

Interreg
Alpine Space



ALPGRIDS

MICROGRID POLICY PACKAGE

**ALPGRIDS POLICY
DOCUMENT**



CONTENTS

1 ABOUT THIS GUIDE	
Why this guide?	
Who is the guide for?	
How can it help you?	
Find out more	
2 WHAT IS AT STAKE CONCERNING POLICY INSTRUMENTS SUPPORTING COLLECTIVE ENERGY ACTIONS AND LOCAL ENERGY COMMUNITIES?	
3 ALPGRID'S CONTRIBUTION	
Setting up a Sounding Board of policy makers and supporters	
Enhancing local energy plans	
Analysis of local energy plans	
Definition of the measures	
Introducing new measures in local energy plans	
4 CONTRIBUTING TO A FAVOURABLE POLICY FRAMEWORK AT REGIONAL, NATIONAL AND EU LEVELS	
Analysing the regional and national contexts	
Identifying barriers and recommendations	
Working with energy regulators	
Mobilising regional financial instruments	
5 DEMONSTRATING MICROGRIDS 'IN ACTION'	
Study visit to pilot sites	
France	
Italy - Savona Pilot: from the Smart Polygeneration Microgrid to SPEED2030 Positive Energy District	
Slovenia - ALPGRIDS pilot Selnica ob Dravi	
Testimonial videos	
ANNEX 1	
Set of Barriers and Policy recommendations for policy makers (EU level)	
ANNEX 2	
Specific barriers and recommendations in the national and regional context of each partner	
ANNEX 3	
Action template to introduce measures in local plans	
ABBREVIATIONS	
PARTNERS AND CONTRIBUTORS	

1

ABOUT THIS GUIDE

This guide provides concrete elements to help design and implement political strategies for the effective development of Local Energy Communities in the target territories of the Alpine space identified by the Project. The guide describes what can be done by policy makers to design supportive policies and instruments for LECs by:

- Enhancing their energy plans with measures supporting LECs and CEAs
- Identifying barriers and defining recommendations for implementing effective instruments
- Mobilizing other stakeholders
- Getting inspired by others (project pilot cases)

WHY THIS GUIDE?

The objective of this guide is to provide significant strategic elements aimed at fostering the development of an integrated low-carbon policy at transnational level. The guide describes LECs and CEAs as a tool for ecological transition and to contrast climate change, empowering citizens to interact with the energy market as “prosumers”, i.e., people who produce and consume their own renewable energy.

WHO IS THE GUIDE FOR?

The guide is aimed in particular at:

- local public authorities
- regional public authorities
- national public authorities

HOW CAN IT HELP YOU?

Through a detailed set of information based on the experience gained by the Partners of the Alpgrids Project, the reader is guided on the basis of step-by-step support on how to structure a Local Energy Community within their target territory. The guide provides a variety of information and tools on how to structure a “turnkey” process. Step 1 begins with the assessment of the players and their role, moving from involvement to sharing objectives. Step 2 concerns the management of regulatory and policy aspects that include barriers and tools for overcoming them. Step 3 is a demonstration pilot and concerns the development and testing of pilot cases.

FIND OUT MORE

Always start with a conversation. We look forward to hearing your questions and hope to give you more information.

<https://alpine-space.org/projects/alpgrids/en/home>

LEAD PARTNER:
AURA-EE - Auvergne-Rhône-Alpes Energy Environment Agency

Address: Rue Gabriel Péri 18, 69100 Villeurbanne, France

Phone: +33 (0)4 78 37 29 14

E-Mail: patrick.biard@auvergnerhonealpes-ee.fr

PROJECT COMMUNICATION MANAGER:
Energy Agency of Podravje - ENERGAP

Address: Smetanova ulica 31 - 2000 Maribor, Slovenia

Phone: +386 (0)2 234 23 60

Email: klavdija.polutnik@energap.si
vlasta.krmelj@energap.si

2

WHAT IS AT STAKE CONCERNING POLICY INSTRUMENTS SUPPORTING COLLECTIVE ENERGY ACTIONS AND LOCAL ENERGY COMMUNITIES?



A man in a blue and white plaid shirt and a young boy in a light blue shirt and glasses are high-fiving on a rooftop. They are standing on a blue metal structure, likely part of a solar panel installation. The background shows green trees and a clear sky. A decorative graphic of three curved lines (green, white, and red) runs vertically along the left side of the page.

WHAT IS AT STAKE CONCERNING POLICY INSTRUMENTS SUPPORTING COLLECTIVE ENERGY ACTIONS AND LOCAL ENERGY COMMUNITIES?

Collective Energy Actions (CEAs) can experiment innovative roles in the environmental, social, ethical and civic fields, structuring themselves through a local governance with direct responsibility, at the basis of which local authorities, citizens, associations and entrepreneurial organizations share a set of principles, rules and procedures concerning the management and governance of the community, towards self-management and resource sharing objectives. However, the development of CEAs will have to face and overcome various barriers at both EU and Member States level. These barriers are of various nature and can be classified according to the following categories: administrative, legislative, financial, contractual, technological, communication, fairness and non-discrimination. Overcoming existing barriers is closely related to the development of policy tools capable of providing methodologies and resources for the development of CEAs and LECs, starting at the local level and then expanding to the national and European level.

The planning and strategic tools at regional and local level lend themselves perfectly to supporting the development of CEAs and overcoming the barriers identified in the Member States. As it often happens, the push from below (from Local Communities and Municipal Energy Plans) is very strong. Regional and local Energy Plans (including SECAPs) are highlighting how the development of CEAs and LECs is of fundamental importance for the energy transition of the territories. To this aspect is added the ethical and social value that the LECs are able to represent, which is equally important with respect to the environmental value. The creation of an energy community is one of the solutions to combat energy poverty (objectives 1, 7 and 11 of the UN 2030 Agenda).

The EU directives, established in the legislative package “Clean Energy for all Europeans” (CEP - Clean Energy Package), seek to put in place legal frameworks suitable for enabling the energy transition and giving a leading role to citizens in the power sector.

Of particular note are two of the CEP directives:

- the Renewable Energy Directive , which contains the definitions of collective self-consumption and the Renewable Energy Community (REC),
- the Directive on the internal electricity market , which defines the Citizens’ Energy Community (CEC).

However, regarding the legislative aspects at the national level, it is clear that needs are focused on the fact that legislators should adopt the legislative framework defined on renewable energy communities as quickly as possible.

