ECOEMPOWER

ECOsystems EMPOWERing at regional and local scale supporting energy communities

February 2024

# D6.2 BASELINE IN THE ECOEMPOWER PILOT SITES

The project ECOEMPOWER - ECOsystems EMPOWERing at regional and local scale supporting energy communities receives funding from the European Climate, Infrastructure and Environment Executive Agency (CINEA) under Grant Agreement n°101120775.

Co-funded by the European Union

## TECHNICAL REFERENCES

| | |
|---|---|
| **Project Acronym** | ECOEMPOWER |
| **Project Title** | ECOsystems EMPOWERing at regional and local scale supporting energy communities |
| **Funding Programme** | LIFE 2027 |
| **Call** | LIFE-2022-CET |
| **Topic** | LIFE-2022-CET-ENERCOM |
| **Project Coordinator** | Cinzia Morisco (FBK), cmorisco@fbk.eu |
| **Project Start Date** | September 1st, 2023 |
| **Project End Date** | August 31st, 2026 |
| **Project Duration** | 36 months |
| **Project ID** | 101120775 |

| | |
|---|---|
| **Deliverable No.** | D6.2 – Baseline in the ECOEMPOWER pilot sites |
| **Dissemination Level** | PU – Public |
| **Work Package** | WP6 – Testing the project support mechanisms in pilot sites |
| **Task** | T6.2– Baseline in the pilot sites |
| **Lead Beneficiary** | Fondazione Bruno Kessler (IT) |
| **Author(s)** | Gionata Luca (FBK), gluca@fbk.eu |
| **Contributing Beneficiaries** | FBK, ACV, eza!, PAT, EAZK, ROCG, UBE |
| **Reviewer(s)** | (ACV: Etienne Jouin, Juliette Rasse) (UBE: Giorgos Barzegkar-Ntovom) |
| **Due Date of Deliverable** | February 29th 2024 |
| **Actual Submission Date** | February 17th 2025 |

## REVISION AND HISTORY CHART

| **Version** | Date | Editors | Comment |
|---|---|---|---|
| **0.1** | 2023/12/12 | Gionata Luca (FBK) | Table of Contents |
| **0.2** | 2023/12/15 | Etienne Jouin (ACV), Juliette Rasse (ACV), Giorgos Barzegkar-Ntovom (UBE) | Revision of ToC |
| **0.3** | 2024/01/24 | Gionata Luca (FBK) | First draft of deliverable |
| **0.4** | 2024/02/01 | Etienne Jouin (ACV), Juliette Rasse (ACV), Giorgos Barzegkar-Ntovom (UBE) | Deliverable review |
| **0.5** | 2024/02/22 | All Regional Ecosystem representatives (PAT, ACV, eza!, EAZK, ROCG) | Contributions and integrations within the relevant sections |
| **0.6** | 2024/02/26 | Gionata Luca (FBK) | Finalization of deliverable |
| **0.7** | 2024/02/28 | Gionata Luca (FBK) | Final version submitted |
| **0.8** | 2024/12/04 | Gionata Luca (FBK) | Version to be changed due to new regional ecosystem (after the amendment) |
| **1** | 2025/02/17 | Gionata Luca (FBK) | Final version submitted to the coordinator |

## DISCLAIMER

The opinion stated in this report reflects the opinion of the authors and not the opinion of the European Commission. The European Union is not liable for any use that may be made of the information contained in this document.



All ECOEMPOWER consortium members are committed to publish accurate and up to date information and take the greatest care to do so. However, the ECOEMPOWER consortium members cannot accept liability for any inaccuracies or omissions, nor do they accept liability for any direct, indirect, special, consequential, or other losses or damages of any kind arising out of the use of this information.

# EXECUTIVE SUMMARY

This deliverable defines and describes the baseline of the pilot sites within the ECOEMPOWER project. The document also outlines the methodology followed to define the baseline and the request for information and input from the various regional ecosystems.

The document gathers all the information and data useful for defining the baseline of all the pilot sites of the project, in order to have a basis of comparison for monitoring these pilots throughout the duration of the project, with a view to achieving the set goals.

Regarding the methodology for defining the baseline, a template has been created for gathering both descriptive and numerical information and input. This template is shared with all the regional ecosystems, in which data relating to the energy communities, existing or assumed, and to all One Stop Shops (OSSs), existing or assumed, have been requested. Special emphasis is placed on the quantitative and qualitative evaluation criteria defined in D6.1, as they are crucial for an accurate assessment of the current situation.

This document serves as a descriptive basis for all pilot sites involved in the ECOEMPOWER project, both qualitatively and quantitatively. This assessment of the initial situation will then be compared to the situation after the project's implemented solutions to verify the actual success of the project in achieving the targets of the various pilot sites.

# TABLE OF CONTENTS

# 1 Introduction

The main objective of WP6 is to test the effect of the ECOEMPOWER support mechanisms to facilitate the emergence and growth of energy community projects, by running extensive real-life evaluation tests in the 15 pilot sites (3 energy communities x 5 regions). The following objectives are identified:

- To evaluate the ecosystem impact of the project in the pilot sites;
- To measure the energy and environmental benefits and the social impacts triggered by the project;
- To analyse the social, policy and economic drivers for the success (or failure) of the measures.

These will be determined by means of qualitative and quantitative analysis. This deliverable is crucial as it allows for the evaluation of the current situation in all the project pilot sites in both qualitative and quantitative terms. Thanks to the definition of the baseline, monitoring of the sites in subsequent phases of WP6 can then be carried out to assess how effectively the project is achieving its objectives.

## 1.1 Objectives of the deliverable

This deliverable stems from the work carried out in T6.2 – *Baseline in the pilot sites*. In this task, a collaborative effort between WP6 and WP2 resulted in the draft of an information and data collection template, aimed at defining the baseline of the pilot sites.

This deliverable collects all information and data of the initial situation within all pilot sites and will be the basis for the comparison of parameters during the project time.

The specific objectives of this deliverable, which are related to the objectives of the reference task, are as follows:

1. To define the methodology used for the collection of information and data from the demo partners;
2. Clear assessment of the initial situation in the regions concerned, with regard to existing or already planned OSSs/energy agencies and their specific service offers, as well as existing or already planned local energy communities;
3. Evaluation of the KPIs considered in D6.1 during the initial phase of the project.

## 1.2 Structure of the deliverable

D.6.2 is structured in four main chapters as follows:

- **1 Introduction** – Overview of the document with objectives: description of the purpose, the structure of the deliverable, and its relationship to other ECOEMPOWER tasks.

- **2 Methodology for data collection** – Description of the method used to achieve the objective of the deliverable, i.e. the definition of the baseline in the pilot sites.

- **3 Baseline assessment in pilot sites** – Description of the identified initial situation in all the pilot sites from a qualitative and quantitative point of view.

- **4 Conclusions** - Conclusions and considerations on the deliverable.

## 1.3 Relation with other activities in ECOEMPOWER

This deliverable holds utmost significance for *WP6 – Testing the project mechanisms in pilot sites,* as the definition of the baseline in pilot sites serves as the reference for comparing situations in T6.3 and T6.4. Thus, this deliverable relates to every single task of WP6, from the definition of evaluation criteria (T6.1) to the analysis of the results (T6.4), via the monitoring of the pilot sites (T6.3).

This particular deliverable of WP6, besides being essential for WP6 itself considering the subsequent tasks, has some relationships outside this work package, as the baseline of the various pilot sites is also involved and used in other work packages. For example, it has relations with T2.1 of WP2, as the definition of the ICT platform requires knowledge of various types of information (data measurement, communication systems and installed assets) which is provided through the collection of information for the baseline of T6.2. In addition, it will also serve as a basis for designing and setting up the OSSs (WP5).

# 2 Methodology for data collection

For the definition of the baseline in the various pilot sites, the steps which are taken into considerations are as follows:

- Creation of a template for data and information collection from the different regional ecosystems;
- Collaboration between WP6 and WP2 to require in this template information also useful to task T2.1 of definition of ICT platform;
- Share the template with all the regional ecosystems (PAT, ACV, eza!, EAZK, ROCG) to require data and information about all the pilot sites within the ECOEMPOWER project;
- Evaluation of KPIs, defined in D6.1, in the initial situation for various pilot sites, as a basis for comparison within the Task 6.3 of monitoring the pilot sites during the project and the analysis of test results of pilot sites within the Task 6.4.

It follows from the Grant Agreement that no other forms of energy besides electricity are taken into account in the calculation of the project KPIs, taking into account only factors and values related to electricity. Furthermore, it is considered that in the case studies considered, energy sharing (and thus the Energy Community approach) occurs only through electricity grids. Consequently, the template focuses solely on the electricity domain, and all requests made to the pilots pertain exclusively to the electricity sector.

As for the baseline template, this consisted of several sections:

1. **General information about the Regional Ecosystem:** In this first section, a descriptive part has been requested concerning the regional ecosystem and all pilot sites considered within it, with a greater level of detail than that assessed in the Grant Agreement. Hence, it is requested to give a broad overview of everything concerning the ecosystem (geographical location of the region and the different pilots, ECs presented and their names); furthermore, it is requested to fill in a table of descriptive information that also includes technical details (such as electricity grid characteristics, sizing, metering infrastructure, etc.). This table is shown below in Table 2.1.

*Table 2.1 - Data description in various pilot sites*

| **Input data** | **Description of pilot sites** |
|---|---|
| Electricity flows | 1st |
| | 2nd |
| | 3rd |
| Electrical grid characteristics | 1st |
| | 2nd |

| | |
|---|---|
| | 3rd |
| RES sizing | 1st |
| | 2nd |
| | 3rd |
| Non-RES sizing | 1st |
| | 2nd |
| | 3rd |
| Metering infrastructure | 1st |
| | 2nd |
| | 3rd |
| Data communication protocols | 1st |
| | 2nd |
| | 3rd |

2. **Data acquisition:** This section is of paramount importance for defining the baseline for monitoring pilot sites, as it requires input on technical and non-technical parameters from the different pilot sites. This data will be monitored during T6.3 to compare the project results with the baseline without project. The required data are related to different areas, in line with the areas of the project KPIs defined in D6.1 (social, energy, economic, environmental), and are shown in the tables below (Table 2.2,Table 2.3, Table 2.4, Table 2.5). Note that in the following list, most of the KPIs are evaluated directly through measurements at the pilot site, while some, including "Primary energy savings," "Final energy savings," and “Ratio of investment”, are evaluated indirectly through formulas defined in D6.1. The tables below also include the data needed for the calculation of the indirect KPIs. A summary table of parameters for all pilot sites can be found within Annex A section.

*Table 2.2 - Input request for evaluation of social parameters*

| **Social data** | **Value** | **Unit of measure** |
|---|---|---|
| Number of citizen-led initiatives supported and/or created | | [#] |
| Number of citizens taking part in energy communities | | [#] |

| | | |
|---|---|---|
| Number of actors with increased skills in the area of community energy | | [#] |
| Number of jobs created | | [FTE] |
| Number of people participating workshops | | [#] |
| Diversity in the distribution of people involved in the EC (% of women and % of people under 40 years) | | [%] |

*Table 2.3 - Input request for evaluation of energy parameters*

| **Energy data** | **Value** | **Unit of measure** |
|---|---|---|
| Primary energy demand | | [GWh/year] |
| Final energy demand | | [GWh/year] |
| Renewable energy generation | | [GWh/year] |
| RES electricity self-consumption | | [%] |
| Flexibility – Storage size and capacity | | [kW and kWh] |

*Table 2.4 - Input request for evaluation of Economic parameters*

| **Economic data** | **Value** | **Unit of measure** |
|---|---|---|
| Investments in sustainable energy | | [M€] |
| Development of local community energy investment pipelines | | [M€] |
| Public investment | | [€] |
| Private investment | | [€] |
| Average cost of electricity (from electricity bill) | | [€/kWh] |

*Table 2.5 - Input request for evaluation of environmental parameters*

| Environmental data | Value | Unit of measure |
|---|---|---|
| Reduction of GHG emissions | | [tonCO2/year] |

3. **OSS evaluation:** This section is necessary for assessing the OSS (primary objective of ECOEMPOWER) during the lifetime of the project. It is important to define this part at this early stage of the baseline description in order to compare the outputs of ECOEMPOWER with the initial situation in the various regional ecosystems. Considering the steps of the development of Energy Communities from the Grant Agreement, it is requested to provide information on the stage of development in which the various pilot sites/energy communities are in the initial situation to understand the actions and support that the regional OSS can provide, among the following:

   - **Emerging phase:** the OSS raises citizens' awareness about potentials and benefits of energy communities and provides detailed information to citizens and stakeholders.

   - **Pre-development phase:** the OSS assists citizens and stakeholders involved in the energy community in analysing the underlying motivations and expectations, in establishing the project technical feasibility and viability (in terms of energy balances and assets, costs, regulation and community participation), and in providing information about funding opportunities and legal aspects.

   - **Development phase:** the OSS provides assistance in developing a business model, supports capacity building and provides technical assistance (e.g. providing orientation about technologies available on the market, including the use of simulation tools; supporting community engagement and the development of collaborative networks among the local actors involved).

   - **Operational phase**: the OSS supports the continuous evaluation of the results achieved, growth in the number of citizens involved, increase in the RES production capacity and self-consumption, updating of digital tools, compliance with evolving regulatory and policy aspects.

   A summary table for the phases of all energy communities participating in the project can be found in Annex A. Furthermore, Regional ecosystems were asked to answer a series of questions about the services offered by the OSS, the number of users of these services, and the skills and characteristics that may be significant in the context of the OSS.

4. **EC evaluation:** This last section asks for a qualitative, and no longer numerical, assessment of the energy communities in the project. The information requested assesses the degree of maturity of an energy community, providing purpose, goals and stability, as seen in Table 2.6.

*Table 2.6 - Energy Community scope and objectives*

| | |
|---|---|
| No. EC | |
| Legally established (*yes/no*)<br>If not, please give some details | |
| Operational (*yes/no*)<br>With explanation | |
| Scope | |
| Objectives / focus | The objectives of the energy communities will be to: |

In addition, other information is requested on the general context of how the energy community was formed. It is therefore required to:

- Describe how the 3 Energy Communities started. Who took the initiative? Which stakeholders were involved from the start?

- Discuss the Regulatory framework and identify if there are any regulatory incentives for energy communities within the regional ecosystem.

- Describe the governance structure of the 3 Energy Communities (how are they organised, what is the legal entity (if relevant), who mandates?). Please include a description of the division of votes/control etc.

- Provide a short description of the issue(s) that you would like to solve as Energy Communities (e.g., congestion, balancing, high energy prices, lack of community engagement).

For this part of requesting qualitative information on EC evaluation in the various pilot sites, the DECIDE[1] project was taken as inspiration, with the aim of creating a strong link with relevant EU projects to ensure efficient dissemination of project results at the European level.

Hence, the one above is the template for collecting data and information from regional ecosystems for all pilot sites associated with the project. In an effort to harmonize and to clarify the feedback provided by the regional ecosystems; these templates were discussed and improved during WP6 monthly meetings.

Once all the information was obtained from the demo partners, all feedback were evaluated, compared, and incorporated into the Deliverable D6.2 for the definition of the baseline in the ECOEMPOWER pilot sites.

[1] DECIDE (H2020 Project - Energy Community Development through Information and Collective Action) – website (https://decide4energy.eu/)

# 3 Baseline assessment in pilot sites

It is important to note that, while the baseline evaluation for four regional ecosystems (PAT, ACV, eza!, ROCG) was carried out based on the reference year 2023, the evaluation for the regional ecosystem of the Zlín region was conducted for 2024, due to the amendment within the project which replaced the original regional ecosystem with the Zlín region. For this reason, the figures and information presented in paragraph 3.4 refer to the reference year 2024, and the data collection for this ecosystem took place after the others.

## 3.1 Regional Ecosystem #1 (RE1): Autonomous Province of Trento (ITALY)

### 3.1.1 Description of Regional Ecosystem

With a population of 533,000 inhabitants and a robust economic foundation, Trentino currently boasts one of the highest levels of well-being and quality of life in Italy and Europe. Empowered by its unique Statute of Autonomy, in effect since 1948, the Autonomous Province of Trento exercises direct legislative, administrative, and financial control over critical sectors such as education, health, industrial policy, transport and tourism. This autonomy extends to the management of 90% of both direct and indirect income collected within the Province.

