insurance provider.	PV Plant	<ul style="list-style-type: none"> - Understand the risks and costs of insurance - Compare offers - Understand bundling options
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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.

5.2.2 Community Roles

Define the core team and their responsibilities.	Social	<ul style="list-style-type: none"> - How to share workload and responsibilities - Promote positive community dynamics
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While key members were assigned during the development phase, these roles need to be reviewed in the realization phase and considered for additional roles. Begin by identifying key roles within the core team, such as project spokesperson and coordinator, and outline their responsibilities using a RASI (Responsible, Accountable, Supporting, Informed) matrix. Clearly define who is responsible for each task, who must approve decisions, who will support the activities, and who needs to be kept informed. Establish a plan for allocating tasks among community members to ensure an even distribution of workload, considering each member's expertise and capacity.

5.2.3 Financing – Private Funding

Ensure financing and source external capital.	PV Plant	<ul style="list-style-type: none"> - Apply for a bank loan - Find investors - Crowdfunding and other community financing variants
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To finance your project, consider three primary options: applying for a bank loan, finding investors, and crowdfunding. A bank loan can provide a significant amount of capital based on your credit profile. Investors may be interested in funding your project in exchange for equity or a share of the profits. Crowdfunding is another effective strategy, allowing you to raise smaller amounts of money from a large number of people.

5.2.4 Financing – Public Funding

Ensure financing and source external capital.	PV Plant	<ul style="list-style-type: none"> - Apply for grants - Apply for state loans
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To secure additional funding for your project, consider applying for grants and state loans. Grants can provide financial support without the need for repayment, though they often require meeting specific criteria and a competitive application process. State loans, on the other hand, may offer favorable terms such as lower interest rates or extended repayment periods compared to conventional bank loans.

5.2.5 Sourcing- Equipment

Initiate bidding process and buy equipment	PV Plant	<ul style="list-style-type: none"> - Specify requirements - Compare prices
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To ensure a successful procurement process, start by clearly specifying your requirements. This involves detailing the technical and functional needs of the desired equipment, including any performance criteria or standards. Once you have a comprehensive list of requirements, compare prices from different suppliers or vendors. Evaluating various price options helps you identify the best value for your investment, taking into account factors such as quality, warranty, and support.

5.2.6 Sourcing – Professionals

Find and hire Service Providers and Technicians for the installation of your PV plant	PV Plant	<ul style="list-style-type: none"> - Communicate project characteristics - Find professionals - Compare prices - Negotiate contractual agreements
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To effectively realize your project, start by clearly communicating its characteristics to potential professionals. This involves providing detailed information about the project's scope, requirements, and goals. Next, seek out and evaluate qualified professionals who have the expertise needed for your project. Compare prices and value propositions from different providers to ensure you are getting competitive rates. Once you have identified suitable candidates, negotiate contractual agreements to outline the terms of work, including deliverables, timelines, and payment conditions.

5.2.7 Commissioning – Plant

Takeover of plan from provider and getting the permission to start operation	PV Plant	<ul style="list-style-type: none"> - Is the plant installed correctly - Does it operate safely - Does it meet all regulatory requirements
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Once the plant is installed, it is crucial to verify that it has been installed correctly. Assess whether the plant operates safely by checking for any signs of malfunction or potential hazards, and confirm that all safety protocols are in place. Accept and take-over the plan from the provider. Additionally, ensure that the installation meets all regulatory requirements, including local codes and standards, to guarantee compliance and avoid any legal or operational issues.

5.2.8 Establish Legal Entity

Create your REC by establishing a legal entity.	REC	<ul style="list-style-type: none"> - Which legal entity is the best for my REC? - What legal documentation is required - How to prepare the legal documentation - What steps are required to establish one? - Which authorities and professionals need to be involved?
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When setting up a Renewable Energy Community (REC) or Citizen Energy Community (CEC), it's important to determine which legal entity is best suited for your needs (eg. non-profit, cooperative, association). Assess the advantages and disadvantages of each type to select the most appropriate structure. Identify the legal documentation required, which may include formation documents and contractual agreements with members. Engage with relevant

authorities and professionals, including legal advisors, accountants, and regulatory bodies, to ensure that all aspects of the establishment are handled correctly and efficiently.

5.2.9 Registration – Market

Register your REC to be involved in the electricity market processes.	REC	<ul style="list-style-type: none"> - Register as Market participant - Register to access the energy aggregation portal - Register REC participants
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To actively participate in electricity market processes, you must register your Renewable Energy Certificate (REC). Begin by registering as a market participant, which involves completing the necessary applications and meeting the requirements set by market regulators. Next, register to access the energy aggregation portal or similar platforms that integrate your REC in the electricity market processes. Finally, register the participants associated with your REC.