3

ALPGRIDS' CONTRIBUTION

The activities conducted by the Alpgrids Project aim to suggest how to adopt an alternative approach to managing issues related to the use of energy, no longer acting as individual consumers, but becoming protagonists in the construction of an energy community.

The current crisis we are experiencing urgently calls for an energy transition, to build a new model of social organization based on the production and consumption of energy from renewable sources that inspires a more sustainable way of living and living. Based on these principles, the activities of the Project have experimented with an innovative method aimed at structuring from the ground up an environment favorable to the development and experimentation of Collective Energy Actions mainly through the deployment of microgrid solutions. These collective energy actions were mainly focused on RES production or collective self-consumption.

The adoption of an approach of sharing and horizontal involvement of the identified stakeholders and policy-makers, the analysis of the existing planning tools, the initiation of talks and contacts for the development of a shared planning in favor of the CEAs, the introduction of measures in favor of LECs in the Regional and Municipal Plans represented the fundamental operational steps of the process.



SETTING UP A SOUNDING BOARD OF POLICY MAKERS AND SUPPORTERS

Stimulating the creation of a favorable policy environment to the development of LECs in the territories of the Alpine area is one of the main ALPGRIDS objectives. To this end, the project, right from the application phase, collected a large number of expressions of interest from policy makers, energy utility companies and regulators and due to their support and contribution they were mentioned in the submission documents as project official Observers alongside the Partners.

Aiming to consolidate and integrate its Observers' group, ALPGRIDS initially focused on carrying out a mapping able to identify the energy relevant stakeholders at various levels. As already mentioned, being able to face and manage the heterogeneity of the actors is a fundamental feature for the success of energy communities governance.

The involvement of the new members was completed in March 2021. Currently the ALPGRIDS Sounding Board consists of 73 energy stakeholders, 36 of which are also Observers, and involves policy makers, energy regulators, energy suppliers, energy agencies, national governments and local authorities, financing institutions, professional and non-professional experts, research centers and other actors.

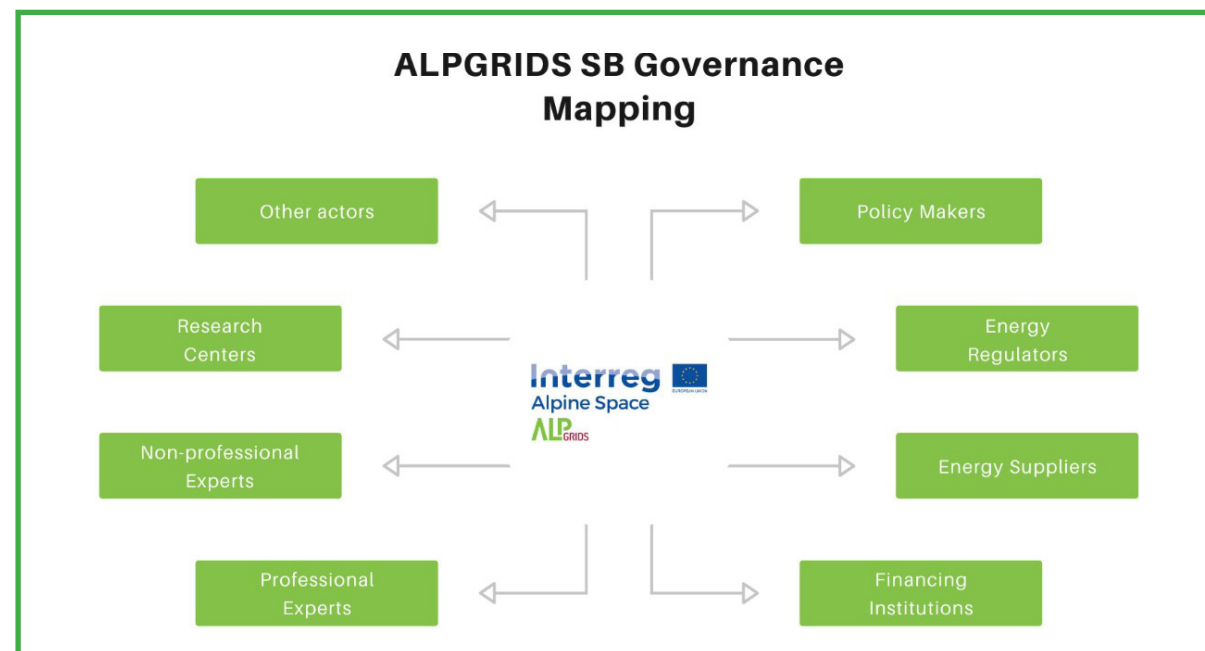


Figure 1 – Sounding Board governance mapping

ALPGRID'S CONTRIBUTION

As stated in ALPGRIDS official documents, the Sounding Board's main goal is contributing to a new enabling policy environment by revising the existing policy instruments or creating new ones. That will support the integration and uptake of LECs solutions on the ground by adopting a multi-level and multi-sectorial approach in compliance with the principle of horizontal subsidiarity. Generally speaking, the goal is to maximize the ALPGRIDS achievements by applying a methodology based on the principle of horizontal subsidiarity, thus allowing each member to actively participate in compliance with their roles and skills.