The Agency for Water Resources and Energy (APRIE)[2] stands as the regional authority entrusted with formulating energy policy and planning, utilizing various actions and instruments. Within the framework of the recently introduced Provincial Energy and Environmental Plan 2021-2030, particular emphasis has been placed on the pivotal role of energy communities in facilitating the energy transition. This stems from the increasing focus on decentralized production from renewable sources and local self-consumption.

In 2021, significant strides were made, including the establishment of a List of Energy Communities in Trentino through Provincial Law. This list, maintained by APRIE, marks a crucial step in integrating Energy Communities (ECs) into the provincial energy board, fostering collaboration with public structures, consortiums, cooperative movements, research institutions, and other entities. Approximately 20 energy community projects are currently underway, primarily engaged in initial feasibility analyses, 5 legal entity was founded in cooperative forms and other 3 initiatives were founded in other forms (e.g. Association).

Despite the absence of a dedicated office, plans are underway to establish the Trentino One Stop Shop, acting as a comprehensive help desk utilizing human and computer resources to guide the creation and management of energy communities. Simultaneously, the ECOEMPOWER project aims to support the development of three pilot sites in Trentino, serving as testing grounds for the practical implementation of the OSS.

From a regulatory point of view, there was a big delay in Italy. The implementing decree that was supposed to define the rules and incentives of the new Renewable Energy Communities (RECs) - which should have come out in June 2022 - was only published on 23 January 2024 and came into force the following day. However, there are still some important issues to be clarified, e.g. the date from which installations are considered new, which will be contained in the 'technical rules' due at the end of February. In addition, one must wait for the activation of

[2] APRIE website link: http://www.energia.provincia.tn.it/

the financing portal, which will take place 45 days after the decrees. The absence of specific deadlines and uncertainties surrounding the compatibility of renewable source plants with REC regulations has slowed project development in the three pilot territories. Moreover, the role of local authorities in the Energy Community (EC) training process is yet to be well-defined.

In the pilot sites of "Val di Fassa", "Levico Terme", and the "Valle dei Laghi" territory, challenges persist in delineating the community's perimeter, identifying additional participants beyond initial promoters, and formulating production and consumption profiles. As the baseline of the project is theoretical and indicative, numerous aspects require further investigation during construction. The absence of prior experience with energy communities operating under the new legislation adds an additional layer of complexity, necessitating ongoing investigations to determine the optimal legal entity for application. In the coming months, a direct accompanying action is anticipated to be implemented in the territories, addressing these uncertainties and contributing to the overall success of the energy community initiatives.

### 3.1.2 OSS evaluation

In the described region, the existing framework for energy community development involves the presence of a provincial energy agency, APRIE, which is actively monitoring the evolution of RECs at the national level. However, as of now, there is no dedicated OSS in place for the specific objectives outlined in the ECOEMPOWER project.

The pre-existing initiatives include the provincial energy agency's efforts in disseminating information and organizing public meetings to raise awareness about the potentials and benefits of energy communities. APRIE is also involved in technical research, exemplified by the simulation of REC scenarios and the calculation of solar irradiance on various surfaces within the province[3]. In the webpage dedicated to energy of the Autonomous province of Trento a section for Energy communities was created[4]. In this section there are some orientational information and all the technical documents and work published by APRIE.

As part of its role, APRIE is engaged in providing light orientation to potential energy communities, predominantly municipalities, and coordinates a provincial table involving agreements between the Provincial Administration (PAT), provincial federation of cooperatives, municipality consortium, and artisans lobby. In this frame, was activated a digital portal by Provincial federation of cooperatives, to give some information about RECs in cooperatives form[5].

An important in-depth study that APRIE has been carrying out since 2021, also with the collaboration of the "Consorzio dei Comuni Trentini", is the role that a local authority can take on within an Energy Community. this is an issue of national importance in Italy, with respect to which there are still no certain answers and the first

[3] Detailed in technical reports available on http://www.energia.provincia.tn.it/pubblicazioni ([1], [2])
[4] Webpage link (www.infoenergia.provincia.tn.it)
[5] https://energia.incooperazione.it/

experiences, which are heterogeneous, have given conflicting results. The system of constraints for the use of public resources, the administrative rules and the complexity of the topic, especially for small and poorly structured municipalities, make the feasibility of a direct contribution of municipalities as partners in RECs particularly complex. APRIE in 2022 published guidelines for municipalities on the topic.

With the integration of the ECOEMPOWER project, APRIE aims to bring more structure to the existing initiatives and institutionalize the OSS. The envisioned OSS includes the development of an informative website that serves as a comprehensive resource for initiating REC projects. This platform will not only provide detailed information but will also showcase operational REC models. Additionally, there are plans to establish a set of tools to assist in building a complete business plan, activating specific expertise as needed.

Currently, the services offered by the OSS are in the early stages, focusing on information dissemination and technical groundwork. The evolution of the OSS is anticipated to play a crucial role in supporting the different phases of REC development, aligning with the objectives outlined in the ECOEMPOWER project. Moving forward, the OSS aims to facilitate the growth of REC initiatives, increase renewable energy production and self-consumption, and ensure compliance with evolving regulatory and policy aspects. As the OSS progresses, user feedback and experiences will be vital in refining and expanding its services to meet the evolving needs of the regional energy ecosystem.

### 3.1.3 EC data acquisition and qualitative assessment

In the evaluated territories, there is a lack of operational Renewable Energy Communities (RECs) with no current energy exchange.

The first pilot site, in Val di Fassa area, in the territory managed by CEP[6] ("Consorzio Elettrico di Pozza") consortium reports total electricity consumption of 4,872 MWh/year in the domestic sector, 8,364 MWh/year in industrial sector and 16,661 MWh/year in the commercial and the third sector. The production of CEP is yet completely by RES sources, mainly hydroelectric and photovoltaics. The planned photovoltaic plant is sized between 130 and 240 kW (130-240 MWh/y of annual production). The electrical grid in the CEP area comprises 25 medium/low voltage substations managed by the local cooperative consortium CEP. The metering infrastructure uses the latest electronic meters with quarter-hour measurements (Second Generation 2G meters) for every POD (Point of Delivery), because in Italy it is mandatory for DSOs to upgrade their metering system until 2025.[7]

6 CEP website

7 CEP - Detailed plan of massive replacement of electricity supply meters

The second pilot site in Levico Terme municipality records a total electricity consumption of 3,745 MWh/year in the industrial sector, 5,744 MWh/year in commercial and the third sector, and 6,768 MWh/year in the domestic sector. The planned photovoltaic plant is sized between 80 and 140 kW (80-140 MWh/y of annual production). The electrical grid consists of 11 medium/low voltage substations managed by SET [8], and the metering infrastructure mirrors the first pilot site (2G for every POD until 2025)[9].

The third pilot site in the Valle dei Laghi territory encompasses multiple municipalities with a total electricity industrial consumption of 10,893 MWh/year, commercial and the third sector consumption of 4,009 MWh/year, and a total domestic consumption of 10,295 MWh/year. The planned renewable energy plant is not yet defined in size, assumed to be approximately 200 kW of photovoltaic capacity (about 200 MWh/y of annual production). The electrical grid includes 45 substations under Madruzzo, 19 under Dro, and one each under Nembia, Mezzocorona, and P.S. Giorgio, all managed by SET. Similar to the first two pilot sites, the metering infrastructure utilizes the latest electronic meters with quarter-hour measurements for all PODs.

Data reporting protocols provide for direct data collection from Energy Communities for the ECOEMPOWER project. The Point of Delivery (POD) of the metering system transmits data to the GSE, the national energy management structure responsible for incentive payments. Despite the existence of a legal entity (REC Vallelaghi) in Valle dei Laghi, founded in June 2023, REC operations are not currently possible in Italy due to laws that have not yet been implemented at the national level. The overall goals of these energy communities include increasing renewable energy production, particularly through photovoltaic and hydroelectric sources, promoting local experiences, and leveraging the energy transition to empower mountain territories. The strategic direction includes directing consumption toward widespread electrification (promoting the diffusion of heat pumps and electric vehicles) and supporting the local grid system.

This section defines all the data for the composition and evaluation of the baseline at the different pilot sites, both from a numerical point of view for the comparison of values with subsequent project steps to define the added value, and from a more qualitative point of view to assess the maturity of an energy community. Individual pilot sites in the corresponding region will be presented below.

[8] SET website: https://www.setdistribuzione.it/

[9] https://www.setdistribuzione.it/attivita/smartecometer.html

#### 3.1.3.1 RE1.1 – Val di Fassa

*Figure 3.1 – Area of Val di Fassa pilot site*

The first pilot site is being developed in Val di Fassa, in the municipality of San Giovanni di Fassa (3500 inhabitants), located in Trentino. San Giovanni di Fassa is situated in the Fassa Valley and has a population of approximately 10,000 residents across 6 municipalities. The area is served by a historical electric cooperative called CEP, founded in 1914, which manages the local electric grid covering a vast region in the valley.

The Val di Fassa, located in the Fassa Valley, is embarking on an inspiring energy community project rooted in educational collaboration. Initiated by local students who took part in an inter-school "Lego League" competition, this pilot site has evolved into a vision for a Renewable Energy Community (REC) centered around the Fassa Ladin School and local preschool. A unique feature of this initiative is its focus group, composed of students, teachers, and representatives from a local electrical cooperative, which is a historic partner and key supporter in bringing this project to life. Although the REC is not yet legally established and cannot be operational under current Italian regulations, the groundwork is being laid for a community-driven energy solution that could serve as a model for similar endeavors.

The primary objective of this project is to create an energy community with a local and educational focus. A photovoltaic (PV) system of 130 kW (130 MWh/year of annual production) will be installed on the kindergarten's roof (or on the Church roof), with funding provided by the local electric cooperative. The participants in the REC will include students, their families, faculty, and school staff, embodying a true community-led initiative. Notably, any income generated from the PV system's energy production will be funneled back into the schools, directed towards purchasing educational materials to benefit all involved. This approach emphasizes social impact over financial gain for individuals, fostering a sense of shared purpose and investment in sustainable energy.

The Val di Fassa REC stands as an example of integrating renewable energy with educational objectives, where the benefits extend beyond environmental gains to include social and community development. While currently limited in its operational capacity, the initiative is poised to serve as a pilot for future energy communities in the region, supported by the local electric cooperative's commitment and the enthusiastic participation of students and faculty.

In this case, there is a lack of data in the considered pilot site because there is neither an operational energy community nor applicable baseline scenarios with good reliability. That is why it is important to monitor the performance of this pilot site in the subsequent stages of WP6 for the creation and monitoring of energy community data.

### 3.1.3.2 RE1.2 – Levico Terme

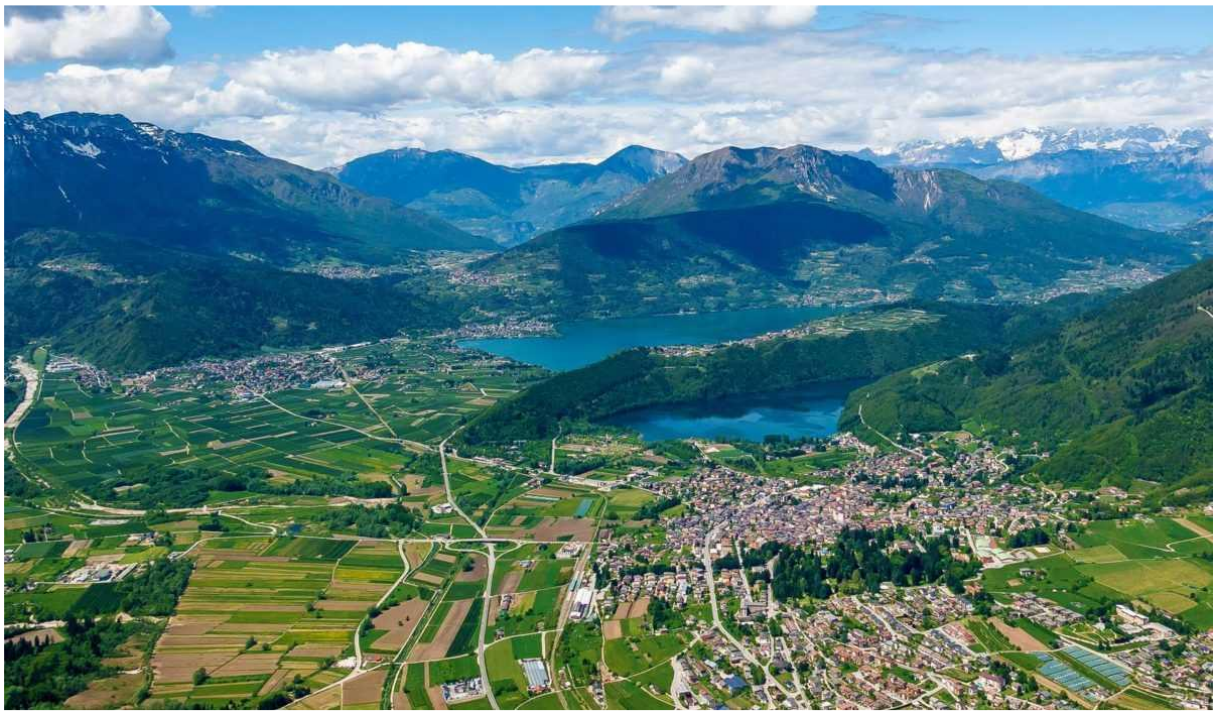

*Figure 3.2 - Area of Levico Terme pilot site*

Levico Terme (8,112 inhabitants), situated in the Valsugana Valley, is thinking about an innovative energy community initiative. This small town boasts a rich historical center and a compact industrial/commercial district nestled close to the residential zones. The driving force behind this endeavor is the Municipality of Levico Terme.

The focal point of this initiative is the repurposing of an unused school building, where an 80 kW photovoltaic (PV) plant is planned for installation. This solar power facility is anticipated to generate an annual output of 102 MWh, contributing significantly to the community's energy needs. Additionally, attention is directed towards the small industrial/commercial district. Here, a 60 kW PV system is slated for implementation, with an expected annual production of 76 MWh/y. This diversification of energy sources ensures a balanced and sustainable approach to power generation within the municipality. Extending the reach of renewable energy, residential areas on the outskirts will feature smaller PV installations. These decentralized systems, totaling 20 kW and producing 25 MWh/y annually, aim to provide clean energy to suburban homes, fostering a widespread adoption of sustainable practices. The Municipality of Levico Terme is also thinking about the possibility to integrate the system with a micro hydroelectric plant but there is not yet a real plan about this and it is not clear if this is easy in terms of concession for the use of public water.

A pivotal player in this initiative is a local Energy Service Company (ESCO), collaborating closely with the community. The ESCO's role is integral, particularly in realizing the ambitious 80 kW PV plant atop the disused school building. This collaboration underscores the cooperative spirit driving the project forward. Notably, the overarching objective of this energy community is not merely environmental sustainability but also social impact.

The creation of an energy income stream is envisioned as a proactive measure to combat energy poverty within Levico Terme. This forward-thinking approach aligns economic benefits with ecological responsibility, demonstrating a commitment to holistic community development.

One intriguing aspect of this energy community is its conscientious effort to mitigate the visual impact of renewable energy installations on the landscape. By strategically choosing large public and industrial/commercial roofs for solar installations, the project aims to strike a balance between meeting energy needs and preserving the aesthetic integrity of historical buildings. This innovative configuration reflects a commitment to sustainable development that is considerate of both environmental and cultural sensitivities.

One of the critical points of this energy community project is that there are already several other energy community projects under the same primary cabin. Limiting the area to just the Municipality of Levico Terme is probably counterproductive because there is a risk of not having enough consumers/prosumers/producers and members to make the initiative economically sustainable. Secondly, having other similar initiatives at very close distances (less than 10 km) could compromise the success of the REC. Finally, the Municipality initially thought of joining the Energy Community directly as a partner. Through the ECOEMPOWER project, the Municipality is being helped to assess the best situation and to foster dialogue with neighboring territories and nascent Energy Communities.

