



Empowering
Renewable and
Citizen Energy
Communities

Deliverable D5.2

Implementation analysis of the ECs (intermediate)

January 2026



Co-funded by
the European Union

This project is a LIFE project, co-funded by the
European Union under contract n° 101120998.



Document control sheet

Document Details	
Title of document	D5.2 – Implementation analysis of the ECs (intermediate)
Work package	WP5
Deliverable	D5.2
Responsible partner	ENERGAP
Delivery date	31.01.2026
File name	Implementation analysis of the ECs (intermediate)
Reviewers	ESV, WIP
Document type	Public

Project reference	
Full title of the project	EmPOWERing Renewable and Citizen Energy Communities
Acronym	POWER-E-COM
Contract agreement n.	101120998
Duration	01.10.2023 – 30.09.2026
Project website	http://POWER-e-com.eu
Project coordinator	WIP – Renewable Energies

Version	Date	Author	Organisation	Description
1.0	31.01.2026	Vlasta Krmelj, Tomaž Robič	ENERGAP	Implementation follow-up based on Task 5.1
Final	31.01.2026	Ingo Ball	WIP	Final revision



Responsible partner for the compilation of this document

ENERGAP

Smetanova ulica 31, 2000 Maribor, Slovenia

Phone: (+386) 02 234 23 60

Email: vlasta.krmelj@energap.si

Project Coordinator

WIP Renewable Energies

Sylvensteinstrasse 2, 81369 Munich, Germany

Phone: (+49) 89 72012718

Email: ingo.ball@wip-munich.de

Project Partners





Acknowledgments & Disclaimer

POWER-E-COM is a LIFE project, co-funded by the European Union under contract n°101120998.

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged.



Table of Contents

1.	Introduction and purpose of D5.2	1
2.	Key findings from Task 5.1 relevant for implementation.....	2
2.1.	Common methodological findings	2
2.2.	Differentiated maturity of pilot Energy Communities	2
2.3.	Cross-cutting implementation needs identified	3
3.	Translation of roadmap design into implementation actions.....	4
4.	Country-level implementation follow-up.....	5
4.1.	Spain – detailed implementation follow-up	5
4.2.	Slovenia – detailed implementation follow-up.....	5
4.3.	Germany – detailed implementation follow-up	6
4.4.	Austria – detailed implementation follow-up.....	6
4.5.	Bulgaria – detailed implementation follow-up.....	7
4.6.	Ireland – detailed implementation follow-up.....	7
5.	Link to Tasks 5.2 and 5.3	8
6.	Status, next steps and outlook	9
6.1.	Digitalisation, data collection and monitoring.....	9
6.2.	Open challenges and focus of the final project phase.....	10



1. Introduction and purpose of D5.2

The POWER-E-COM project aims to support the establishment and scaling of Renewable and Citizen Energy Communities (RECs and CECs) across partner countries by combining business model development, implementation planning and stakeholder engagement.

Within Work Package 5 (WP5), Task 5.1 focused on the design and initial analysis of country-specific Energy Community implementation roadmaps. Using a common Canvas-based methodology, partners developed pilot and thematic roadmaps reflecting different national contexts, maturity levels and technological focuses. The outcomes of Task 5.1 are documented in Deliverable D5.1.

Building on these results, Deliverable D5.2 shifts the focus from roadmap design to implementation follow-up. Its purpose is not to introduce new roadmaps or repeat the analytical work already carried out, but to document how the findings of Task 5.1 are being actively used to guide implementation-oriented activities.

In particular, D5.2 describes how the roadmap results are translated into concrete follow-up actions, including the structuring of stakeholder workshops, the prioritisation of implementation steps, and the preparation of a coherent monitoring framework. In this way, the deliverable provides a clear transition from roadmap development towards practical implementation and validation and establishes a direct link to the subsequent activities under Tasks 5.2 and 5.3.

D5.2 therefore serves as an operational bridge between the analytical outputs of Task 5.1 and the ongoing implementation and monitoring of Energy Community pilots within the POWER-E-COM project.



2. Key findings from Task 5.1 relevant for implementation

Task 5.1 confirmed that all partner countries have successfully developed pilot or thematic Energy Community (EC) implementation roadmaps using a common Canvas-based approach. While the scope and maturity of the pilots differ, the roadmaps provide a clear and comparable structure for moving from planning to implementation.

A key result of Task 5.1 is the identification of different implementation starting points across partner countries. Some pilots are at an early implementation stage, requiring validation of governance models, financing schemes and stakeholder commitment, while others are already operational and focus on optimisation, expansion and replication. In parallel, thematic roadmaps address system-level challenges such as energy storage integration and networking of existing energy communities.