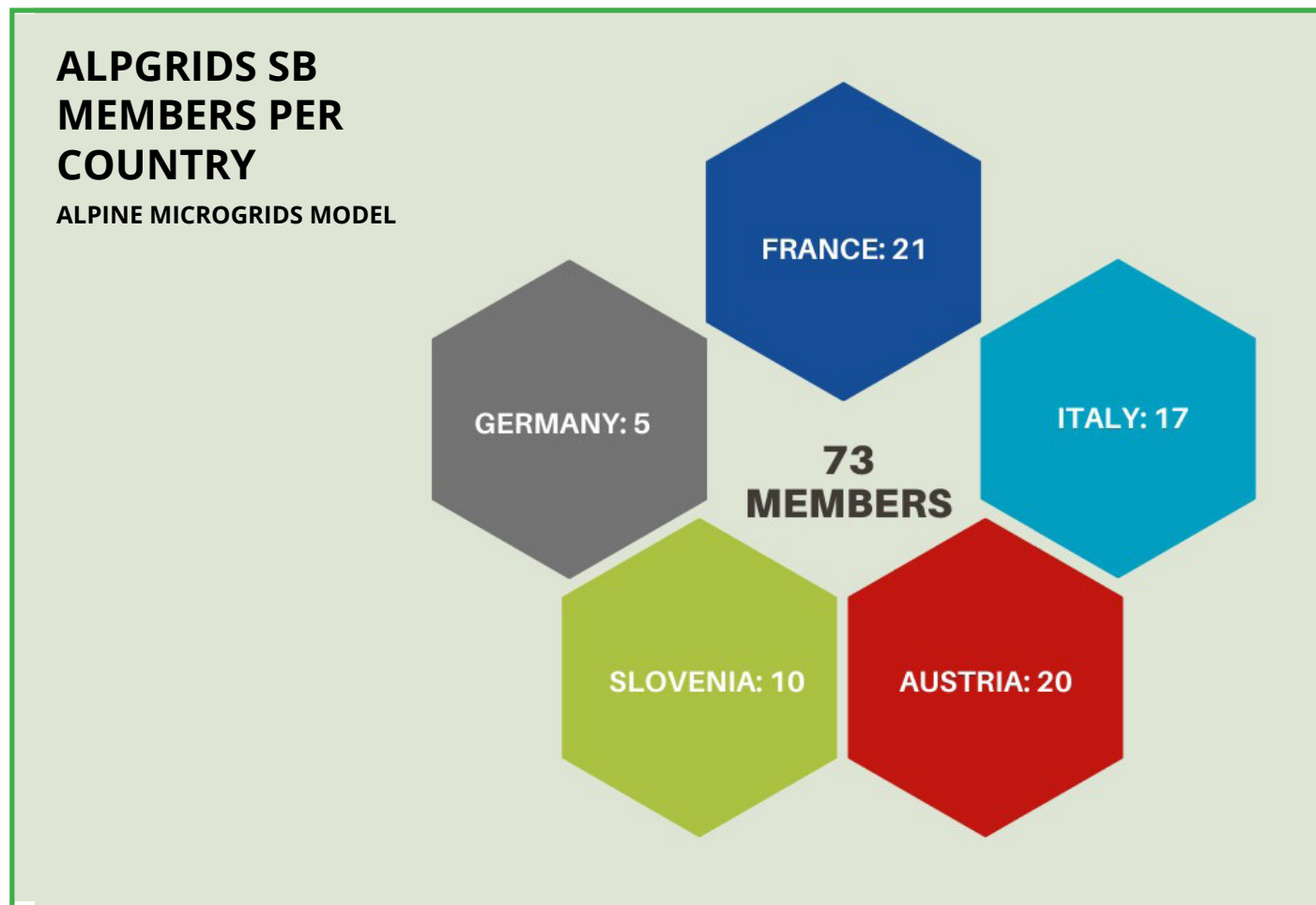


Figure 2 – Sounding Board governance mapping

ENHANCING LOCAL ENERGY PLANS

The introduction of Collective Energy Actions in favor of LECs in municipal and/or regional energy plans represents a fundamental step for their development in the target countries. Alpgrids has faced this key step by structuring its own analytical methodology aimed at strengthening planning in favor of the development of LECs in the project's target areas.

The improvement of Local Energy Plans aimed at introducing measures in favor of LECs, was addressed in three phases:

1. **Analyze the Plans (phase 1)** focused on identifying the regional or local plans to be integrated through actions in support of energy communities or microgrids (phase 1.1). The objective of the first phase was to carry out a survey of the planning tools existing within the target countries and subsequently select the plans within which it was more appropriate to integrate specific measures (phase 1.2).
2. **Preliminary study of the measure (phase 2)** a preliminary analysis was carried out of the specific measure that could be introduced. For each target country, specific measures have been identified to be integrated into the respective Energy Plans (Local/Regional) providing support supported a preliminary qualitative and quantitative analysis that estimates the potential impacts, associated costs and recommendations for implementation.
3. **Enhancing of the plans (phase 3)** sharing the measure with the public authority responsible for the plan (Municipalities, Metropolitan Cities, Regions). Obviously, if a collaborative spirit is established from the beginning, the respective institution should also play an active role in defining the measure in support of LECs. The goal is to facilitate a possible integration of the measure in a future update of the plan.

ANALYSIS OF LOCAL ENERGY PLANS

The analysis refers to phase 1 and was conducted according to precise indications and was based on the following aspects/requirements to be verified:

- Type of Plan (Regional, Municipal, other);
- Date of approval/update;
- Authority responsible for the plan;
- Strategic vision;
- Policy;
- Number of short-term actions;
- Number of long-term actions;
- Incentives and funds for LECs;
- Participatory approach-based actions;
- Environmental impacts;
- Economic impacts;
- Social impacts;
- Other features

The analyses were carried out in 5 target countries respectively: France, Austria, Germany, Italy and Slovenia. The plans taken into consideration for the analysis were both at regional and local level (with the exception of Slovenia which does not present regional plans). Overall, more than 10 regional level plans and more than 60 local level plans were analyzed, also considering the high number of local plans analyzed in Italy for the Liguria Region.