In this case, there is a lack of data in the considered pilot site because there is neither an operational energy community nor applicable baseline scenarios with good reliability. That is why it is important to monitor the performance of these pilot sites in the subsequent stages of WP6 for the creation and monitoring of energy community data.

### 3.1.3.3 RE1.3 – Valle dei Laghi

*Figure 3.3 – Area of "Valle dei Laghi" pilot site*

The Valle dei Laghi Energy Community is a visionary project, currently supported by 20 members (citizens, small enterprises, associations), situated in the heart of Trentino, Italy. Covering the municipalities of Cavedine, Madruzzo, and Vallelaghi, this initiative aims to unite approximately 11,000 inhabitants in a collective effort towards energy sustainability and independence.

The valley, renowned for its natural beauty, hosts a variety of lakes, biotopes, and Sites of Community Importance, along with the impressive Paganella-Gazza mountain range and Mount Bondone.

Initially, the three administrations of the Valle dei Laghi municipalities (Valle dai Laghi, Cavedine and Madruzzo) were involved in the ECOEMPOWER project. It was they, with the support of the Valley Community (a supra-municipal body that unites all the municipalities in an area), who promoted the creation of a Renewable Energy Community. However, recently, a group of entrepreneurs and citizens started an initiative to establish a REC in the Valle dei Laghi. Through ECOEMPOWER, an attempt is being made to govern the relationship between municipal administrations and this spontaneous initiative. Municipalities do not wish to officially participate as members in the Energy Community, preferring to directly activate other initiatives to valorize their energy assets (a new modality similar to Energy Communities called 'self-consumption elsewhere') because it is easier to set up (each municipality its own) and does not affect the rules of the REC, which can then act as a private entity. Their role thus becomes that of external actors promoting and supporting the development of private RECs. ECOEMPOWER will try to hold these two parts together, addressing the issue of shared renewable energy in the Valle dei Laghi as a whole.

The core objective of the Energy Community is social in nature, with a primary focus on achieving energy independence through sustainable development principles. The plan involves integrating new photovoltaic (PV)

plants on public buildings, schools, and industrial structures. Furthermore, the project envisions the creation of biogas plants to generate electricity from agricultural and livestock waste. In this moment there is not yet individuate an area to install a PV plant, but the REC is working for reaching almost 200 kW of PV (with an estimated production of 200 MWh/year). At this time there is not a concrete project about biogas, or other sources and it could be difficult to create this type of plant within ECOEMPOWER project.

Through collaborative efforts involving local municipalities, enterprises, and citizens, the Energy Community endeavors to create a self-sustaining ecosystem that reduces reliance on external energy sources. This comprehensive strategy aligns with global sustainability goals and sets a noteworthy example for other regions seeking to combine environmental conservation with community development.

In this case, there is a lack of data in the considered pilot site because there is neither an operational energy community nor applicable baseline scenarios with good reliability. That is why it is important to monitor the performance of these pilot sites in the subsequent stages of WP6 for the creation and monitoring of energy community data.

## 3.2 Regional Ecosystem #2 (RE2): Auvergne-Rhone-Alpes and Grand Est (FRANCE)

### 3.2.1 Description of Regional Ecosystem

The focus of the ECOEMPOWER project is the Centrales Villageoises' network[10] in France, a nationwide initiative with significant implementation in the Auvergne-Rhône-Alpes region (about 8 million inhabitants in the region, of which about 1.9 million residents reside in the areas covered by the local companies of Centrales Villageoises) and Grand Est region (about 5.5 million inhabitants in the region, of which about 200,000 inhabitants live in the areas covered by the local companies of Centrales Villageoises), specifically chosen as focus regions. Centrales Villageoises are local companies formed by citizens, municipalities, and local businesses, aiming to develop renewable energy and energy efficiency projects at a territorial scale, considering local factors such as landscape integration and social and economic development. The concept originated from an experimental phase (2010-2014) led by the regional energy agency of Auvergne-Rhône-Alpes, involving eight pilot sites. This initiative evolved into the establishment of local citizen-owned companies financing photovoltaic projects. The success led to the consolidation of technical and legal frameworks, facilitating the replication of the Centrales Villageoises model on other sites. In 2018, the Association Centrales Villageoises (ACV) was created to further develop the network, now comprising 68 local companies. These entities have successfully developed more than 475 photovoltaic power plants on roofs (10 MWp installed power, 12.0 GWh/y produced in 2023), with ongoing studies for other types of renewable energy projects such as micro hydroelectricity and wind energy. Historically, the regional agency AURA-EE (Auvergne-Rhône-Alpes Énergie Environnement) has been supporting the creation and development of the model of Centrales Villageoises. Since 2018, with the creation of the Association Centrrales Villageoises, the regional authority is not anymore involved in the project. However, AURA-EE is still supporting the association through a parternship in which an employee from their organization is working part time for the association. This regional program, initiated in 2010, has resulted in the creation of 68 local energy communities across multiple French regions, involving more than 7,000 shareholders. To support the expansion of the program, ACV serves as an OSS, coordinating the efforts of local energy communities implementing the Centrales Villageoises model. ACV receives support from regional public authorities, including Grand Est, Provence-Alpes-Côte d'Azur and Bretagne (in addition to Auvergne-Rhône-Alpes), as well as organizations like Foundation Terre Solidaire, Fondation Crédit Mutuel Alliance Fédérale and Energie Partagée.

In ECOEMPOWER, three pilot sites from the Centrales Villageoises' network were identified. These sites, with varying degrees of maturity, are working on innovative renewable energy projects, complementing the development of rooftop photovoltaic projects.

The roles within ECOEMPOWER include AURA-EE focusing on sharing its experience, leading specific work packages, and supporting replication activities, while ACV coordinates further development of the "One Stop Shop CV model" accompanies pilot sites, and facilitates replication in other French regions and beyond. The

[10] Centrales Villageoises website (https://www.centralesvillageoises.fr/centrales-villageoises-local-citizen-owned-energy-communities)

objective is to expand services in areas such as financing, local employment, social engagement, and the development of new renewable energy projects.

### 3.2.2 OSS evaluation

The Association Centrales Villageoises (ACV) plays a crucial role as the OSS in the French regional ecosystem (focused on Auvergne-Rhône-Alpes and Grand Est regions within ECOEMPOWER but acting nationally). Established with the aim of supporting the development of local energy communities, ACV serves as a vital resource, facilitating the creation of citizen-owned Renewable Energy Sources (RES) projects. This framework has enabled the successful replication of the concept across various sites. ACV is currently actively providing a comprehensive set of tools and services to its members. These include legal and business model support, technical assistance, communication tools, and various databases. ACV's toolkit[11] comprises approximately 150 tools tailored to guide local energy communities through different project phases. The services extend to virtual platforms, such as personalized websites, forums for experience sharing, and virtual storage spaces. Additionally, ACV conducts training sessions on legal, financial, and technical aspects, reinforcing the capabilities of local companies.

As of now (January 2024), ACV boasts a membership of 68 energy communities, totaling around 500 direct users, so people actively involved in the ECs. The OSS services are actively utilized, evident in the 7,900 website visits from 5,070 users within a year (2023)[12]. The number of direct users is complemented by an additional 135 participants in training sessions and 650 information requests handled by ACV staff in 2023. Several citizen groups, embodying the Centrales Villageoises model, have successfully navigated the process of creating energy communities with ACV's support. A notable example is the Centrales Villageoises Energies Coeur de Corrèze, which initiated its journey with ACV in 2020, officially joining the network, establishing a legal entity, and commissioning a PV plant by June 2023. ACV envisions a proactive approach to enhance communication and volunteer mobilization within the network. This involves developing tools and training programs to boost the visibility of local companies, facilitate volunteer governance, and support the creation of employment opportunities within local companies. Additionally, ACV aims to refine tools for business plan analysis and further develop services for different types of RES projects. ACV recognizes the value in empowering local companies through enhanced communication and volunteer engagement. The organization aims to facilitate the transition from volunteer management to paid employment, fostering sustainability and growth. The emphasis is not only on technical aspects but also on governance, citizen engagement, and participatory decision-making processes. In essence, the OSS, represented by ACV in the Centrales Villageoises' network, stands as a dynamic and multifaceted resource, actively contributing to the development and sustainability of local energy communities in the French regions. The ongoing efforts focus on adaptability and continuous improvement to meet the evolving needs of its diverse membership.

[11] Website page where some tools can be found among the public ones (https://centralesvillageoises.fr/emergence)

[12] ACV website link: https://www.centralesvillageoises.fr/

### 3.2.3 EC data acquisition and qualitative assessment

The ECOEMPOWER project consolidates and promotes the deployment of these innovative initiatives, which are a credible alternative to traditional renewable energy projects. Three remarkable pilot sites—Centrales Villageoises Eau et Soleil du Lac, Centrales Villageoises VercorSoleiL, and Centrales Villageoises de Vezouze en Piémont—stand as beacons of change, embodying a commitment to sustainable practices, community engagement, and environmental stewardship.

All local companies within the Centrales Villageoises network share a cooperative governance model. The General Assembly, where each individual holds one vote, consists mainly of citizens, ensuring their majority representation. The General Assembly is responsible for electing the Management Board, which, in turn, elects the President responsible for the company's legal aspects. As regard to the regulatory framework, the Centrales Villageoises model falls under the definition of Renewable Energy Communities (decree from December 26$^{th}$ 2023). No specific incentives exist yet for energy communities within the regional ecosystem, as the regulatory framework is very recent. The pilot sites contribute to the broader goal of becoming key players in their respective territories, actively participating in the fight against climate change. Each site showcases unique technical specifications, objectives, and challenges, reflecting the diverse approaches and contexts of the Centrales Villageoises network.

In essence, these pilot sites exemplify the transformative power of community-driven initiatives, propelling France toward a future powered by renewable energy, economic resilience, and environmental sustainability. The diverse goals of each pilot site collectively contribute to the overarching mission of the ECOEMPOWER project, marking a paradigm shift in the nation's energy narrative.

This section defines all the data for the composition and evaluation of the baseline at the different pilot sites, both from a numerical point of view for the comparison of values with subsequent project steps to define the added value, and from a more qualitative point of view to assess the maturity of an energy community. Individual pilot sites in the corresponding region will be presented below.

### 3.2.3.1 RE2.1 - Centrales Villageoises Eau et Soleil du Lac

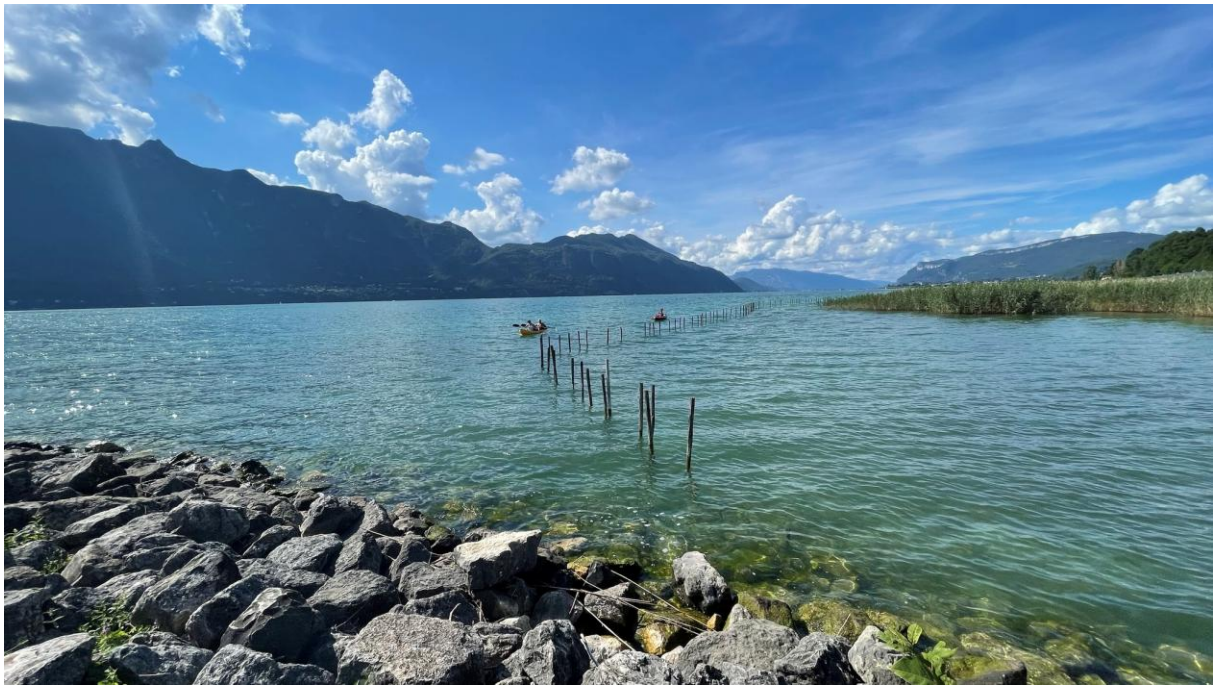

*Figure 3.4 – Area of Centrales Villageoises Eau et Soleil du Lac pilot site*

Centrales Villageoises Eau et Soleil du Lac is a legally established energy community, adopting the SAS ("Sociétés par Actions Simplifiées" – joint-stock companies) structure since 2022. The community is operational, marked by the successful commencement of its first PV plant, with an installed capacity of 24.6 kWp (annual production: 30 MWh/y), in March 2023. Ongoing projects include the development of two additional rooftop PV plants (35.7 kWp and 102 kWp, total annual production expected: 150 MWh/y), and a hydropower project with an estimated capacity of 200 kW (annual production expected: 600 MWh/y). The primary scope of this energy community is to undertake initiatives favoring the energy transition within the territory of the "Grand Lac" community of communes (64 000 inhabitants). With a commitment to uniting citizens and local authorities, Eau et Soleil du Lac aims to boost the energy transition in the region. Looking forward, Eau et Soleil du Lac aims to broaden its membership to encompass citizens, local municipalities, and SMEs.

Below in Table 3.1, Table 3.2, Table 3.3 and Table 3.4 are entered all the parameters from the social, energy, economic and environmental point of view within the pilot site, respectively.