5.2.10 Registration – Tax

Register your REC at the tax authority.	REC	<ul style="list-style-type: none"> - Provide an economic outlook - Receive tax verification number
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Registration of the legal entity, which is the legal entity behind your REC or CEC, with the tax authority may involve providing an economic outlook, which includes an assessment 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 your REC.

5.3 Operation Phase

5.3.1 Maintenance - HW

Perform regular maintenance and repairs to the PV plant.	PV Plant	<ul style="list-style-type: none"> - What is required? - Who can do it? - How much does it cost? - Are there significant down times?
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Regular maintenance and repairs are crucial for ensuring the efficiency and longevity of your PV plant. This includes inspecting and cleaning panels, checking electrical connections, and monitoring system performance. Costs vary based on the system's size and complexity, covering routine maintenance and potential repairs for parts and labor. Be aware that

maintenance might cause some downtime, though it is usually minimal compared to the benefits of maintaining optimal system performance.

5.3.2 Membership – Administration

On/Off boarding of REC members.	REC	<ul style="list-style-type: none"> - Report membership changes to the power grid operator - Register new participants of REC - Maintain and update member list
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To manage your REC effectively, report any membership changes to the power grid operator to ensure accurate records. Register new participants in the REC and update the member list to reflect current information.

5.3.3 Billing

Periodic settlement of electricity consumption and feed-in.	REC	<ul style="list-style-type: none"> - Collecting energy data - Rate Application & Updates - Invoice Generation - Payment monitoring and processing - Record keeping
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For effective billing and periodic settlement of electricity consumption and feed-in, start by collecting accurate energy data. If not provided by the grid operator, consider purchasing metering instruments. Apply and update applicable rates to ensure correct pricing. Generate invoices based on this data or by using a dedicated billing/invoicing platforms and monitor and process payments to ensure timely transactions. Finally, maintain detailed records of all billing activities to support accurate financial management and regulatory compliance.

5.3.4 Accounting

Book keeping and reporting towards tax authorities	REC	<ul style="list-style-type: none"> - Preparing financial statements - Ensuring compliance with legal and regulatory requirements - Balancing accounts
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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.

5.3.5 Membership - Engagement

Member services and continuous engagement.	Social	<ul style="list-style-type: none"> - Keeping members updated - Recruiting new members - Organizing informational and social events - Offering assistance
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To maintain REC member services and continuous engagement, keep members updated with the latest information and developments. Actively recruit new members to expand the community and enhance its impact. Organize informational and social events to foster a sense of community and provide valuable insights. Additionally, offer assistance to members to address their needs and ensure they are well-supported throughout their involvement in the REC.

6 Conclusion

The DISCOVER project aims to catalyze significant investments in renewable energy production by facilitating the launch of CEPs. This is accomplished through a range of support services encapsulated in the (specific) DISCOVER guidebook. The guidebook's primary objectives are to eliminate knock-out criteria, reduce complexity, and simplify the decision-making process, thereby streamlining the development of CEPs and promoting successful renewable energy initiatives.

The DISCOVER guidebook is designed to cover the entire lifecycle of an energy project, outlining each step that a CEP initiator must undertake. These steps are categorized into the three phases of a CEP lifecycle: planning, realization, and operation. Additionally, the steps are divided into three disciplines: activities related to PV plant installation, the setup and operation of a Renewable Energy Community (REC) or a Citizen Energy Community (CEC), and community engagement aspects (social).

The development of the DISCOVER Guidebook is structured into three distinct documents: the General Guidebook, the Specific Guidebook, and the Interactive Guidebook.

This document focuses on the General Guidebook, which provides a general but comprehensive list of steps covering the entire lifecycle of a CEP. Universally applicable to all pilot regions, the General Guidebook offers a set of generic steps that are both broad and detailed, serving as a robust foundation for the development of the Specific and Interactive Guidebooks. By acting as a precursor, it establishes a cohesive and structured approach that ensures consistency across all subsequent guides.

In the Specific Guidebook, each step from the General Guidebook is expanded with region-specific content, including relevant services, local stakeholders, service providers, and regional challenges. This adaptation allows for the creation of tailored regional guidebooks while maintaining a consistent structure across all documents. The Specific Guidebook will be utilized in local OSS (One-Stop-Shops) to connect local technology providers, enhancing collaboration and streamlining project execution. Additionally, the Interactive Guidebook in form of an interactive web-platform, will extend the reach and impact of DISCOVER support services, further amplifying their effectiveness.



**Co-funded by
the European Union**

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Project number: 101120622