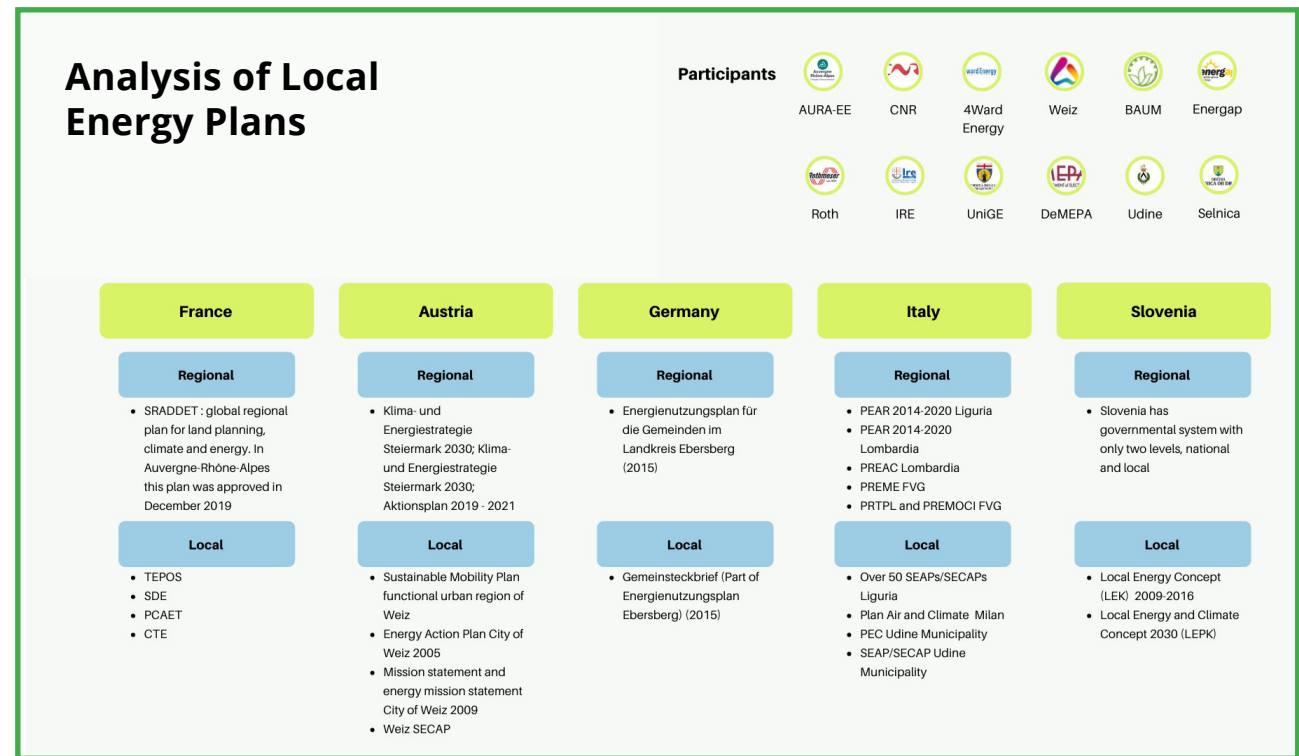


Figure 3 – Local Plan Analysis

DEFINITION OF THE MEASURES

The definition of measures to be introduced in Local Plans refers to phase 2 and is aimed at structuring an action sheet model through which the partners were able to define one or more Collective Energy Actions in favor of the Local Energy Communities, specifically designed and contextualized, taking into consideration the characteristics of the regional/local plan to be integrated. The mode of action to integrate into the Plans has been changed according to the level of planning to be influenced. As regards the regional plans, a policy-making process has been activated aimed at transferring to the regional level all the information collected in the process of identifying barriers and recommendations relating to the development of CEAs and LECs in the target countries. The purpose of this activity was to influence regional policies on the subject, mainly aiming at introducing the development of LECs at local level into the new regional planning tools for the period 2021-2027. At the same time, solely at the local level (Municipalities and Metropolitan Cities), the aim was to structure real specific Actions to support the LECs to be integrated/introduced in the local planning tools (Municipal Energy Plans, SECAP (s), other Plans). This “double front” of action has allowed the partners to give continuity to their relations with the regional government authorities already started during the structuring of the Sounding Board, pushing the latter to take into due consideration the CEAs/LECs in their development plans for 2030. At the same time, where possible, the partners were able to act in collaboration with the local authorities identified in order to “permeate” the Local Plans by inserting specific measures in favor of LECs and providing the Municipalities and Metropolitan Cities with valuable information and quantitative objectives. These are qualitative and ambitious objectives that can be immediately integrated into local planning tools. For each proposed measure to be integrated into the Local Plans, the partners of the respective target countries discussed with their respective Local Governments the following specific aspects:

- Reason of the measure;
- Description;
- Impact quantification;
- Economic benefits;
- Environmental benefits;
- KPIs for monitoring.

INTRODUCING NEW MEASURES IN LOCAL ENERGY PLANS

Consistently with the Local Plans selected for the analysis, the following 29 measures have been identified to be integrated into the Local Plans for each target country (phase 3):

COUNTRY	No. of measures	MEASURES IN BRIEF
France	6	1: Launch a first collective self-consumption project 2: Procedures with DSO's IT tool to be simplified and secured 3: Support the emergence of energy communities 4: Become shareholder of local initiatives 5: An Energy point of contact trained to CSC schemes 6: Linking initiatives together
Austria	4	1: Raising awareness for joint consumption of renewable energy through PR promotion and development measures 2: Funding of start-up costs (legal, technical, economic consulting services) for the implementation of local and regional energy communities or direct line systems 3: Funding of start-up costs (production and storage facilities for renewable energy sources) for the implementation of local and regional energy communities or direct line systems 4: Implementation of a regional renewable energy community within the municipality of Weiz with different stakeholders
Germany	5	1: Tenants and neighborhood energy communities 2: Continuous data assessment and adaptation of the energy use plan 3: Optimized development of the charging infrastructure for electrically powered vehicles 4: Making biogas use more flexible 5: Development of wind power use
Italy	11	1: General Action introduced in Genoa SECAP in supporting LECs development 2: Residential and Civil: Promotion of self-consumption schemes, particularly for condominiums, and use of heat pumps supplied by PV systems 3: Industry: Development of local energy communities, particularly in case of high energy demand 4: Industry: Development of local energy communities, particularly in case of high energy demand 5: Behavioral measures for citizens: Promotion and support the self-production and storage of electricity (prosumer) in a context of end-user's empowerment for a rational use of energy 6: Promotion of the use of energy from photovoltaic systems in private sectors 7: Promotion and development of Renewable Energy Communities 8: Renewable Energy Communities Pilot Project - Alpgrids Project 9: Investments for the production of energy from municipal photovoltaic systems 10: Strengthening of the Energy Desk (Sportello Energia) 11: Creation of the "One Stop Shop"
Slovenia	3	1: Promoting the self-sufficiency of residential and commercial buildings 2: Promoting the establishment of electrical micro-networks 3: Energy and RES communities