*Table 3.1 – Input request for evaluation of social parameters - Centrales Villageoises Eau et Soleil du Lac*

| Social data | Value | Unit of measure |
|---|---|---|
| Number of citizen-led initiatives supported and/or created | 1 | [#] |
| Number of citizens taking part in energy communities | 41 | [#] |
| Number of actors with increased skills in the area of community energy | 0 | [#] |
| Number of jobs created | 0 direct job<br>0.2 indirect job | [FTE] |
| Number of people participating workshops | 0 | [#] |
| Diversity in the distribution of people involved in the EC | 30% of women<br>17 % of people under 40 | [%] |

*Table 3.2 – Input request for evaluation of energy parameters - Centrales Villageoises Eau et Soleil du Lac*

| Energy data | Value | Unit of measure |
|---|---|---|
| Primary energy demand | 0.17 | [GWh/year] |
| Final energy demand | 0.12 | [GWh/year] |
| Renewable energy generation | 0.023 | [GWh/year] |
| RES electricity self-consumption | 0 | [%] |
| Flexibility – Storage size and capacity | 0 | [kW and kWh] |

*Table 3.3 – Input request for evaluation of Economic parameters - Centrales Villageoises Eau et Soleil du Lac*

| Economic data | Value | Unit of measure |
|---|---|---|
| Investments in sustainable energy | 0.03 | [M€] |
| Development of local community energy investment pipelines | 0.03 | [M€] |
| Public investment | 1,740 | [€] |
| Private investment | 28,260 | [€] |
| Average cost of electricity (from electricity bill) | 0.1907 | [€/kWh] |

*Table 3.4 – Input request for evaluation of environmental parameters - Centrales Villageoises Eau et Soleil du Lac*

| Environmental data | Value | Unit of measure |
|---|---|---|
| Reduction of GHG emissions | 1.18 | [tonCO2/year] |

### 3.2.3.2 RE2.2 – Centrales Villageoises VercorSoleiL

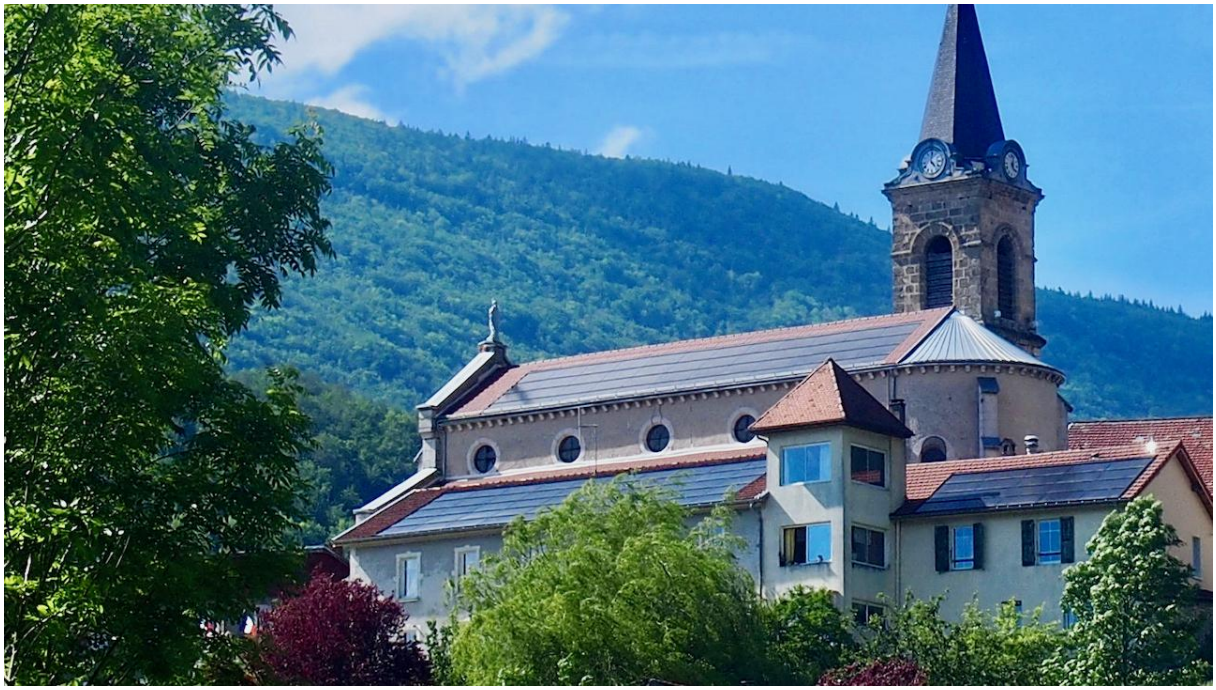

*Figure 3.5 – Area of Centrales Villageoises VercorSoleiL pilot site*

Centrales Villageoises VercorSoleiL, established as a SAS (“Sociétés par Actions Simplifiées” – joint-stock companies) since 2015, is an operational energy community currently managing 29 PV plants. This cooperative involves 137 local citizens, municipalities, and SMEs. The community's primary focus lies in promoting the energy transition within the "Vercors Drômois" territory (2,382 inhabitants). VercorSoleiL has set ambitious goals, including surpassing the 1 MWp (1.2 GWh/year of annual production) installed threshold for photovoltaic production. In addition to its core energy activities, VercorSoleiL has ventured into innovative initiatives such as a local e-mobility service, offering a shared electric vehicle to village residents. Future projects include a new 150 kW PV project (annual production expected: 200 MWh/y), a collective self-consumption endeavor (28 kW of PV plant without storage, connected to e-mobility), and exploration into hydropower and wind projects. For example, they aim to develop collective self-consumption, and explore the incorporation of a potential hydroelectric project of 250 kW (annual production expected: 700 MWh/y). However, challenges have been encountered in launching a pre-established wind energy project of 2.4 MWp (annual production of about 5 GWh/year), attributed to funding issues and difficulties with local authorities.

The current RES annual production for this site is 510.7 MWh/y, with an RES sizing of 469 kWp. The community places a strong emphasis on citizen engagement, social aspects, shared governance, and effective communication, embodying a holistic approach to sustainable energy practices.

Below in Table 3.5, Table 3.6, Table 3.7 and Table 3.8 are entered all the parameters from the social, energy, economic and environmental point of view within the pilot site, respectively.

*Table 3.5 – Input request for evaluation of social parameters - Centrales Villageoises VercorSoleiL*

| Social data | Value | Unit of measure |
|---|---|---|
| Number of citizen-led initiatives supported and/or created | 1 | [#] |
| Number of citizens taking part in energy communities | 139 citizens (and 8 municipalities, and 2 SMEs) | [#] |
| Number of actors with increased skills in the area of community energy | 0 | [#] |
| Number of jobs created | 0.4 directly<br>5.6 indirectly | [FTE] |
| Number of people participating workshops | 15 | [#] |
| Diversity in the distribution of people involved in the EC | 47% of women<br>33% of people under 40 | [%] |

*Table 3.6 – Input request for evaluation of energy parameters - Centrales Villageoises VercorSoleiL*

| Energy data | Value | Unit of measure |
|---|---|---|
| Primary energy demand | 0.60 | [GWh/year] |
| Final energy demand | 0.44 | [GWh/year] |
| Renewable energy generation | 0.51 | [GWh/year] |
| RES electricity self-consumption | 0 | [%] |
| Flexibility – Storage size and capacity | 0 | [kW and kWh] |

*Table 3.7 – Input request for evaluation of Economic parameters - Centrales Villageoises VercorSoleiL*

| Economic data | Value | Unit of measure |
|---|---|---|
| Investments in sustainable energy | 0.8 | [M€] |
| Development of local community energy investment pipelines | 0.8 | [M€] |
| Public investment | 128,580 | [€] |
| Private investment | 671,420 | [€] |
| Average cost of electricity (from electricity bill) | 0.1907 | [€/kWh] |

*Table 3.8 – Input request for evaluation of environmental parameters - Centrales Villageoises VercorSoleiL*

| Environmental data | Value | Unit of measure |
|---|---|---|
| Reduction of GHG emissions | 26.1 | [tonCO2/year] |

### 3.2.3.3 RE2.3 - Centrales Villageoises de Vezouze-en-Piemont

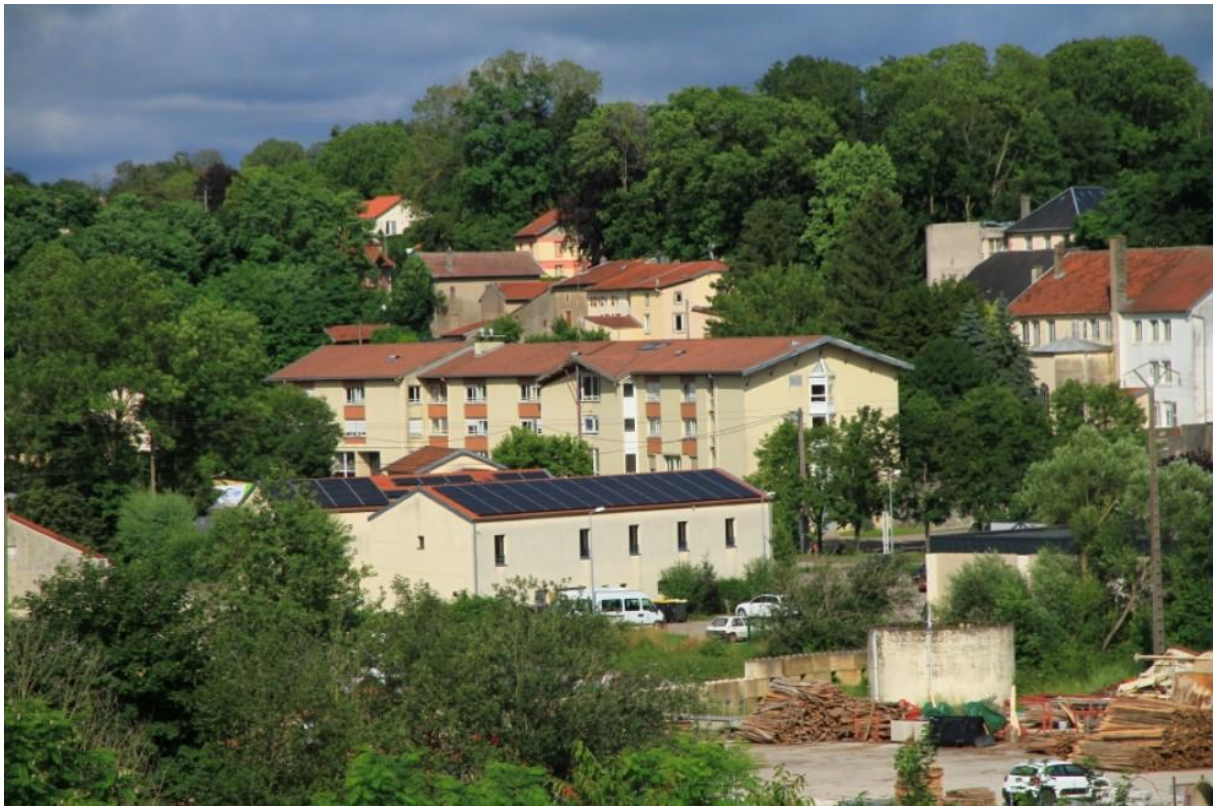

*Figure 3.6 – Area of Centrales Villageoises de Vezouze-en-Piemont pilot site*

Centrales Villageoises de Vezouze en Piémont, established as a SAS ("Sociétés par Actions Simplifiées" – joint-stock companies) in 2019 across the grouping of municipalities of Vezouze-en-Piémont in Grand Est region (11,947 inhabitants), stands as an operational energy community with 10 PV plants with a cumulative installed RES capacity of 410 kWp, with an annual RES production of 446.2 MWh/year. Future objectives include the installation of new photovoltaic plants in 2024, promoting local electricity harnessing through collective self-consumption. Collaborative efforts with a local partner are underway for the co-development of a ground-based photovoltaic park (5 MWp, annual expected production: 5 GWh/year), part of a more extensive, longer-term project. Envisioning the future, the community delves into collective self-consumption initiatives through collaborations with local distribution system operators (DSOs), municipalities, companies, and citizens. Central to its mission are citizen involvement, social engagement, shared governance, and participatory decision-making processes. The community is dedicated to sustainable practices, fostering collaboration for a resilient and eco-friendly future.

Below in Table 3.9, Table 3.10, Table 3.11 and Table 3.12 are entered all the parameters from the social, energy, economic and environmental point of view within the pilot site, respectively.

*Table 3.9 – Input request for evaluation of social parameters - Centrales Villageoises de Vezouze-en-Piemont*

| Social data | Value | Unit of measure |
|---|---|---|
| Number of citizen-led initiatives supported and/or created | 1 | [#] |
| Number of citizens taking part in energy communities | 67 | [#] |
| Number of actors with increased skills in the area of community energy | 0 | [#] |
| Number of jobs created | 0 directly<br>3.85 indirectly | [FTE] |
| Number of people participating workshops | 0 | [#] |
| Diversity in the distribution of people involved in the EC | 31% of people under 40<br>34% of women | [%] |

*Table 3.10 – Input request for evaluation of energy parameters - Centrales Villageoises de Vezouze-en-Piemont*

| Energy data | Value | Unit of measure |
|---|---|---|
| Primary energy demand | 0.23 | [GWh/year] |
| Final energy demand | 0.17 | [GWh/year] |
| Renewable energy generation | 0.45 | [GWh/year] |
| RES electricity self-consumption | 0 | [%] |
| Flexibility – Storage size and capacity | 0 | [kW and kWh] |

*Table 3.11 – Input request for evaluation of Economic parameters - Centrales Villageoises de Vezouze-en-Piemont*

| Economic data | Value | Unit of measure |
|---|---|---|
| Investments in sustainable energy | 0.55 | [M€] |
| Development of local community energy investment pipelines | 0.55 | [M€] |
| Public investment | 120,780 | [€] |
| Private investment | 429,220 | [€] |
| Average cost of electricity (from electricity bill) | 0.1907 | [€/kWh] |

*Table 3.12 – Input request for evaluation of environmental parameters - Centrales Villageoises de Vezouze-en-Piemont*

| Environmental data | Value | Unit of measure |
|---|---|---|
| Reduction of GHG emissions | 22.8 | [tonCO2/year] |

## 3.3 Regional Ecosystem #3 (RE3): Allgau (GERMANY)

### 3.3.1 Description of Regional Ecosystem

Situated in Southern Germany, the expansive Allgäu region spans the districts of Oberallgäu, Ostallgäu, Unterallgäu, and Lindau, covering an extensive 4,600 square kilometers. Home to a population of 650,000 residents, Allgäu distinguishes itself not only for its geographical significance but also for its noteworthy advancements in sustainable living.

The region has positioned itself at the forefront of the energy transition movement, exemplified by the internationally acclaimed energy village of Wildpoldsried. Allgäu's dedication to environmental stewardship is evident in its pristine landscapes, attracting both national and international visitors seeking refuge in nature.

Beyond its aesthetic appeal, Allgäu boasts a thriving economy and hosts a sophisticated high-tech industry, particularly in the realm of renewable facilities and infrastructure. The energy landscape is diverse, encompassing major entities such as LEW (affiliated with E.ON) alongside numerous small, municipality-owned utilities. Even modest "Energiegenossenschaften" (energy cooperatives) have established successful operations in the region, underscoring the depth of community engagement.

Renewable energy sources constitute the backbone of Allgäu's energy profile. Solar energy takes precedence, adorning rooftops and fields, while wind power, biogas, and hydropower play integral roles in the region's sustainable energy framework. This commitment to renewables is deeply ingrained in the region's history, with Allgäu being the birthplace of pioneering energy community initiatives, such as Hindelang.

Driving Allgäu's sustainable initiatives is eza! (Energy and Environmental Centre Allgäu)[13], the regional energy agency. Comprising a team of approximately 40 experts across various disciplines related to sustainable energy management, eza! serves as a pivotal force, offering support to local authorities, municipalities, and energy utilities. The agency actively engages with educational institutions, instilling the principles of the energy transition in schools and spearheading initiatives like Bündnis Klimaneutrales Allgäu 2030 (Allgäu Climate-Neutral Alliance).

In a collaborative effort with B.A.U.M., eza! envisions the establishment of a regional OSS. This comprehensive institution aims to facilitate a seamless transition for municipalities, enterprises, and other regional stakeholders looking to embrace energy cooperatives and citizen-led renewable energy communities. The OSS will amalgamate expertise in motivation, capacity building, initiation, energy management, financing, legal affairs, and social dynamics, consolidating these services into a singular, comprehensive hub.

In essence, Allgäu transcends its geographical boundaries, standing as a testament to the harmonious fusion of tradition, innovation, and an unwavering commitment to a sustainable future. With its breathtaking landscapes, robust economy, and a community-oriented approach to the energy transition, Allgäu emerges as an exemplar of successful integration of renewable living principles.

[13] eza! Website: https://www.eza-allgaeu.de/

### 3.3.2 OSS evaluation

In the dynamic landscape of southern Germany's Allgäu region, a transformative initiative is taking shape with the inception of a groundbreaking OSS. Spearheaded by the Energy and Environment Centre Allgäu (eza!) in Kempten Allgäu, the OSS is a pivotal outcome of the ambitious ECOEMPOWER project. Currently the OSS is in the process of being created and aims to redefine the local energy narrative, offering a comprehensive suite of services tailored to the unique needs of energy communities. Unlike the existing energy agency model at eza!, the OSS is a dedicated effort geared specifically towards advising and supporting energy communities. At this juncture, the OSS remains a planned entity, with its development unfolding in tandem with the progression of the ECOEMPOWER project.

The envisioned OSS is poised to fill a critical void in the region's energy ecosystem. Prior to the ECOEMPOWER initiative, there were no concrete plans for such an institution. The project has provided the impetus for not only planning but also implementing an OSS, marking a significant shift in the region's approach to sustainable energy practices.

As the OSS evolves, it is expected to offer a spectrum of services. These span from raising awareness about the potentials and benefits of energy communities to providing detailed information to citizens and stakeholders. Moreover, the OSS will play a crucial role in assisting stakeholders in analyzing motivations and expectations, establishing technical feasibility and viability, and offering insights into funding opportunities and legal aspects.