Across all roadmaps, several cross-cutting implementation needs were consistently identified. These include the necessity of structured stakeholder engagement as a prerequisite for implementation, the importance of sequencing regulatory, permitting and financing steps, and the need for clear milestones and indicators to track progress.

Overall, Task 5.1 delivered a consolidated and implementation-ready knowledge base that enables targeted follow-up actions. These findings directly inform the implementation activities described in the subsequent sections of this deliverable and provide the foundation for stakeholder workshops and monitoring activities under Tasks 5.2 and 5.3.

2.1. Common methodological findings

Task 5.1 demonstrated that the common Canvas-based roadmap methodology is applicable across all partner countries and energy community types. The structure proved robust enough to capture technical, financial, governance and regulatory aspects, while allowing flexibility for national and local adaptations.

An important result is that the implementation roadmaps function as living documents. They require iterative updates as regulatory conditions, financing options and stakeholder engagement evolve during implementation. This finding directly influences how roadmaps are used in the follow-up phase, shifting from static planning tools to operational guidance instruments.

2.2. Differentiated maturity of pilot Energy Communities

The analysis carried out under Task 5.1 highlighted significant differences in the maturity levels of pilot Energy Communities. Some pilots are at an early implementation stage, focusing on organisational setup, stakeholder validation and financing preparation, while others are already operational and concentrate on optimisation, scaling and replication.

In addition, thematic pilots address system-level challenges such as energy storage integration or networking of existing communities rather than the establishment of new entities. These differences



require differentiated implementation approaches, timelines and support measures, which are reflected in the follow-up actions described in this deliverable.

2.3. Cross-cutting implementation needs identified

Despite differences in maturity and national context, several common implementation needs were identified across all pilot roadmaps. These needs directly influence the feasibility, speed and quality of Energy Community implementation and therefore require dedicated follow-up actions.

The following cross-cutting implementation needs were consistently identified:

- **Structured stakeholder engagement** – continuous involvement of citizens, municipalities and local actors to validate governance models, secure local commitment and maintain long-term participation
- **Regulatory and administrative alignment** – clarification and sequencing of permitting, grid connection and contractual procedures to reduce implementation risks and delays
- **Financing preparation and alignment** – coordination of investment models with available public support schemes, private financing options and local financial capacities
- **Monitoring and performance tracking** – definition of clear milestones and harmonised key performance indicators (KPIs) to enable consistent monitoring, comparison and learning across pilots

These cross-cutting needs form the basis for the implementation-oriented activities undertaken in Task 5.2 and for the monitoring framework applied in Task 5.3.



3. Translation of roadmap design into implementation actions

Building on the results of Task 5.1, the Energy Community implementation roadmaps are now being actively used as operational tools rather than planning documents. The focus has shifted from roadmap design to the execution and validation of the identified implementation steps.

The roadmaps have been used to prioritise concrete actions, including the sequencing of organisational setup, regulatory procedures, financing preparation and technical planning. Based on the maturity of each pilot, implementation efforts are either concentrated on establishing the necessary preconditions for operation or on optimising and expanding already functioning energy communities.

A first implementation step across all partner countries is the structured validation of the roadmaps through stakeholder engagement activities. Workshops, bilateral meetings and targeted consultations are being prepared or implemented to confirm governance models, investment approaches and local acceptance.

In parallel, the milestones and indicators defined in the roadmaps are being used to align implementation planning with project-level monitoring requirements. This ensures that implementation progress can be tracked in a consistent and comparable manner and provides a direct input for the monitoring activities under Task 5.3.

4. Country-level implementation follow-up

Building on the common findings and implementation actions described in the previous sections, this chapter provides a concise overview of the implementation follow-up at country level. The purpose of this overview is not to repeat the roadmap designs developed under Task 5.1, but to highlight the current implementation focus and status in each partner country, taking into account different maturity levels and national contexts. The summaries below therefore outline how the roadmap results are being applied in practice and where implementation efforts are currently concentrated.

4.1. Spain – detailed implementation follow-up

In Spain, the pilot Energy Community is currently in the transition phase from roadmap design to practical implementation. The implementation follow-up focuses on validating the organisational, financial and social elements defined in the roadmap before moving to large-scale technical deployment.

Key follow-up actions concentrate on structured stakeholder engagement, with particular emphasis on confirming citizen participation, governance arrangements and the proposed social component of the initiative. Engagement activities are used to test assumptions made during the roadmap design phase, including investment willingness, allocation of benefits and long-term commitment of participants.