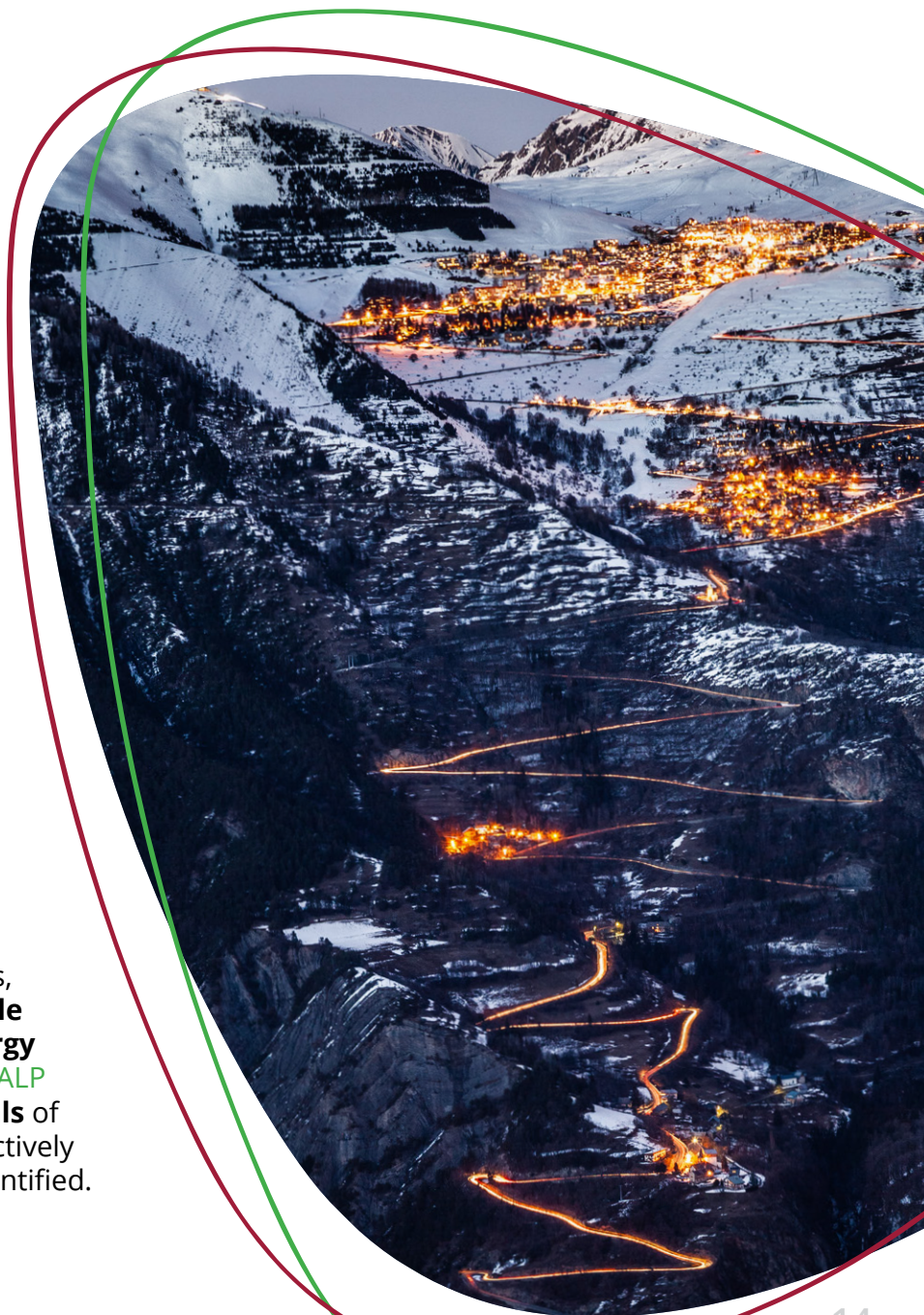
Table 1 – Proposed measures to be integrated into Local Plans

4

CONTRIBUTING TO A FAVORABLE POLICY FRAMEWORK AT REGIONAL, NATIONAL AND EU LEVELS

According to the analyses conducted on policy and planning tools at regional, national and European level, the Project partners have identified specific barriers and structured a set of recommendations to overcome them. The objective of this activity was to conduct a critical analysis of the existing policy tools in order to favor the development of an environment favorable to the growth of CEAs/ LECs in all target countries. Fostering a policy framework for LECs represents a fundamental step to ensure that they are subsequently included in planning tools at national and regional as well as local level.

At the European level, the activities carried out by the Project concerned the identification of a series of barriers that can constitute an obstacle to the development of LECs. At the same time, the partners identified specific policy recommendations, which were presented and shared at European level during the **European Round Table of the Alpgrids Local Energy Communities Project: “A Win for All in the Energy Transition” held on 17 November 2021**. The event, organized within the **5th EUSALP Energy Conference**, attracted a large participation: in total, **78 registered individuals** of different backgrounds and nature demonstrated their interest in the event and actively participated in providing votes and comments to barriers and recommendations identified.



CONTRIBUTING TO A FAVORABLE POLICY FRAMEWORK AT REGIONAL, NATIONAL AND EU LEVELS

At the European level, **17 barriers** have been identified and **17 recommendations** respectively proposed to overcome them.

Barriers and recommendations have been identified by thematic categories, the following: **Administrative, Legislative, Financial, Accounting/ Contractual, Technical and Technological, Communication and information, Equal opportunities and non-discrimination.**

The barriers identified and the recommendations identified to overcome them are briefly presented below through two infographics.