The development of the OSS is a testament to the region's commitment to community-driven renewable energy initiatives. While specific services are yet to be fully outlined, the OSS is anticipated to provide support in developing business models, aiding capacity building, and offering technical guidance. This includes orientation on market-available technologies, supporting community engagement, and fostering collaborative networks among local actors.

As the OSS progresses towards full operation, it will become a central hub for the continuous evaluation of results achieved by energy communities. Monitoring the growth in the number of citizens involved, the increase in renewable energy production capacity, and adaptation to evolving regulatory aspects will be integral to its function.

Currently, there are no users utilizing OSS services, as it is still in the planning stage. However, the envisioned OSS at eza! is poised to become a focal point for citizens, stakeholders, and local authorities seeking guidance on energy community initiatives. As the OSS develops, opportunities may arise for users to share experiences and insights, contributing to the refinement and enhancement of services.

In conclusion, the emergence of the OSS in Allgäu reflects a strategic response to the region's commitment to sustainable energy practices and community engagement. The collaboration with ECOEMPOWER is set to bring about transformative changes, providing a centralized hub for expertise, support, and collaboration in the pursuit of renewable and community-driven energy initiatives.

### 3.3.3 EC data acquisition and qualitative assessment

In the region the focus of ECOEMPOWER project will be on three different pilot sites: Elektrizitätswerke Hindelang eG, Elektrizitätswerke Reutte, Dorfenergie eG Eppishausen.

In the regulatory realm, Germany's regulatory framework, as outlined by REScoop, reveals both progress and challenges. Amendments to the EEG (‘Erneuerbare Energien Gesetz’) in 2022 exhibit positive strides, reintroducing exemptions for 'citizen energy companies' from tender requirements. Strengthening definitions for renewable energy projects owned by these citizen-driven entities present a significant leap forward. However, gaps persist, necessitating further developments in creating an enabling framework and facilitating energy sharing among ECs.

As we delve deeper into the governance structures of these energy communities, Elektrizitätswerke Hindelang eG boasts a robust framework with a dedicated Management Board and Supervisory Board. Elektrizitätswerke Reutte is currently in the organizational phase, while Dorfenergie eG Eppishausen operates with an honorary board, supervisory board, and a substantial membership base.

This section defines all the data for the composition and evaluation of the baseline at the different pilot sites, both from a numerical point of view for the comparison of values with subsequent project steps to define the added value, and from a more qualitative point of view to assess the maturity of an energy community. Individual pilot sites in the corresponding region will be presented below.

#### 3.3.3.1 RE3.1 - Elektrizitätswerke Hindelang eG

*Figure 3.7 – Area of "Elektrizitätswerke Hindelang eG" pilot site*

Established in the 1920s by 48 visionary citizens in the Ostrachtal valley (5,000 inhabitants), Elektrizitätswerke Hindelang eG is a cooperative at the forefront of community-driven sustainable energy initiatives in Germany's Oberallgäu region. Despite economic challenges, the cooperative's founders embarked on a mission to provide electricity to the local community, resulting in the construction of the Auele hydroelectric power plant in 1926 and the development of an electricity distribution network. Operating under a cooperative legal structure, Elektrizitätswerke Hindelang enjoys unwavering support from the municipality of Bad Hindelang (5,000 inhabitants). The cooperative's energy portfolio encompasses hydroelectric and solar power, electricity import and trade, as well as active involvement in the local power grid. Notable power capacities include the 1,100 kW hydro plant at Auele (annual production of 4 GWh/y), a 95 kW hydro plant at Gernbach (annual production of 300 MWh/y) and various photovoltaic installations totaling 193 kW on rooftops (annual production of 160 MWh/y). Elektrizitätswerke Hindelang is also a prominent player in the energy transition, holding a leading role in motivating other energy providers and municipalities in the region. Additionally, the cooperative contributes to sustainable mobility with five electric vehicle charging structures (each of 22 kW). Beyond energy, Elektrizitätswerke Hindelang is a key employer in the region (with 16 employees), contributing significantly to the local economy and actively participating in regional projects like the DECIDE[14] project initiative with BAUM, underscoring its commitment to driving sustainable energy transitions.

[14] DECIDE project website: https://decide4energy.eu/

Below in Table 3.13, Table 3.14, Table 3.15 and Table 3.16 are entered all the parameters from the social, energy, economic and environmental point of view within the pilot site, respectively.

*Table 3.13 – Input request for evaluation of social parameters - Elektrizitätswerke Hindelang eG*

| Social data | Value | Unit of measure |
|---|---|---|
| Number of citizen-led initiatives supported and/or created | 1 | [#] |
| Number of citizens taking part in energy communities | 330 citizens and 20 SMEs are members of the cooperative | [#] |
| Number of actors with increased skills in the area of community energy | 0 | [#] |
| Number of jobs created | 16 | [FTE] |
| Number of people participating workshops | 0 | [#] |
| Diversity in the distribution of people involved in the EC | 30% women,<br>5% under 40y | [%] |

*Table 3.14 – Input request for evaluation of energy parameters - Elektrizitätswerke Hindelang eG*

| Energy data | Value | Unit of measure |
|---|---|---|
| Primary energy demand | N/A | [GWh/year] |
| Final energy demand | 17.9 | [GWh/year] |
| Renewable energy generation | 4.46 | [GWh/year] |
| RES electricity self-consumption | 0 | [%] |
| Flexibility – Storage size and capacity | 500,000 (dam "Schrecksee") | [kWh] |

*Table 3.15 – Input request for evaluation of Economic parameters - Elektrizitätswerke Hindelang eG*

| Economic data | Value | Unit of measure |
|---|---|---|
| Investments in sustainable energy | N/A | [M€] |
| Development of local community energy investment pipelines | N/A | [M€] |
| Public investment | N/A | [€] |
| Private investment | N/A | [€] |
| Average cost of electricity (from electricity bill) | 0.34 | [€/kWh] |

*Table 3.16 – Input request for evaluation of environmental parameters - Elektrizitätswerke Hindelang eG*

| Environmental data | Value | Unit of measure |
|---|---|---|
| Reduction of GHG emissions | 1,387 | [tonCO2/year] |

### 3.3.3.2 RE3.2 - Elektrizitätswerke Reutte

*Figure 3.8 – Area of "Elektrizitätswerke Reutte" pilot site*

The region encompassing Altlandkreis Füssen, Seeg, and the city of Füssen, along with other municipalities (50,000 inhabitants) in the Ostallgäu county, is poised for a transformative initiative in sustainable energy development. At the heart of this endeavor is Elektrizitätswerke Reutte (EWR), an energy supply company with a century-long legacy, legally established as Elektrizitätswerke Reutte GmbH & Co. KG and owned by the Austrian municipality of Reutte. Currently operational, EWR is now venturing into a groundbreaking project – the formation of an energy community. This collaborative effort involves municipalities, farmers, hotels, and private initiatives, all keenly interested in establishing an energy community to redefine the energy landscape of the region. About 100 citizens are currently supporting the birth of the new energy community.

In terms of technical specifications, the Seeg municipality (3,000 inhabitants) emerges as a key player, with its primary renewable energy source being photovoltaic (PV) installations generating 15 MWh/year (about 20 kW of capacity). These PV systems are strategically positioned on rooftops and open rural spaces, showcasing the region's commitment to harnessing solar power.

EWR, as the main energy distributor, relies predominantly on hydroelectricity sourced from the Lech River (28,000 kW of capacity and 161,000 MWh/y of annual production). This underscores a commitment to clean and sustainable energy generation, aligning with the broader goals of the community.

Socially, the collaborative efforts are evident through entities such as the Seeg Working Group Energy (Arbeitskreis Energie) and the Tourism Association of Füssen, particularly its subgroup – the Climate Network of

Hotels (Tourismusverein Füssen im Allgäu e.V./Klimaverbund Hotels). This coalition represents a diverse range of stakeholders, including five hotels, a sporting arena, and two farms. They are at the forefront of initiating an energy cooperative aimed at facilitating the exchange of electricity.

The vision extends beyond the initial group, with the potential for this energy cooperative to expand its reach to encompass all 20 hotel members in the association. The community-driven aspect of this initiative is evident in the cooperative's collaborative structure, involving not only major players but also smaller entities, fostering a sense of shared responsibility and commitment to sustainable energy practices.

As part of the overarching objectives, the region aims to kickstart a new energy community primarily focused on electricity generation, with a predominant emphasis on PV plants and potential integration of wind energy. The comprehensive approach, blending technical advancements with community involvement, positions this region as a pioneer in sustainable energy initiatives.

In this case, there is a lack of data in the considered pilot site because there is neither an operational energy community nor applicable baseline scenarios with good reliability. That is why it is important to monitor the performance of these pilot sites in the subsequent stages of WP6 for the creation and monitoring of energy community data.

#### 3.3.3.3 RE3.3 - Dorfenergie eG


*Figure 3.9 – Area of "Dorfenergie eG" pilot site*

Eppishausen (2,000 inhabitants) and Kirchheim (2,500 inhabitants), nestled in the county of Unterallgäu, epitomize the essence of proactive and sustainable energy initiatives through their active participation in the energy cooperative, Dorfenergie eG (www.dorfenergie-eg.de) (RE3.2). The cooperative's primary goal is energy generation and self-supply for its members, emphasizing economic benefits within a framework of communal engagement.

Founded in 2010 and legally established, Dorfenergie eG operates as a beacon of renewable energy advancement, particularly in solar power. The cooperative operates with a robust focus on purchasing, installing, and maintaining facilities for renewable energy generation. Notably, the cooperative's portfolio includes solar systems, biomass extraction and processing, and the sale of generated energy in the form of electricity and/or heat. This multifaceted approach aligns with its commitment to both economic prosperity and environmental preservation.

Noteworthy solar installations include a 131 kWp PV rooftop in the Municipality of Eppishausen, a 17 kWp installation at the Haselbach community and club center, a 23 kWp system at the Kirchheim school gymnasium, and a substantial 426 kWp open space PV installation at the landfill Derndorf. In total, these installations contribute to an annual energy production of 653,000 kWh, utilized for both power and heating. Beyond the technical achievements, the cooperative actively engages citizens in the energy transition. Through comprehensive information campaigns and community involvement, the cooperative ensures that residents are well-informed about the economic yields and environmental benefits of self-organization within an energy cooperative framework. This grassroots approach has fostered a sense of community and collective responsibility among the citizens, creating a vibrant and sustainable ecosystem.

Dorfenergie eG extends its influence beyond its immediate members by providing consultation and support on renewable power supply issues to both members and third parties. Public relations efforts further amplify awareness on energy-related topics, reinforcing the cooperative's commitment to education and advocacy.

As the cooperative evolves, its objectives include ensuring self-supply and direct marketing after the 20 years of state feed-in remuneration (from 19 to 39 c€/kWh depending on size), adapting to legal developments. The cooperative's journey underscores the transformative power of community-led sustainable energy initiatives. With each solar panel and biomass facility, Eppishausen and Kirchheim set a precedent for a future where renewable energy and communal cooperation harmoniously coexist, paving the way for a more sustainable and resilient community.

*Below in Table 3.17, Table 3.18, Table 3.19 and*

Table 3.20 are entered all the parameters from the social, energy, economic and environmental point of view within the pilot site, respectively.

*Table 3.17 – Input request for evaluation of social parameters - Dorfenergie eG*

| **Social data** | **Value** | **Unit of measure** |
|---|---|---|
| Number of citizen-led initiatives supported and/or created | 1 | [#] |
| Number of citizens taking part in energy communities | 142 | [#] |
| Number of actors with increased skills in the area of community energy | 0 | [#] |
| Number of jobs created | 0 | [FTE] |
| Number of people participating workshops | 4 | [#] |
| Diversity in the distribution of people involved in the EC | Women 31%<br>Under 40y 20% | [%] |

*Table 3.18 – Input request for evaluation of energy parameters - Dorfenergie eG*

| Energy data | Value | Unit of measure |
|---|---|---|
| Primary energy demand | 0.409 | [GWh/year] |
| Final energy demand | 0.1704 | [GWh/year] |
| Renewable energy generation | 0.7 | [GWh/year] |
| RES electricity self-consumption | 0 | [%] |
| Flexibility – Storage size and capacity | 0 | [kW and kWh] |

*Table 3.19 – Input request for evaluation of Economic parameters - Dorfenergie eG*

| Economic data | Value | Unit of measure |
|---|---|---|
| Investments in sustainable energy | 1.2 | [M€] |
| Development of local community energy investment pipelines | 1.2 | [M€] |
| Public investment | 0 | [€] |
| Private investment | 1,200,000 | [€] |
| Average cost of electricity (from electricity bill) | 0.40 | [€/kWh] |

*Table 3.20 – Input request for evaluation of environmental parameters – Dorfenergie eG*

| Environmental data | Value | Unit of measure |
|---|---|---|
| Reduction of GHG emissions | 217.7 | [tonCO2/year] |

## 3.4 Regional Ecosystem #4 (RE4): Zlín Region (CZECH REPUBLIC)

### 3.4.1 Description of Regional Ecosystem

Located in the eastern part of the Czech Republic, the Zlín Region shares its border with Slovakia and covers 3,964 square kilometers, making it the fourth smallest of the country's regions. Despite its compact size, Zlín is home to a rich cultural heritage and a dynamic industrial landscape, with a population of 580,119 residents spread across 307 municipalities. Known for its industrial exploit, Zlín houses nearly 200 enterprises with over 100 employees each, ranking fifth among the 13 Czech regions. These enterprises reflect the region's legacy in sectors such as shoemaking, aviation, engineering, showcasing a blend of tradition and innovation.

In the middle of a varied landscape, the Zlín Region has embraced energy transformation with notable dedication, driven by its regional energy agency (EAZK). The region's territory, though limited in mineral resources, has valuable deposits of brick-clay, gravel sands, and building stone, as well as some modest discoveries of crude oil and natural gas. However, its high reliance on imported fossil fuels is evident: 93% of Zlín's municipalities are connected to the natural gas grid, underscoring the need for energy independence and local resiliency. To counter this dependence, the region is prioritizing local energy sharing models and community-based initiatives to shift toward renewables.

A keystone of Zlín's energy strategy is the rapid development of energy communities, part of a nationwide movement within the Czech Republic. Leading this transition is the Energy Data Center (EDC), which launched in August 2024 to support data-driven energy management and optimization across the country. The EDC serves as a critical infrastructure component for energy communities, facilitating transparency and efficiency in energy use, and fostering collaboration among municipalities, residents, and industries.

Currently, EAZK is planning three energy communities within the Zlín Region, focusing on creating a resilient and decentralized energy model. By establishing local networks that allow energy sharing among nearby consumers, these communities aim to significantly reduce dependency on imported energy sources. The agency is working closely with stakeholders across sectors to support this initiative, addressing not only technical and financial needs but also building capacity and promoting community engagement in sustainable practices.

The establishment of energy communities aligns with Zlín's commitment to sustainable growth and local empowerment. EAZK also collaborates with educational institutions, spreading awareness of energy transformation goals and providing expertise in areas such as energy management, legal frameworks, and financing options.

The Zlín Region exemplifies a balanced integration of industrial legacy and forward-thinking sustainability. Its concerted efforts toward energy self-sufficiency and community-driven renewable initiatives highlight the region's potential as a model for sustainable energy practices in Eastern Europe.

### 3.4.2 OSS evaluation

The One Stop Shop (OSS) in the region, currently operated by EAZK, primarily provides physical services for building refurbishment of public buildings, assistance with energy suppliers, and the development of renewable energy sources (RES).

While OSS has been active in offering consultations, approximately 150 per year for building refurbishment, 100 for grants and subsidies, and 200 for RES development, it is primarily focused on municipalities seeking to reduce energy demand through refurbishment and adopt RES, spurred by EU subsidies popularized over the last five years. The service is evenly split between physical (in-person) and virtual (email or phone) consultations, with municipalities expressing high satisfaction due to the comprehensive support provided, particularly with navigating subsidies and addressing bureaucratic challenges. However, the creation of an OSS specifically dedicated to energy communities was not previously planned and remains absent, placing the region in the pre-development phase for energy community-related OSS services.