In parallel, preparatory work is ongoing to align regulatory and administrative requirements with the planned implementation steps. This includes the sequencing of permitting, financing and contractual arrangements to reduce implementation risks and delays.

Overall, the implementation follow-up in Spain is progressing in an iterative manner, with the next milestones focusing on stakeholder validation outcomes and confirmation of financing conditions, which will enable the transition from preparatory activities to concrete implementation.

4.2. Slovenia – detailed implementation follow-up

In Slovenia, implementation follow-up covers several pilot Energy Communities representing different organisational and technical models. The focus of the follow-up phase is on translating the roadmap designs into phased implementation steps in close cooperation with municipalities and local stakeholders.

Key follow-up actions include the validation of governance structures, coordination with local authorities regarding regulatory procedures, and preparation of financing arrangements aligned with national support schemes. Particular attention is given to sequencing administrative steps to avoid delays during implementation.



Implementation activities are currently ongoing, with pilot communities progressing at different speeds depending on local conditions. The next milestones include stakeholder workshops and confirmation of investment and partnership arrangements, which will enable a transition from preparatory activities to concrete implementation.

4.3. Germany – detailed implementation follow-up

In Germany, several Energy Communities are already operational, particularly in the field of renewable district heating. The implementation follow-up therefore focuses on consolidation, optimisation and preparation for further scaling rather than on initial establishment.

Key follow-up actions include the assessment of operational performance, optimisation of governance and contractual arrangements, and the extension of existing systems to additional users or locations. Experiences gained during operation are systematically reviewed to identify transferable elements and potential bottlenecks.

In addition, implementation follow-up supports replication activities by documenting lessons learned and best practices from operational pilots. These insights are used to inform stakeholders in other regions and contribute to knowledge exchange within the project.

Implementation activities are ongoing, with the next milestones focusing on scaling decisions and the structured transfer of operational experience to other pilot regions.

4.4. Austria – detailed implementation follow-up

In Austria, implementation follow-up does not concentrate on the establishment of new Energy Communities but on thematic actions related to energy storage integration and the networking of existing communities. The focus is on supporting system-level improvements within an already mature Energy Community landscape.

Key follow-up actions include the analysis of legal and regulatory conditions for different storage integration options, assessment of technical feasibility, and exchange of practical experiences with Energy Community operators and experts. These activities aim to clarify implementation barriers and identify viable use cases.

Networking activities are used to facilitate knowledge exchange between existing Energy Communities and to transfer practical insights to new initiatives. Implementation follow-up also includes the preparation of guidance and information materials to support broader uptake.

Implementation is ongoing, with upcoming milestones focusing on consolidating findings and translating them into practical recommendations and dissemination outputs.



4.5. Bulgaria – detailed implementation follow-up

In Bulgaria, implementation follow-up centres on a municipality-led photovoltaic Energy Community pilot based on a crowdfunding investment model. The focus is on moving from roadmap design to concrete implementation under the newly established regulatory framework.

Key follow-up actions include finalising stakeholder participation, operationalising the crowdfunding mechanism, and aligning municipal, citizen and SME involvement. Particular attention is given to governance arrangements and risk allocation to ensure transparency and long-term viability.

Implementation activities also address regulatory and administrative coordination, including permitting and grid connection procedures. Lessons learned during this phase are documented to support replication in other municipalities.

Implementation is progressing towards pilot realisation, with next steps focusing on confirming investment commitments and initiating technical implementation.

4.6. Ireland – detailed implementation follow-up

In Ireland, implementation follow-up primarily addresses regulatory and procedural barriers identified during the roadmap development phase. The focus is on learning-oriented implementation rather than immediate large-scale deployment.

Key follow-up actions include continued stakeholder dialogue with community representatives, local authorities and national bodies to clarify planning, grid access and financing challenges. Pilot activities are used to test implementation pathways within the existing regulatory context.

Implementation follow-up places strong emphasis on capacity building and knowledge generation. Insights gained are used to inform policy feedback and to strengthen future Energy Community initiatives.

Implementation activities are ongoing, with next milestones focusing on consolidating lessons learned and translating them into recommendations for future pilot development and replication.

5. Link to Tasks 5.2 and 5.3

Deliverable D5.2 provides a direct link between the roadmap design activities carried out under Task 5.1 and the subsequent implementation and monitoring activities foreseen in Work Package 5.

Under Task 5.2, the implementation roadmaps developed and refined through the follow-up described in this deliverable are used as the main reference framework for national and regional stakeholder workshops. These workshops serve to validate implementation assumptions, align stakeholders, and support concrete action planning at local level.