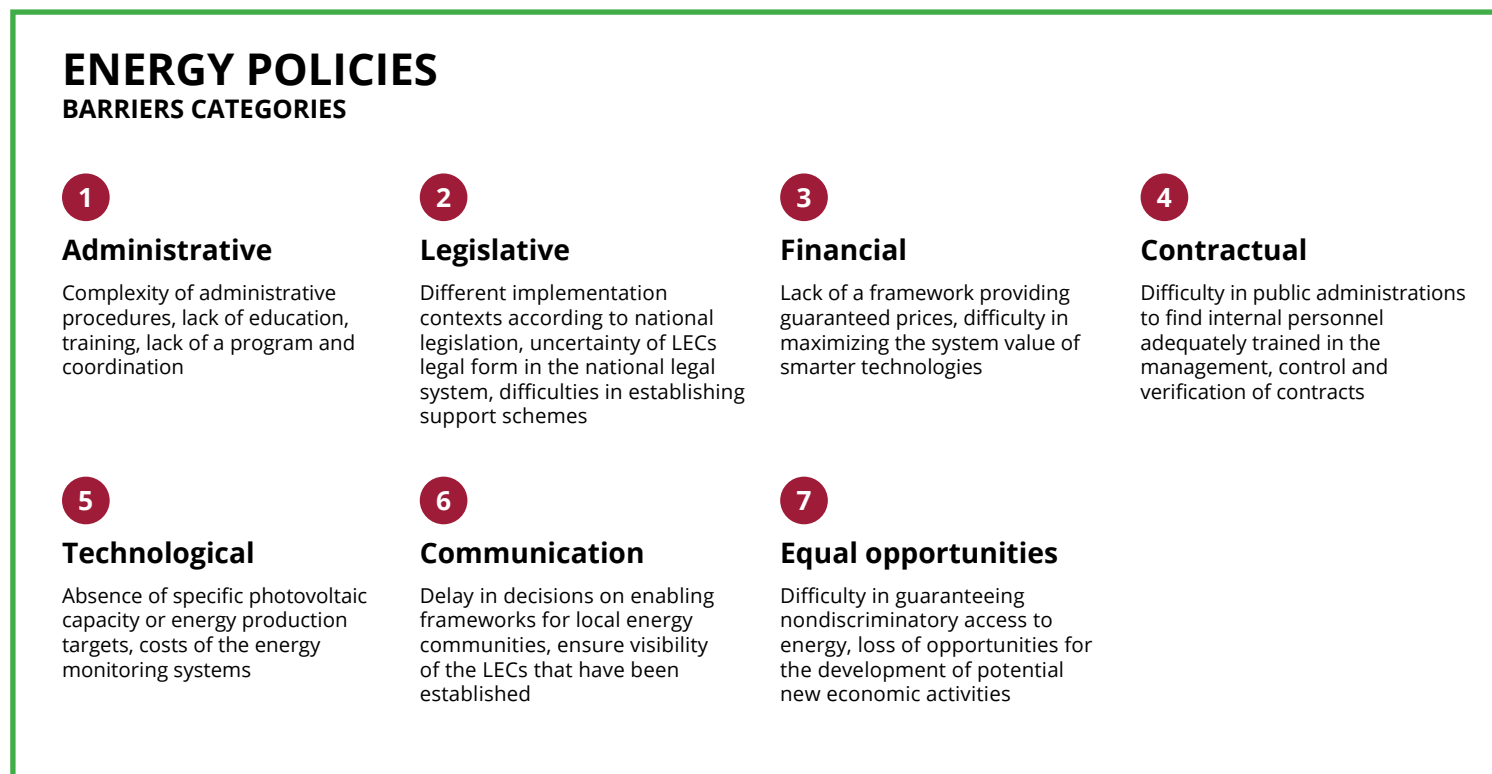


Figure 4 – Set of barriers identified per category

CONTRIBUTING TO A FAVORABLE POLICY FRAMEWORK AT REGIONAL, NATIONAL AND EU LEVELS

ENERGY POLICIES

SET OF POLICY RECOMMENDATIONS

1

Administrative

Reate single points of contact (One-Stop-Shops); Reduce technical, financial and legal requirements; Provide education and training; Stimulate coordination among stakeholders

2

Legislative

Energy communities properly defined, taking into account key characteristics (LEC, CEC, EC, other); Maintain a stable and cooperative policy environment for the promotion of renewable energy

3

Financial

Guaranteed prices for exported electricity, as well as tax incentives on renewable hardware; system value of smarter technologies needs to be maximized

4

Contractual

Appropriately train the internal staff responsible for contracts so that they are sufficiently prepared to manage, control and direct the supplier with respect to what is contractually agreed

5

Technological

A target for energy communities which should constitute a percentage of the overall national / regional target for renewables; Overcoming the powerconstraint of 200 kW for RES plants

6

Communication

Improve the communication with distribution system operators and vulnerable families; Include Local Energy Communities in Local / Regional plans

7

Equal opportunities

Ensuring equal access to energy and energy services is one of the EU policies and one of the 3 Pillars of the Covenant of Mayors for Climate and Energy initiative:Energy Poverty

Figure 5 – Set of policy recommendations in brief identified per category

ANALYZING THE REGIONAL AND NATIONAL CONTEXTS

At the national and regional level, the context analysis was conducted on two main fronts: the regulatory front and the front relating to policy and planning tools.

The activity of the partners led to the analysis of over 10 Regional/National Level Plans and/or Strategies to which is added a critical analysis of the regulatory tools implemented in the respective 5 target countries of the Project on the subject of LECs.

The results of these activities were respectively shared with the individuals identified: Ministries, Regions, Energy Agencies, Regulatory Authorities, Electricity Service Operators, DSOs and Research Institutes.

IDENTIFYING BARRIERS AND RECOMMENDATIONS

Overall, 15 barriers and 16 recommendations at national and regional level have been identified which concern administrative, legislative, financial, contractual, technical/technological, communication and fair opportunities aspects.

According to the findings of the partners, administrative barriers (2 in total) have been identified in Austria and Slovenia. Legislative barriers (2 in total) were instead detected in Germany and Italy. Technical and technological barriers represent the most representative ones (9 in total) and were detected in all 5 target countries. Finally, the financial barriers were found only for Austria (1 in total), while those of Accounting/Contractual for France (1 in total).