While current users value the complex information and support offered, there is a clear gap in services tailored to energy communities, which is why the ECOEMPOWER project is critical to developing this capacity. Stakeholders recognize the potential value in expanding OSS functionalities, although they note that the concept of OSS is still relatively new and evolving, presenting challenges in implementing innovative features and capabilities. The development of an energy community OSS would significantly enhance the regional ecosystem, addressing unmet needs and aligning with the growing interest in sustainable energy solutions.

### 3.4.3 EC data acquisition and qualitative assessment

The Zlín Region, located in the eastern part of the Czech Republic, covers an area of 3,964 km² and is home to 580,119 inhabitants (2021) spread across 307 local authorities. The limited availability of natural resources and the ongoing energy crisis underline the urgency of transitioning to local renewable energy sources and energy-sharing models. To address this, the regional energy agency (EAZK) has initiated the development of three pilot Energy Communities as part of a broader strategy to enhance energy resilience and sustainability.

The three pilot sites—Vlčnov, Slavičín, and Zlín—exemplify diverse approaches to community energy. In Vlčnov, the municipality manages a PV system with an installed capacity of 221.4 kW, supplying approximately 222 MWh annually. These systems, located on municipal buildings such as the local swimming pool, operate on a low-voltage grid (400V) but currently lack battery storage. Slavičín integrates a 139.5 kW PV installation with a 129.75 kWh battery and an established District Heating Network (DHN) powered by wood chips, cogeneration units, and heat pumps. The municipality's progressive approach has earned national recognition, and plans include the integration of additional renewable technologies, such as bladeless wind turbines. In Zlín, the regional capital with 74,835 inhabitants, a municipally owned company, "Teplo Zlín," is leading the development of a robust EC. Initial PV installations of 100 kW are planned, with a long-term goal of over 2 MW. Zlín's initiative aims to foster collaboration among eight city entities and other stakeholders to ensure affordable energy for the community.

Governance across these ECs reflects a strong municipal foundation, with local authorities or municipally owned companies overseeing operations. In Vlčnov, the municipality acts as the "active consumer." In Slavičín, the company BTH Slavičín manages EC development, while in Zlín, Teplo Zlín drives the project. These governance structures provide stability but require enhanced public engagement and professional expertise to maximize their potential.

Central to these pilots is the role of the Energy Data Center (EDC), operational since 2024, which facilitates real-time data collection and electricity sharing within registered consumption and production groups. EDC enables quarter-hourly data granularity, essential for monitoring and optimizing energy flows across all three sites. However, metering infrastructure remains inconsistent, with only partial coverage of smart meters, particularly on the consumption side in Slavičín and Zlín.

Regulatory advancements, particularly the amendment to the Energy Act known as Lex OZE II (effective January 2024), have provided a framework for energy communities in the Czech Republic. The amendment allows electricity sharing across distribution networks, with mandatory registration of consumption points and production facilities in the EDC. While this regulatory progress is promising, challenges remain, including low public engagement, insufficient stakeholder commitment, a lack of skilled energy professionals, and limited support from regulatory bodies like the Energy Regulatory Office and EDC.

Addressing these barriers will be critical to unlocking the full potential of ECs in the Zlín Region. By fostering local renewable energy production, reducing dependency on imported fossil fuels, and promoting community participation, these initiatives aim to contribute significantly to the region's energy transition and long-term resilience.

#### 3.4.3.1 RE4.1 – Vlčnov

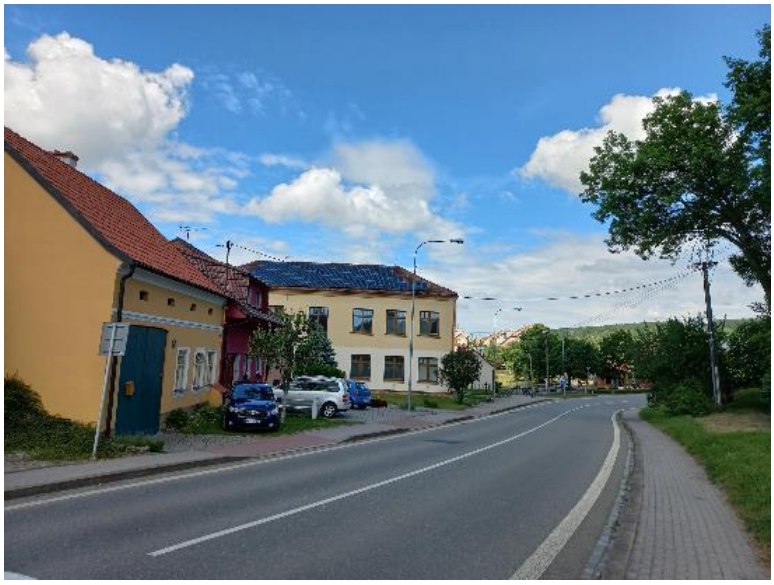

*Figure 3.10 – Area of Vlčnov pilot site*

Vlčnov, a village of 2,969 inhabitants, is in the initial stages of forming an Energy Community (EC), currently operating as an "active customer." The municipality manages photovoltaic (PV) systems on several public buildings, including the municipal office, cultural center, elementary school, and swimming pool, which hosts a 20 kW PV plant. These installations are key to Vlčnov's efforts to generate renewable energy locally, helping the village take a step toward greater energy independence.

However, the development of the EC faces social and operational challenges. Citizen engagement remains limited, with no active participation or workshops organized thus far, and energy skills development is still in its infancy. Despite these barriers, the municipality is supported by the regional energy agency, EAZK, which plays a crucial role in formalizing the EC and planning its future.

The primary objective of the EC is to align local energy production with consumption to maximize efficiency and sustainability. This ongoing transition reflects Vlčnov's commitment to fostering renewable energy adoption, reducing environmental impact, and paving the way for stronger community involvement in the energy transition.

Below in Table 3.21, Table 3.22, Table 3.23 and Table 3.24 are entered all the parameters from the social, energy, economic and environmental point of view within the pilot site, respectively.

*Table 3.21 – Input request for evaluation of social parameters - Vlčnov*

| Social data | Value | Unit of measure |
|---|---|---|
| Number of citizen-led initiatives supported and/or created | 0 | [#] |
| Number of citizens taking part in energy communities | 0 | [#] |
| Number of actors with increased skills in the area of community energy | 1 | [#] |
| Number of jobs created | 0 | [FTE] |
| Number of people participating workshops | 0 | [#] |
| Diversity in the distribution of people involved in the EC | 0 | [%] |

*Table 3.22 – Input request for evaluation of energy parameters - Vlčnov*

| Energy data | Value | Unit of measure |
|---|---|---|
| Primary energy demand | 0.648 | [GWh/year] |
| Final energy demand | 0.341 | [GWh/year] |
| Renewable energy generation | 0.222 | [GWh/year] |
| RES electricity self-consumption | 29 | [%] |
| Flexibility – Storage size and capacity | 0 | [kW and kWh] |

*Table 3.23 – Input request for evaluation of Economic parameters - Vlčnov*

| Economic data | Value | Unit of measure |
|---|---|---|
| Investments in sustainable energy | 0.275 | [M€] |

| | | |
|---|---|---|
| Development of local community energy investment pipelines | 0.275 | [M€] |
| Public investment | 275,000 | [€] |
| Private investment | 0 | [€] |
| Average cost of electricity (from electricity bill) | 0.36 | [€/kWh] |

*Table 3.24 – Input request for evaluation of environmental parameters – Vlčnov*

| **Environmental data** | **Value** | **Unit of measure** |
|---|---|---|
| Reduction of GHG emissions | 97 | [tonCO2/year] |

### 3.4.3.2 RE4.2 – Slavičín


*Figure 3.11 – Area of Slavičín pilot site*

Slavičín, a municipality of 6,513 residents, stands out for its progressive energy initiatives and dedication to sustainability. The town operates a well-developed system of community energy measures, supplying heat to a significant share of households through local resources. Renewable energy production is driven by photovoltaic systems installed on municipal facilities, primarily at the boiler room and administrative building of BTH Slavičín[15], a company fully owned by the city. These PV systems generate approximately 140 MWh annually, with efficient energy use supported by a battery storage system of 129.75 kWh capacity.

The development of an Energy Community (EC) in Slavičín is underway, with plans to enhance renewable energy integration and community participation. While citizen involvement and workshops have yet to be initiated, the town's focus is on improving energy self-sufficiency and laying the groundwork for future collaboration. Long-term goals include the installation of a bladeless wind power plant, which would further diversify energy sources and reduce environmental impact.

Slavičín's renewable energy efforts have already received national recognition, reflecting the municipality's commitment to innovation and sustainability. The emerging EC aims to maximize the potential of its RES production and battery storage, strengthening local energy independence and supporting the broader energy transition.

Below in Table 3.25, Table 3.26, Table 3.27 and Table 3.28 are entered all the parameters from the social, energy, economic and environmental point of view within the pilot site, respectively.

[15] Website: https://www.bth-slavicin.cz/

*Table 3.25 – Input request for evaluation of social parameters - Slavičín*

| Social data | Value | Unit of measure |
|---|---|---|
| Number of citizen-led initiatives supported and/or created | 0 | [#] |
| Number of citizens taking part in energy communities | 0 | [#] |
| Number of actors with increased skills in the area of community energy | 0 | [#] |
| Number of jobs created | 0 | [FTE] |
| Number of people participating workshops | 0 | [#] |
| Diversity in the distribution of people involved in the EC | 0 | [%] |

*Table 3.26 – Input request for evaluation of energy parameters - Slavičín*

| Energy data | Value | Unit of measure |
|---|---|---|
| Primary energy demand | N.A | [GWh/year] |
| Final energy demand | N.A | [GWh/year] |
| Renewable energy generation | 0.14 | [GWh/year] |
| RES electricity self-consumption | >50 | [%] |
| Flexibility – Storage size and capacity | 129.75 kWh | [kW and kWh] |

*Table 3.27 – Input request for evaluation of Economic parameters - Slavičín*

| Economic data | Value | Unit of measure |
|---|---|---|
| Investments in sustainable energy | 0.335 | [M€] |
| Development of local community energy investment pipelines | 0.335 | [M€] |
| Public investment | 335,000 | [€] |
| Private investment | 0 | [€] |
| Average cost of electricity (from electricity bill) | 0.28 | [€/kWh] |

*Table 3.28 – Input request for evaluation of environmental parameters – Slavičín*

| Environmental data | Value | Unit of measure |
|---|---|---|
| Reduction of GHG emissions | 61 | [tonCO2/year] |

#### 3.4.3.3 RE4.3 – Zlín City

*Figure 3.12 – Area of Zlín City pilot site*

Zlín, the regional capital of the Zlín region with 74,835 inhabitants, is in the initial stages of establishing its Energy Community. The city has demonstrated a clear commitment to fostering collaboration by forming a partnership agreement between the municipality and eight city entities to create a community association. This initiative aims to provide its members with favorable electricity prices while gradually expanding participation and enhancing the community's impact. The current focus is on identifying renewable energy sources, with plans to install photovoltaic systems on schools and other municipal buildings.

Despite no renewable energy generation or storage currently being operational, the groundwork is being laid for a future-oriented energy transition. The development strategy aligns with Zlín's broader goals of sustainability and cooperation, supported by entities such as Teplo Zlín. While no investments have been made yet, the city's plans to connect additional sources to the community association hold promise for significant progress in renewable energy integration and cost reduction for participants.

In this case, there is a lack of data in the considered pilot site because there is neither an operational energy community nor applicable baseline scenario with good reliability. That is why it is important to monitor the performance of these pilot sites in the subsequent stages of WP6 for the creation and monitoring of energy community data.

## 3.5 Regional Ecosystem #5 (RE5): Central Greece (GREECE)

### 3.5.1 Description of Regional Ecosystem

The Central Greece region (about 500,000 inhabitants) blend of diverse topography encompassing coastal vistas and mountainous landscapes, stands as a testament to the convergence of rich cultural heritage and a burgeoning focus on renewable energy initiatives. At the forefront of this transformative journey is the ECOEMPOWER project, a beacon for sustainable practices within the region's electricity sector.

The project is developed in three key pilot sites-Domokos, Kamena Vourla, and Amfikleia-each of which offers a distinctive picture of geographic features and socioeconomic dynamics. Delving into the complexities of the electricity sector, the region hosts a mix of low-voltage (LV) and medium-voltage (MV) grids, which are essential for the efficient distribution of power generated by the emerging ECs.

Importantly, the import/export dynamic looms as a potential shift from reliance on national grids to export of excess energy, particularly from solar plants, thus contributing to the national grid. To counter the intermittency of renewables, energy storage solutions, including battery systems, become indispensable to ensure a steady and reliable energy supply.

The power generation landscape is diverse and aligns with the unique characteristics of each pilot site. Domokos and Kamena Vourla lead the way with solar PV systems, while Amfikleia follows a particular path, focusing on a biogas plant. Consumption patterns are evolving, with a notable shift toward integrating heat pumps for climate control and supporting electric vehicle (EV) infrastructure. Pilot sites are set to significantly reshape local consumption patterns.

Within innovative practices, the possibility of incorporating Power-to-Gas (P2G) technologies looms large, particularly in areas such as Amfikleia, where agricultural waste is transformed into a valuable resource for energy generation.

Beyond the technical dimensions, Greek Law 4513/2018 provides a legal framework for the establishment and operation of ECs, serving as a catalyst for community-driven energy initiatives. Financial incentives and support measures, including incorporation into the Development Law (Law no. 4513/2018) and exemptions from certain obligations, provide an enabling environment for ECs to thrive[16].

In particular, the Central Greece region is home to 114 existing ECs involving more than 2,000 stakeholders. While there is support from entities such as HEDNO (Hellenic Distribution Network Operator), RAE (Regulatory Authority of Energy) and CRES (Center of Renewable Energy Sources), a dedicated regional office, that will be designed under the ECOEMPOWER project, aims to streamline services and support emerging ECs.

This includes the development of an OSS, both virtual and physical, to serve as a comprehensive resource center for regulatory information, network capacity data, incentives, and technical guidance. This ambitious initiative

[16] Funds for RECs, CECs or and Energy Communities under Law no. 4513/2018 in Greece: https://thegreentank.gr/en/community-energy-watch-en/funds/

aims to empower communities by combining human and technological resources for the successful establishment and operation of ECs.

In essence, the Central Greece region, through the ECOEMPOWER project, is in the middle of a revolutionary transformation: a model for sustainable energy practices that seamlessly blends technical innovation with community.

### 3.5.2 OSS evaluation

As of the information shared, there is no established physical or OSS dedicated to the energy communities in the Region of Central Greece. The region appears to be in the early stages of developing an OSS, starting from the support of the pilot projects in Domokos, Kamena Vourla, and Amfikleia.

This implies the need for developing both the physical and digital infrastructure necessary for an OSS that can support the emerging energy communities, empowering citizens and stakeholders to make informed decisions about participating.

Given this scenario, the next steps for the Region of Central Greece would likely involve moving from this preliminary stage, characterized by studies and initial planning, towards the actual establishment of an OSS. This OSS would ideally function both as a physical center for in-person consultations and support, as well as a virtual platform offering accessible information and resources online. This dual approach would ensure comprehensive support for the various stakeholders involved in the energy community projects.

Established procedures applicable in Greece, cooperation of the involved parties, and consideration of all legal documents will be crucial in the planning process of an EC and will be supported by the new OSS.

The envisioned OSS, with features like a comprehensive resource database, job creation support, collaborative networking, communication tools, skill development resources, legal guidance, monitoring tools, a digital marketplace, and community engagement features, aims to empower local businesses, facilitate job creation, and contribute to the overall development of the communities within the region.

### 3.5.3 EC data acquisition and qualitative assessment

In the target region, which includes the regional ecosystem in Central Greece, three ECs are currently being established. The legal status of each EC is pending, with no operational activity launched at this stage.

The primary objectives of the Domokos, Kamena Vourla and Amfikleia pilot sites include reducing energy costs for members and reducing the overall CO2 footprint.

The start-up of these ECs has been driven by citizens from every region who seek to reduce energy consumption costs. Support and guidance was provided by the Central Greece Region and the Ministry of Energy.