In parallel, Task 5.3 builds on the outputs of D5.2 by applying a structured monitoring approach to track the implementation progress. The milestones and indicators defined in the roadmaps and further refined during the follow-up phase provide the basis for an “implementation diary”, enabling systematic documentation of progress, challenges and lessons learned across partner countries.

Table 5-1: Linkage between Task 5.1, Deliverable D5.2 and Tasks 5.2 and 5.3

Element	Role in Task 5.1	Follow-up in D5.2	Application in Task 5.2	Application in Task 5.3
Implementation roadmaps	Design and initial analysis of pilot and thematic EC roadmaps	Translation of roadmap results into implementation-oriented follow-up actions	Use of roadmaps as reference framework for stakeholder workshops and action planning	Use of roadmap milestones as basis for monitoring progress
Stakeholder engagement	Identification of key stakeholders and engagement needs	Preparation and structuring of stakeholder validation activities	Organisation of national and regional workshops	Documentation of stakeholder feedback and engagement outcomes
Implementation steps	Definition of phased implementation pathways	Prioritisation and sequencing of implementation actions	Validation and refinement of implementation steps with stakeholders	Tracking of implementation progress through implementation diaries
Milestones and indicators	Initial definition of milestones and KPIs	Alignment and refinement for implementation follow-up	Use as reference points in workshop discussions	Systematic monitoring and comparison across pilot countries

Lessons learned	Identification of potential barriers and drivers	Consolidation of early implementation insights	Exchange of experiences between stakeholders	Structured documentation of challenges and best practices
------------------------	--	--	--	---

6. Status, next steps and outlook

The implementation follow-up activities described in this deliverable are ongoing across all partner countries. While pilot Energy Communities are progressing at different speeds depending on national and local conditions, the results of Task 5.1 are now actively guiding implementation planning and stakeholder engagement.

The next steps focus on completing stakeholder validation, advancing selected pilots towards concrete implementation, and systematically monitoring progress through the mechanisms established under Task 5.3. Particular attention will be given to capturing transferable lessons and addressing barriers identified during implementation.

Looking ahead, the continued application of the roadmap-based approach and the implementation follow-up framework will support the replication and upscaling of Energy Community models beyond the initial pilots. In this way, D5.2 contributes to the long-term objectives of the POWER-E-COM project by strengthening practical implementation capacity and knowledge transfer across regions.

6.1. Digitalisation, data collection and monitoring

In the implementation follow-up phase, increasing emphasis is placed on the digitalisation of data collection, monitoring and analysis across pilot Energy Communities. The roadmap-based approach applied under Task 5.1 provides a structured framework for systematic data gathering related to implementation progress, stakeholder engagement and key performance indicators.

Table 6-1: Overview of data categories monitored during implementation follow-up

Data category	Examples of monitored elements	Purpose
Energy data	Renewable energy generation, self-consumption	Tracking technical implementation progress
Economic data	Investment volumes, cost savings	Assessing financial viability
Social data	Number of participants, vulnerable households	Evaluating social impact
Environmental data	Estimated CO ₂ emission reductions	Assessing environmental benefits
Implementation status	Milestones achieved, delays encountered	Monitoring roadmap execution



Digital tools and structured reporting formats support the continuous collection and consolidation of this data. This enables timely tracking of implementation progress, identification of bottlenecks and comparison of experiences across pilot Energy Communities. The monitoring framework implemented under Task 5.3 builds directly on these digitalised data flows and provides a solid basis for validation and learning.

6.2. Open challenges and focus of the final project phase

Despite the progress achieved in translating roadmap designs into implementation-oriented actions, several challenges remain open across partner countries. These challenges influence implementation dynamics and require continued attention in the final phase of the project.

The following open challenges have been identified:

- **Regulatory and administrative uncertainties** – evolving national frameworks, permitting procedures and grid-related requirements affecting implementation timelines
- **Differences in implementation speed** – varying maturity levels and local conditions leading to heterogeneous progress across pilot Energy Communities
- **Sustaining stakeholder engagement** – maintaining long-term commitment of citizens, municipalities and local actors throughout extended implementation phases

In the final phase of the project, the focus will therefore extend beyond implementation follow-up and validation towards strengthened data management and analysis. Particular attention will be given to:

- improving data quality and completeness
- ensuring consistency and interoperability of collected data across pilots
- transforming monitoring results into actionable insights for implementation improvement and replication

Combined with continued monitoring and validation activities, enhanced data management will support evidence-based assessment of implementation outcomes and the identification of transferable lessons. This approach will strengthen the foundation for replication and upscaling of Energy Community models and contribute to the long-term impact of the POWER-E-COM project.