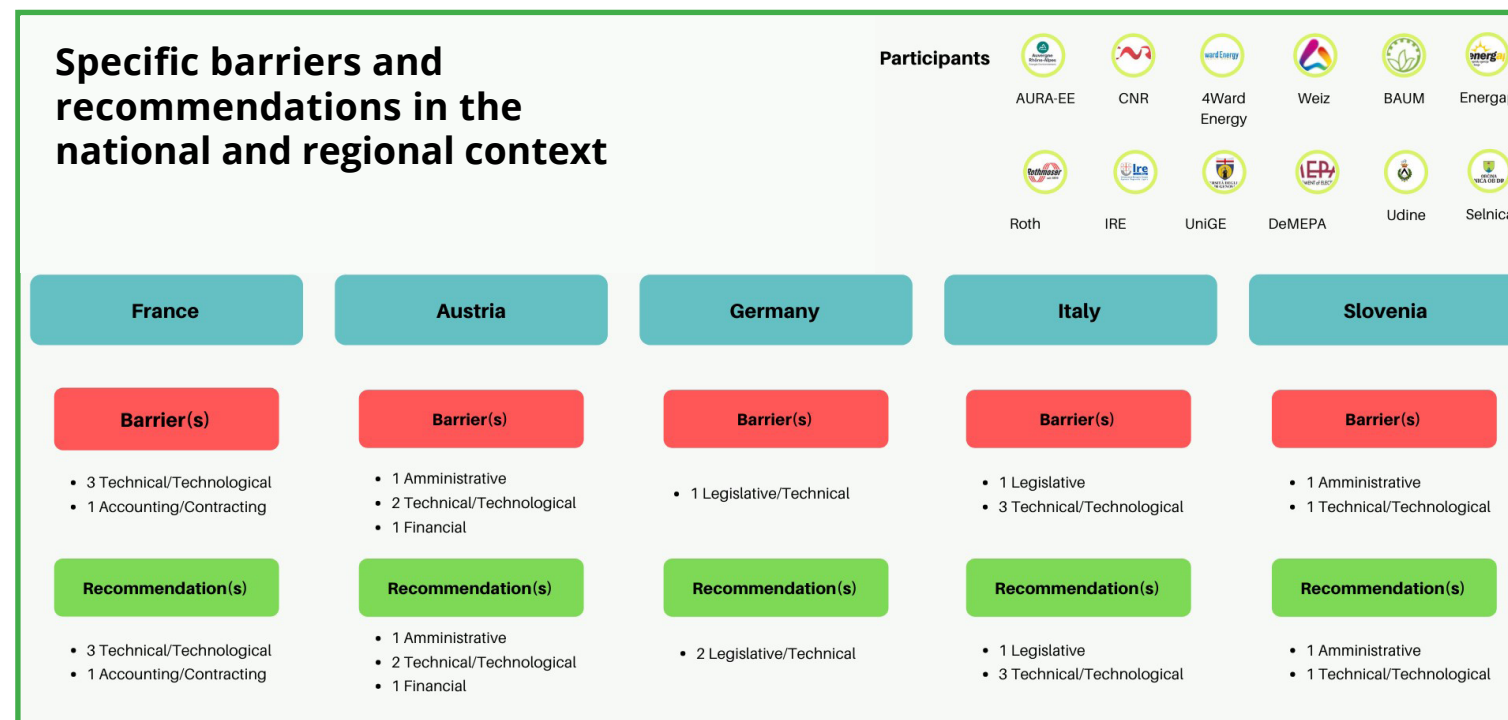


Figure 6 – Barriers and recommendations in brief identified at National and Regional level

WORKING WITH ENERGY REGULATORS

Energy regulators were invited to participate in the Sounding Board and provide feedback to policy recommendations. Within this document, the Municipality of Udine as WPL consolidates a summary report of the discussions with the energy regulatory authorities involved, organized and conducted by the respective partners of the Alpgrids Project at a national level.

Despite the efforts made by all the partners of the Project, the results in the action of involving the National Authorities and Ministries differ from country to country.

While solid and cooperative relationships have already been structured in France, Austria and Slovenia with excellent results, the relationship between partners and Authorities/Ministries is still ongoing in some target countries of the Project:

COUNTRY	ACTIVITY SUMMARY AND RESULTS
France	AURAE discussed and presented in the course of public workshops, 10 measures to support the development of local governance in RES projects. It was also possible to cooperate in the drafting of the future decree on energy communities, transposing Community directives.
Austria	4Ward and Energy Graz had the opportunity to present to the National Regulator the results achieved by the Austrian pilot projects resulting from the work carried out in the Alpgrids Project by promoting measures in favor of the development of microgrids and LECs and obtaining positive feedbacks from the representatives of the Authority. Specific barriers were also discussed (administrative and organizational, economic for low-income families, tariff and legislative), analyzing risk aspects and related opportunities to overcome existing obstacles.
Germany	Baum and Roth have not yet had the opportunity to cooperate with the national authorities and ministries. The events resulting from the Covid_19 pandemic and the recent federal elections did not facilitate the process. As for Italy, the reports and the results deriving from the existing collaboration may come in the coming months.
Italy	Udine, IRE Liguria and DeMEPA are respectively in contact with 3 different national actors: Ministry of Economic Development, GSE (Electricity Services Manager) and ARERA (Regulatory Authority for Energy, Networks and Environment). In all three cases, some difficulties are highlighted in identifying the willingness of national actors to open a discussion on the issue. The talks and contacts have started and new meetings are being planned. The identified actors were duly informed of the activities of the Alpgrids Project and project documents were made available to them to be evaluated and commented on. New developments will be reported in the coming months of the activities.
Slovenia	Energap and Selnica were able to count on the collaboration of the Ministry of Infrastructure (Energy Directorate) and the Energy Agency (market regulator). The discussions conducted by the partners with the two identified national actors have highlighted the challenges that the country is facing on the Energy Communities, in particular those of a technical, legislative, financial and administrative nature. Furthermore, the discussion touched on a topic strictly connected to the LECs: that of Energy Poverty, on which the Ministry and Agency are cooperating with various stakeholders and within which to insert policies in favor of LECs at a national level.

Table 2 – Relationship established with Energy Regulators in target countries

MOBILIZING REGIONAL FINANCIAL INSTRUMENTS

The common element that emerges from the comparison between the partners on the subject is that, at the national level, the laws that have transposed the EU directives have not at the moment produced an incentive system that can guarantee a significant economic advantage for private citizens who intend to implement a LEC. As an example, the provisions of Italian legislation are reported, but the extent of the incentives in the other Member States is not very different. According to the guidelines published by ARERA, National Authority for Energy Grids Regulation and Environment (5 August 2020):

- each community member maintains the relationship with its energy provider.
- the energy community is a juridical entity such as a consortium, a cooperative or an association.
- each community member must be physically connected to the LV distribution network and powered by the same MV-LV substation.
- the shared energy is incentivized at 11 c €/kWh by GSE.
- the shared energy is also incentivized by a reduction of transmission (referring to the TRASE tariff) and distribution (referring to the highest value of the BTAU tariff for the month considered) grid fees.
- the energy injected into the grid can be sold on the electricity market or can be purchased by GSE (Gestore Servizi Energetici - National Energy Services Operator) at a guaranteed price within the regulatory system of "Ritiro Dedicato" (dedicated withdrawal), according to the ARERA's directive n° 280/07.

The limited economic convenience is even more evident when compared with the renewable promotion tools activated in previous years by virtue of other incentive systems currently in force in various Member States, or in force until a few months ago (e.g., the energy bill for the PV in Italy). The attention that is noted for the economic and financial aspects of the LECs is undoubted. Currently, in terms of energy community, the interested parties look to local authorities and public technical representatives to have a clearer and more precise picture not only from a technical point of view, but also from an economic convenience standpoint. To this we must add the climate of uncertainty that prevails in the EU at this particular historical moment. The costs of raw materials are increasing and this favors the rationalization process in the production and distribution of electricity in which the LECs are inserted. On the other hand, the costs of the plants are also growing with a consequent lengthening of the payback times for the investments required by the new plants for renewables to which the granting of the incentives provided for the LEC is generally bound. On the other hand, there are different considerations on the convenience of LECs if a purely financial analysis is renounced and the evaluation is extended to other aspects enhanced by the introduction of energy communities with particular reference to the containment of energy poverty and the spread of participatory democracy models and spread throughout the territory. Based on the experiences of the project partners in relation to the economic frameworks developed for the implementation of their own pilots, an orientation towards the evolutionary direction has developed to be suggested to the Legislator for an update of the regulatory framework:

- tax exoneration (in some Member States it already exists for individual self-consumption),
- feed-in tariff for the excess energy production
- specific standing charge for the use of the public grid
- higher investment aids
- increasingly premium on the self-consumed energy
- administrative simplification regarding the legal contracts to be set up between producers and consumers.