The legal basis for these Energy Communities is provided by Greek legislation, in particular Law No. 4513/2018 and Law No. 5037/2023 on the transposition of the European directives 2018/2001 and 2019/944. These laws outline the principles of cooperation that govern the EC, emphasizing values such as solidarity, justice, equality, democracy, self-sufficiency and self-responsibility. The financial management and distribution of surpluses shall be regulated according to the type of energy community.

In all types of energy communities, at least 10 % of each year's surplus must be maintained to create the regular reserve.

At least seventy per cent (70%) of the surplus for each financial year shall be retained by the RECs as special reserve and shall be allocated, by decision of the general meeting, in accordance with the activities and as provided for in the statutes. RECs may distribute financial surpluses to members, less any previous reserves, where such provision is provided for in the Statutes.

This section defines all the data for the composition and evaluation of the baseline at the different pilot sites, both from a numerical point of view for the comparison of values with subsequent project steps to define the added value, and from a more qualitative point of view to assess the maturity of an energy community. Individual pilot sites in the corresponding region will be presented below.

#### 3.5.3.1 RE5.1 – Domokos

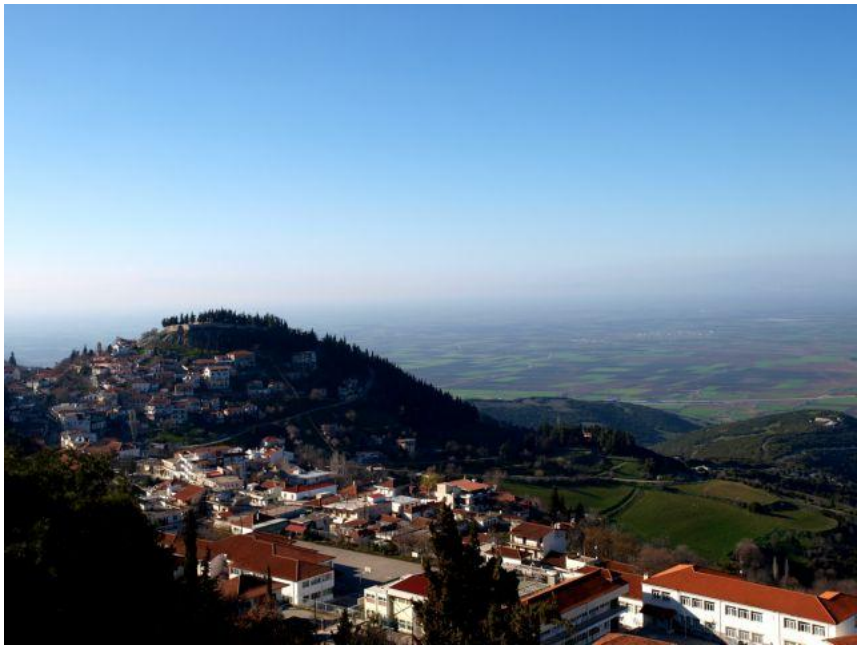

*Figure 3.13 – Area of Domokos pilot site*

Domokos is a town and municipality in Central Greece, comprising 34 villages with a total population of about 5,000. An energy community with 1.5 MW (annual production of 1.5 GWh/year) photovoltaic systems is planned to virtually share energy among public buildings, schools, water pumps, city lighting, and electric vehicle charging points. In addition, the community can choose to donate energy to vulnerable citizens in poverty.

The Domokos Energy Community (EC) will be legally established and is still in the planning stage. Although it is not yet operational, it aims to strengthen environmental and economic goals by sharing energy generated between public infrastructure points. Goals include reducing members' energy costs and minimizing CO2 footprint (the reduction in GHG emissions could be about 720 tonCO2eq/year) through virtual net metering and heat pump integration.

In this case, there is a lack of data in the considered pilot site because there is neither an operational energy community nor applicable baseline scenarios with good reliability. That is why it is important to monitor the performance of these pilot sites in the subsequent stages of WP6 for the creation and monitoring of energy community data.

### 3.5.3.2 RE5.2 - Kamena Vourla

*Figure 3.14 – Area of Kamena Vourla pilot site*

Kamena Vourla, located in the Region of Central Greece, is a town and municipality in Phthiotis. Positioned on the south coast of the Malian Gulf, it lies 4 km west of Cape Knimis, separating the Malian Gulf from the North Euboean Gulf. The municipality covers a total area of 200 km2, incorporating three small towns and 20 villages. With a town population of 2,800 and an overall municipality population of approximately 4800, Kamena Vourla is a community nestled in a coastal setting.

In a forward-thinking initiative, Kamena Vourla is planning to establish an EC that focuses on renewable energy sources (RESs). The proposed EC aims to install photovoltaic systems (PVs) with a capacity of 0.5 MW (annual production of 0.5 GWh/year) in urban areas. This infrastructure is strategically designed to inject the generated energy directly into the local distribution network, promoting sustainability and reducing reliance on traditional energy sources.

Furthermore, the RESs owned by the EC will play a crucial role in offsetting multiple energy bills through virtual net metering. This innovative approach allows the energy generated by the PVs to be distributed among community members, contributing to a collective reduction in energy costs. The emphasis on virtual net metering aligns with the broader objectives of the energy community, which include not only economic benefits but also a commitment to reducing the carbon footprint (the reduction in GHG emissions could be about 240 tonCO2eq/year).

As Kamena Vourla moves toward the establishment of this energy community, it reflects a proactive stance in harnessing clean energy, fostering environmental sustainability, and enhancing the resilience of the local energy infrastructure. The integration of renewable energy sources and virtual net metering underscores the community's dedication to both economic and ecological goals.

In this case, there is a lack of data in the considered pilot site because there is neither an operational energy community nor applicable baseline scenarios with good reliability. That is why it is important to monitor the performance of these pilot sites in the subsequent stages of WP6 for the creation and monitoring of energy community data.

### 3.5.3.3 RE5.3 - Amfikleia

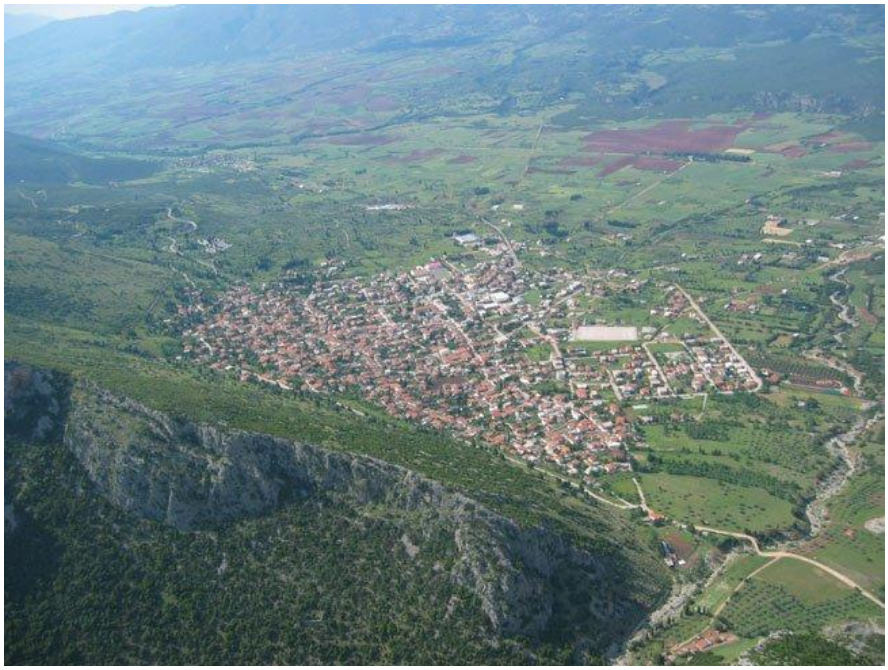

*Figure 3.15 – Area of Amfikleia pilot site*

Amfikleia is a town and municipality nestled at the northern foot of Mount Parnassus in the Phthiotis region of Central Greece. Covering a vast area of 500 $km^2$, the municipality comprises the town and 15 surrounding villages, boasting a combined population of around 11,000 inhabitants.

The town itself houses approximately 4,000 residents and serves as the focal point for this ambitious energy community (EC) initiative. The EC, not yet legally established, aims to integrate various components to enhance sustainability and promote local development.

One key aspect of the proposed EC is the establishment of a 500 kW biogas plant for electricity and heat production, waste management and fertilizer production. This facility will play a dual role, generating both electricity and heat. The electricity produced can be channeled back into the grid, contributing to the overall energy supply or utilized for local consumption. Additionally, the generated heat will serve a crucial role in supporting the agricultural activities within the community.

Waste management is a priority within the EC framework. The implementation of effective waste management practices will not only address environmental concerns but also contribute to the overall efficiency of the community. Furthermore, the waste generated in the process will be harnessed for fertilizer production, fostering a closed-loop system that benefits local agriculture.

Members of the energy community will include farmers, breeders, and the Municipality of Amfikleia itself. This diverse group of stakeholders reflects a collaborative effort to ensure the success and sustainability of the EC.

The involvement of local farmers and breeders is particularly noteworthy, as they stand to benefit from the electricity generated through a virtual net metering system, either by selling surplus energy to the grid or offsetting their own electricity bills.

The symbiotic relationship extends to the utilization of heat and fertilizer produced by the biogas plant. These valuable resources will find purpose in the community's greenhouses, enhancing agricultural productivity and creating a more self-sufficient and resilient local economy.

In summary, the envisioned energy community in Amfikleia presents a comprehensive and integrated approach to sustainable development. Through the establishment of a biogas plant, waste management initiatives, and collaboration among diverse stakeholders, the community aims to achieve energy self-sufficiency, support local agriculture, and contribute to a more environmentally conscious future.

In this case, there is a lack of data in the considered pilot site because there is neither an operational energy community nor applicable baseline scenarios with good reliability. That is why it is important to monitor the performance of these pilot sites in the subsequent stages of WP6 for the creation and monitoring of energy community data.

# 4 Conclusions

In conclusion, the completion of Deliverable 6.2 marks a significant milestone in the ECOEMPOWER project (i.e. Milestone No. 11), providing a comprehensive definition of the baseline in the various pilot sites. The baseline was meticulously established through an introductory overview for each of the 5 Regional Ecosystems, along with the evaluation of the Regional OSS (in the current configuration if already operational or in the envisioned features if in the planning stage), and a quantitative and qualitative analysis of the 15 energy communities operating or developing. In addition, KPIs were evaluated for the operational energy communities, as indicated in Deliverable D6.1, where data was accessible. Annex A displays the full set of information for the various pilot sites for the parameters and OSS. This document is of key importance as it outlines the current status of all Regional Ecosystems, OSSs and pilot sites, serving as a basis for the project's progress on this issue which will be closely monitored in Tasks T6.3 and T6.4. In fact, during the monitoring period of the pilot sites within Task T6.3 of WP6, this will be carried out through a data and parameter collection of the energy communities from the social point of view, and OSS development, every six months to evaluate the effectiveness of the ECOEMPOWER project in achieving the objectives. As for the energy data of the pilot sites for monitoring the associated KPIs, these will be monitored annually throughout the life of the project. The in-depth knowledge gained from this document lays the foundation for informed decision-making and strategic planning in the later stages of the ECOEMPOWER project.

## List of Tables

## List of figures

## List of Abbreviations

| | |
|---|---|
| DoA | Description of Actions |
| DSO | Distribution System Operator |
| ESCO | Energy Service Company |
| GHG | GreenHouse Gas |
| ICT | Information and Communication Technology |
| KPI | Key Performance Indicator |
| OSS | One Stop Shop |
| PU | Public |
| POD | Point of Delivery |
| EC | Energy Community |
| RES | Renewable Energy Source |
| ToC | Table of Contents |
| WP | Work Package |

# A. Annex A

| | PAT | | | ACV | | | eza! | | |
|---|---|---|---|---|---|---|---|---|---|
| | Val di Fassa | Levico Term | Valle Laghi | *Eau et Sol* | *VercorSol* | *de Vezouz* | *Hindelang* | *Reutte* | *Dorfenerg* |
| Number of citizen-led initiatives supported and/or created [#] | 1 | - | - | 1 | 1 | 1 | 1 | | 1 |
| Number of citizens taking part in energy communities [#] | 0 | - | - | 41 | 139 (and 8 municipalities and 2 | 67 | 330 citizens and 20 SMEs | | 142 |
| Number of actors with increased skills in the area of community energy [#] | 1 | - | - | 0 | 0 | 0 | 0 | | 0 |
| Number of jobs created [FTE] | 0 | - | - | 0 | 0.4 | 0 | 16 | | 0 |
| Number of people participating workshops [#] | 0 | - | - | 0 | 15 | 0 | 0 | | 4 |
| Diversity in the distribution of people involved in the EC [%] | N/A | - | - | 30% women, 17% under 40y | 47% women, 33% under 40y | 34% women, 31% under 40y | 30% women, 5% under 40y | | 31% women, 20% under 40y |
| Primary energy demand [GWh/year] | N/A | - | - | 0.17 | 0.6 | 0.23 | N/A | | 0.409 |
| Final energy demand [GWh/year] | N/A | - | - | 0.12 | 0.44 | 0.17 | 17.9 | | 0.1704 |
| Renewable energy generation [GWh/year] | 0.14 | - | - | 0.023 | 0.51 | 0.45 | 4.46 | | 0.7 |
| RES electricity self-consumption [%] | N/A | - | - | 0 | 0 | 0 | 0 | | 0 |
| Flexibility – Storage size and capacity [kW and kWh] | N/A | - | - | 0 | 0 | 0 | 500,000 kWh | | 0 |
| Investments in sustainable energy [M€/year] | 0.06 | - | - | 0.03 | 0.8 | 0.55 | N/A | | 1.2 |
| Development of local community energy investment pipelines [M€/year] | 0.06 | - | - | 0.03 | 0.8 | 0.55 | N/A | | 1.2 |
| Public investment [€] | 0 | - | - | 1,740 | 128,580 | 120,780 | N/A | | 0 |
| Private investment [€] | 60,000 | - | - | 28,260 | 671,420 | 429,220 | N/A | | 1,200,000 |
| Average cost of electricity (from electricity bill) [€/kWh] | N/A | - | - | 0.1907 | 0.1907 | 0.1907 | 0.34 | | 0.4 |
| Reduction of GHG emissions [tonCO2eq/year] | 29.9 | - | - | 1.18 | 26.1 | 22.8 | 1,387 | | 217.7 |

| | EAZK | | | ROCG | | |
|---|---|---|---|---|---|---|
| | *Vlcnvov* | *Slavicìn* | *Zlìn* | *DOMOKOS* | *KAMENA V* | *AMFIKLEIA* |
| Number of citizen-led initiatives supported and/or created [#] | 0 | 0 | - | - | - | - |
| Number of citizens taking part in energy communities [#] | 0 | 0 | - | - | - | - |
| Number of actors with increased skills in the area of community energy [#] | 1 | 0 | - | - | - | - |
| Number of jobs created [FTE] | 0 | 0 | - | - | - | - |
| Number of people participating workshops [#] | 0 | 0 | - | - | - | - |
| Diversity in the distribution of people involved in the EC [%] | 0 | 0 | - | - | - | - |
| Primary energy demand [GWh/year] | 0.648 | N.A | - | - | - | - |
| Final energy demand [GWh/year] | 0.341 | N.A | - | - | - | - |
| Renewable energy generation [GWh/year] | 0.222 | 0.14 | - | - | - | - |
| RES electricity self-consumption [%] | 29 | >50 | - | - | - | - |
| Flexibility – Storage size and capacity [kW and kWh] | 0 | 129.75 kWh | - | - | - | - |
| Investments in sustainable energy [M€/year] | 0.275 | 0.335 | - | - | - | - |
| Development of local community energy investment pipelines [M€/year] | 0.275 | 0.335 | - | - | - | - |
| Public investment [€] | 275,000 | 335,000 | - | - | - | - |
| Private investment [€] | 0 | 0 | - | - | - | - |
| Average cost of electricity (from electricity bill) [€/kWh] | 0.36 | 0.28 | - | - | - | - |
| Reduction of GHG emissions [tonCO2eq/year] | 97 | 61 | - | - | - | - |

*Figure 0.1 - Comparison between pilot sites in terms of project KPIs*

| | | EC phase | | | |
|---|---|---|---|---|---|
| | | Emerging | Pre-development | Development | Operational |
| PAT | Val di Fassa | | X | | |
| | Levico Terme | X | | | |
| | Valle dei Laghi | X | | | |
| ACV | Eau et Soleil du Lac | | | | X |
| | VercorSoleiL | | | | X |
| | de Vezouze-en-Piemont | | | | X |
| eza! | Hindelang eG | | X | | |
| | Reutte | X | | | |
| | Dorfenergie eG | | X | | |
| EAZK | Vlcnov | X | | | |
| | Slavicìn | X | | | |
| | Zlìn | X | | | |
| ROCG | Domokos | X | | | |
| | Kamena Vourla | X | | | |
| | Amfikleia | X | | | |

*Figure 0.2 – Comparison between pilot sites in terms of development phases of EC and support of OSS*

# Bibliography

[1] P. A. di Trento, “COMUNITA’ DI ENERGIA RINNOVABILE: configurazioni tecniche di comunità di energia rinnovabile modellate sul Trentino,” Provincia autonoma di Trento. Accessed: Jan. 29, 2024. [Online]. Available: https://www.provincia.tn.it/Documenti-e-dati/Documenti-di-supporto/COMUNITA-DI-ENERGIA-RINNOVABILE-configurazioni-tecniche-di-comunita-di-energia-rinnovabile-modellate-sul-Trentino

[2] P. A. di Trento, “COMUNITA’ DI ENERGIA RINNOVABILE: Linee guida per la partecipazione degli enti locali,” Provincia autonoma di Trento. Accessed: Jan. 29, 2024. [Online]. Available: https://www.provincia.tn.it/Documenti-e-dati/Documenti-di-supporto/COMUNITA-DI-ENERGIA-RINNOVABILE-Linee-guida-per-la-partecipazione-degli-enti-locali

FEBBRAIO 2024

# D6.2 BASELINE DEI SITI PILOTA DI ECOEMPOWER

The project ECOEMPOWER - ECOsystems EMPOWERing at regional and local scale supporting energy communities receives funding from the European Climate, Infrastructure and Environment Executive Agency (CINEA) under Grant Agreement n°101120775.

# DISCLAIMER

Il parere espresso in questo rapporto riflette l'opinione degli autori e non quella della Commissione Europea. L'Unione Europea non è responsabile per qualsiasi uso che possa essere fatto delle informazioni contenute in questo documento.



Tutti i membri del consorzio ECOEMPOWER si impegnano a pubblicare informazioni accurate e aggiornate e a prestare la massima attenzione in tal senso. Tuttavia, i membri del consorzio ECOEMPOWER non si assumono la responsabilità per eventuali imprecisioni o omissioni, né per eventuali perdite o danni diretti, indiretti, speciali, consequenziali o di altro tipo derivanti dall'uso di queste informazioni.

# EXECUTIVE SUMMARY

Questo documento definisce e descrive la baseline dei siti pilota nell'ambito del progetto ECOEMPOWER. Il documento illustra anche la metodologia seguita per definire la baseline nonchè la richiesta di informazioni e contributi da parte dei vari ecosistemi regionali.

Il documento raccoglie tutte le informazioni e i dati utili a definire la baseline di tutti i siti pilota del progetto, al fine di avere una base di confronto per il monitoraggio di tali siti per tutta la durata del progetto, in vista del raggiungimento degli obiettivi prefissati.

Per quanto riguarda la metodologia di definizione della baseline, è stato creato un modello per la raccolta di informazioni e input sia descrittivi che numerici. Questo modello è stato condiviso con tutti gli ecosistemi regionali, in cui sono stati richiesti i dati relativi alle comunità energetiche, esistenti o presunte, e a tutti gli One Stop Shop (OSS), esistenti o presunti. Particolare enfasi è posta sui criteri di valutazione quantitativi e qualitativi definiti in D6.1, in quanto fondamentali per una valutazione accurata della situazione attuale.

Questo documento serve come base descrittiva per tutti i siti pilota coinvolti nel progetto ECOEMPOWER, sia dal punto di vista qualitativo che quantitativo. Questa valutazione della situazione iniziale sarà poi confrontata con la situazione successiva alle soluzioni implementate dal progetto per verificare l'effettivo successo del progetto nel raggiungimento degli obiettivi dei vari siti pilota.

ECOEMPOWER

ECOsystems EMPOWERing at regional and local scale supporting energy communities

Février 2024

# D6.2 BASE DE RÉFÉRENCE DANS LES SITES PILOTES ECOEMPOWER

The project ECOEMPOWER - ECOsystems EMPOWERing at regional and local scale supporting energy communities receives funding from the European Climate, Infrastructure and Environment Executive Agency (CINEA) under Grant Agreement n°101120775.

Co-funded by the European Union

# DISCLAIMER

L'opinion exprimée dans ce rapport reflète celle des auteurs et non celle de la Commission européenne. L'Union européenne n'est pas responsable de l'utilisation qui pourrait être faite des informations contenues dans ce document.



Tous les membres du consortium ECOEMPOWER s'engagent à publier des informations précises et à jour et prennent le plus grand soin pour le faire. Cependant, les membres du consortium ECOEMPOWER ne peuvent pas être tenus responsables des inexactitudes ou des omissions, ni des pertes ou dommages directs, indirects, spéciaux, consécutifs ou autres, de quelque nature que ce soit, résultant de l'utilisation de ces informations.

# EXECUTIVE SUMMARY

Ce livrable définit et décrit la base de référence des sites pilotes dans le cadre du projet ECOEMPOWER. Le présent document décrit également la méthodologie suivie pour définir la base de référence, avec les données nécessaires à remplir par chaque écosystème régional.

Le document rassemble les informations et données essentielles pour définir la base de référence de tous les sites pilotes du projet, afin d'avoir une base de comparaison pour suivre les sites pilotes tout au long du projet, dans le but d'atteindre les objectifs fixés.

En ce qui concerne la méthodologie pour définir la base de référence, un modèle a été créé pour récolter des données à la fois descriptives et numériques. Ce modèle a été partagé avec tous les écosystèmes régionaux, qui ont ensuite renseigné des informations (existantes ou présumées) sur les communautés d'énergie et les guichets uniques. Une attention particulière a été portée sur les critères d'évaluation quantitatifs et qualitatifs définis au point D6.1, car ils sont essentiels pour évaluer la situation actuelle de manière précise.

Ce document sert de base descriptive pour tous les sites pilotes impliqués dans le projet ECOEMPOWER, tant sur le plan qualitatif que quantitatif. Cette évaluation de la situation initiale sera ensuite comparée à la situation finale, quand les activités du projet auront été réalisées, afin de s'assurer du succès du projet dans la réalisation des objectifs des différents sites pilotes.

ECOEMPOWER

ECOsystems EMPOWERing at regional and local scale supporting energy communities

Februar 2024

# D6.2 AUSGANGSLAGE IN DEN ECOEMPOWER-PILOTSTANDORTEN

The project ECOEMPOWER - ECOsystems EMPOWERing at regional and local scale supporting energy communities receives funding from the European Climate, Infrastructure and Environment Executive Agency (CINEA) under Grant Agreement n°101120775.

Co-funded by the European Union

# DISCLAIMER

Die in diesem Bericht geäußerte Meinung gibt die Meinung der Autoren und nicht die Meinung der Europäischen Kommission wieder. Die Europäische Union haftet nicht für die Verwendung der in diesem Dokument enthaltenen Informationen.



Alle Mitglieder des ECOEMPOWER-Konsortiums verpflichten sich, genaue und aktuelle Informationen zu veröffentlichen, und gehen dabei mit größter Sorgfalt vor. Die Mitglieder des ECOEMPOWER-Konsortiums übernehmen jedoch keine Haftung für etwaige Ungenauigkeiten oder Auslassungen und haften auch nicht für direkte, indirekte, besondere oder Folgeschäden oder sonstige Verluste oder Schäden jeglicher Art, die sich aus der Nutzung dieser Informationen ergeben.

# EXECUTIVE SUMMARY

Dieses Dokument definiert und beschreibt die Ausgangslage der Pilotstandorte im Rahmen des ECOEMPOWER-Projekts. Das Dokument umreißt auch die Methodik, die zur Definition der Ausgangslage angewandt wurde, sowie die Anforderung von Informationen und Beiträgen aus den verschiedenen regionalen Ökosystemen.

In dem Dokument werden alle Informationen und Daten zusammengetragen, die für die Festlegung der Ausgangslage aller Pilotstandorte des Projekts nützlich sind, um eine Vergleichsgrundlage für die Überwachung dieser Pilotstandorte während der gesamten Laufzeit des Projekts zu haben, damit die gesetzten Ziele erreicht werden können.

Für die Methodik zur Festlegung der Ausgangslage wurde eine Vorlage erstellt, mit der sowohl beschreibende als auch numerische Informationen und Eingaben erfasst werden können. Diese Vorlage wurde allen regionalen Ökosystemen zur Verfügung gestellt, in denen Daten zu den bestehenden oder angenommenen Energiegemeinschaften und zu allen bestehenden oder angenommenen One Stop Shops (OSS) angefordert wurden. Besonderes Gewicht wird auf die in D6.1 definierten quantitativen und qualitativen Bewertungskriterien gelegt, da sie für eine genaue Beurteilung der aktuellen Situation entscheidend sind.

Dieses Dokument dient als beschreibende Grundlage für alle am ECOEMPOWER-Projekt beteiligten Pilotstandorte, sowohl in qualitativer als auch in quantitativer Hinsicht. Diese Bewertung der Ausgangssituation wird dann mit der Situation nach der Umsetzung der Projektlösungen verglichen, um den tatsächlichen Erfolg des Projekts bei der Erreichung der Ziele der verschiedenen Pilotstandorte zu überprüfen.

ECOEMPOWER

ECOsystems EMPOWERing at regional and local scale supporting energy communities

Únor 2024

# D6.2 VÝCHOZÍ STAV PILOTNÍCH LOKALIT V PROJEKTU ECOEMPOWER

The project ECOEMPOWER - ECOsystems EMPOWERing at regional and local scale supporting energy communities receives funding from the European Climate, Infrastructure and Environment Executive Agency (CINEA) under Grant Agreement n°101120775.

Co-funded by the European Union

# DISCLAIMER

Názory vyjádřené v této zprávě jsou názory autorů a nevyjadřují názory Evropské komise. Evropská unie nenese odpovědnost za jakékoli použití informací obsažených v tomto dokumentu.



Všichni členové konsorcia ECOEMPOWER se zavazují zveřejňovat přesné a aktuální informace a věnují tomu maximální péči. Členové konsorcia ECOEMPOWER však nenesou žádnou odpovědnost za případné nepřesnosti nebo opomenutí a neodpovídají za žádné přímé, nepřímé, zvláštní nebo následné ztráty nebo škody jakéhokoli druhu vzniklé v důsledku použití těchto informací.

# EXECUTIVE SUMMARY

Tento výstup definuje a popisuje výchozí stav pilotních lokalit v rámci projektu ECOEMPOWER. Dokument také uvádí metodologii, která se používá k definování výchozího stavu a požadavků na informace a vstupy od různých regionálních ekosystémů.

Dokument shromažďuje všechny informace a údaje užitečné pro definování výchozího stavu všech pilotních lokalit projektu, aby měl základ pro srovnání a monitorování těchto pilotních projektů po celou dobu trvání projektu s cílem dosáhnout stanovených cílů.

Co se týče metodiky pro definování výchozího stavu, byla vytvořena šablona pro shromažďování jak popisných, tak numerických informací a vstupů. Tato šablona je sdílena se všemi regionálními ekosystémy, od kterých byly požadovány údaje týkající se stávajících nebo připravovaných energetických společenství a jednotných kontaktních míst (OSS). Zvláštní důraz je kladen na kvantitativní a kvalitativní hodnotící kritéria definovaná v D6.1, protože jsou klíčová pro přesné posouzení současné situace.

Tento dokument slouží jako výchozí kvalitativní a kvantitativní popis všech pilotních lokalit zapojených do projektu ECOEMPOWER. Toto hodnocení výchozího stavu bude následně porovnáno se stavem po realizaci pilotních projektů, aby se ověřila skutečná úspěšnost projektu při dosahování cílů jednotlivých pilotních lokalit.

ECOEMPOWER

ECOsystems EMPOWERing at regional and local scale supporting energy communities

Φεβρουάριος 2024

# D6.2 ΓΡΑΜΜΗ ΒΑΣΗΣ ΣΤΟΥΣ ΠΙΛΟΤΟΥΣ ΤΟΥ ECOEMPOWER

The project ECOEMPOWER - ECOsystems EMPOWERing at regional and local scale supporting energy communities receives funding from the European Climate, Infrastructure and Environment Executive Agency (CINEA) under Grant Agreement n°101120775.

Co-funded by the European Union

# DISCLAIMER

Η γνώμη που διατυπώνεται στο παρόν παραδοτέο αντικατοπτρίζει τη γνώμη των συγγραφέων και όχι τη γνώμη της Ευρωπαϊκής Επιτροπής. Η Ευρωπαϊκή Ένωση δεν ευθύνεται για οποιαδήποτε χρήση των πληροφοριών που περιέχονται στο παρόν έγγραφο.



Όλα τα μέλη της κοινοπραξίας ECOEMPOWER δεσμεύονται να δημοσιεύουν ακριβείς και επικαιροποιημένες πληροφορίες και καταβάλλουν τη μεγαλύτερη δυνατή προσπάθεια για τον σκοπό αυτό. Ωστόσο, τα μέλη της κοινοπραξίας ECOEMPOWER δεν μπορούν να αναλάβουν ευθύνη για τυχόν ανακρίβειες ή παραλείψεις, ούτε για άμεσες, έμμεσες, ειδικές, επακόλουθες ή άλλες απώλειες ή ζημίες οποιουδήποτε είδους που προκύπτουν από τη χρήση των πληροφοριών αυτών.

# EXECUTIVE SUMMARY

Το παραδοτέο αυτό καθορίζει και περιγράφει τη γραμμή βάσης των πιλότων του έργου ECOEMPOWER. Το έγγραφο παρουσιάζει τη μεθοδολογία που ακολουθήθηκε για τον καθορισμό της γραμμής βάσης, καθώς και τη διαδικασία για τη συλλογή πληροφοριών και τη συνεισφορά από τα διάφορα περιφερειακά οικοσυστήματα.

Το παραδοτέο συγκεντρώνει όλες τις πληροφορίες και τα δεδομένα που είναι χρήσιμα για τον καθορισμό της βάσης όλων των πιλότων του έργου, προκειμένου να υπάρχει σημείο αναφοράς για την παρακολούθησή τους κατά τη διάρκεια του έργου, με σκοπό την επίτευξη των στόχων που έχουν τεθεί.

Όσον αφορά τη μεθοδολογία για τον καθορισμό της γραμμής βάσης, δημιουργήθηκε ένα πρότυπο για τη συλλογή τόσο περιγραφικών όσο και αριθμητικών πληροφοριών και στοιχείων. Το πρότυπο αυτό κοινοποιήθηκε σε όλα τα περιφερειακά οικοσυστήματα του έργου, όπου ζητήθηκαν πληροφορίες που αφορούν τις ενεργειακές κοινότητες, υφιστάμενες ή προγραμματισμένες, καθώς και στοιχεία σχετικά με τα καταστήματα μιας στάσης, υπάρχοντα ή προγραμματισμένα. Ιδιαίτερη έμφαση δίνεται ως προς τα ποσοτικά και ποιοτικά κριτήρια που έχουν καθοριστεί στα πλαίσια του παραδοτέου D6.1, καθώς είναι κρίσιμα για την ακριβή αξιολόγηση της παρούσας κατάστασης.

Αυτό το παραδοτέο λειτουργεί ως περιγραφική βάση για όλους τους πιλότους που συμμετέχουν στο έργο ECOEMPOWER, τόσο ποιοτικά όσο και ποσοτικά. Αυτή η αξιολόγηση της αρχικής κατάστασης θα συγκριθεί στη συνέχεια με τη μέλλουσα συνθήκη ύστερα από την εφαρμογή των λύσεων του έργου, ώστε να επαληθευτεί η επιτυχία του στην επίτευξη των στόχων των διαφόρων πιλότων.