The pricing environment being often very complex, each project becomes a particular case. Small changes in a project can imply great changes in its economic viability. This prevents replication and thus mass deployment.

To allow for the definition of a replicable collective self-consumption scheme, a stable, simple and seamless pricing environment is needed.

5

DEMONSTRATING MICROGRIDS 'IN ACTION'

STUDY VISIT TO PILOT SITES



FRANCE

The pilot sites studied by CNR are located in the Drôme area, in the South-Eastern part of France, at the foothills of the Vercors mountain range. In this rural area, a collective self-consumption (CSC) operation is led by ACOPREV, a local citizen community. The pilot sites consider the actual CSC operation, which concern 33 consumption points spread over two low-voltage substations, and the long-term objective of ACOPREV, which aim at encompassing more than 500 consumption points spread over 35 low-voltage substations. CNR has developed a numerical tool that simulates these CSC operations under various assumptions, to assess how the use of consumption flexibility in regard to the energy grid needs can improve the CSC economic interest.



ITALY

SAVONA PILOT: FROM THE SMART POLYGENERATION MICROGRID TO SPEED2030 POSITIVE ENERGY DISTRICT

The Savona University Campus is a compound in the Legino neighborhood, two kilometers from the Savona city Centre. The Smart Polygeneration Microgrid (SPM) shown in Figure 7 has been developed in the last decade and it currently represents an important R&D project related to the concepts of Sustainable Energy (renewable energy, energy saving and reduction of CO₂ emissions).

The Savona Campus is currently facing an upgrade of its technology mix. In the upcoming months the installation of new power plants will be finalized to increase the exploitation of renewable sources up to approximately 280 kW.

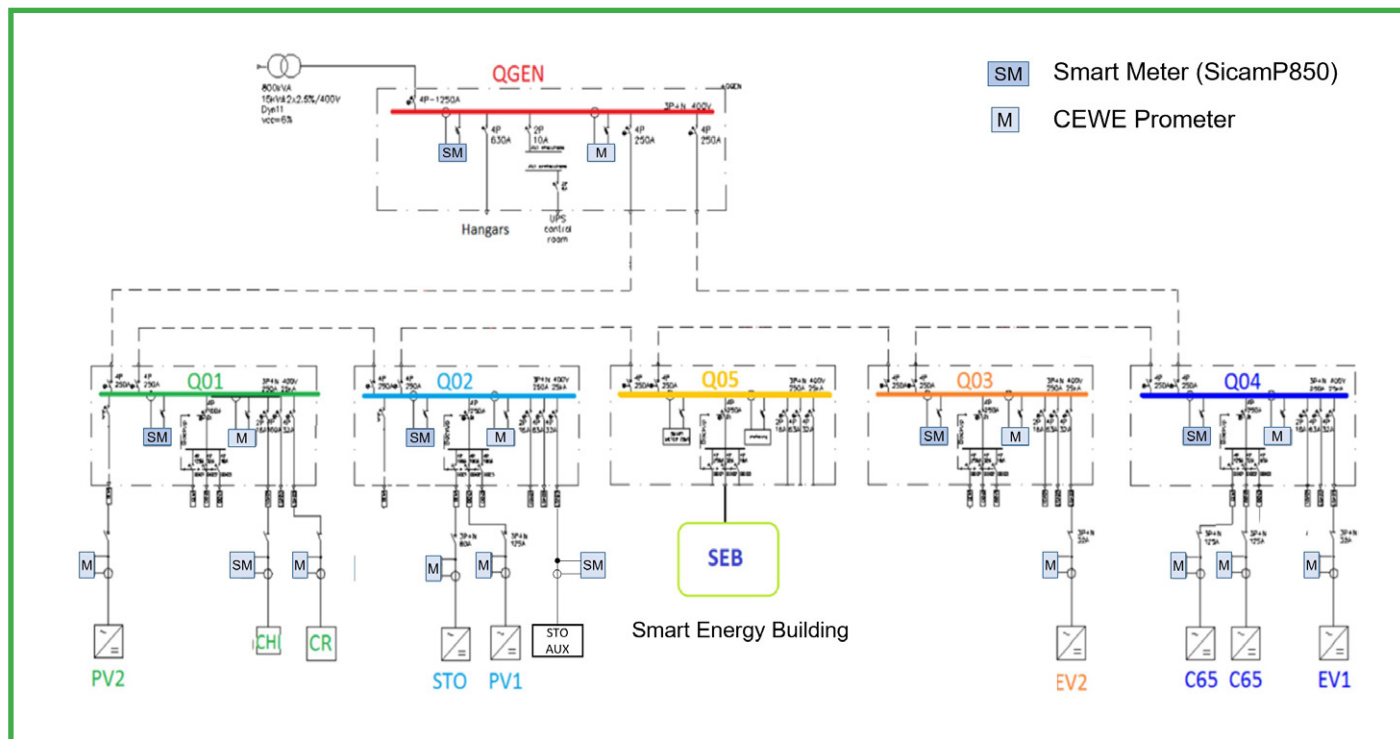


Figure 7 – The single line wiring diagram of the Smart Polygeneration Microgrid (SPM) – Savona Campus

DEMONSTRATING MICROGRIDS 'IN ACTION'

STUDY VISIT TO PILOT SITES

SPEED2030 (Savona Positive Energy & Environment District), the pilot Site presented within Alpgrids European project, is a new PED that is intended as an expansion of the above cited Savona Campus (Figure 8). The development of the area has been planned based on the PED (Positive Energy District) guidelines, focusing on the maximization of energy production from renewables and on exploitation of the resources at the district level by using, where possible, microgrid configurations and energy sharing through REC (Renewable Energy Communities).

All the new buildings will be equipped with PV plants and supplied with thermal and cooling energy produced by reversible electricity-driven heat pumps to completely avoid the use of fossil fuels. SPEED2030 is characterized by a set of power plants for self-production that are significantly different to those of the Savona Campus both in current and upcoming configuration.

The performance of the new SPEED2030 District has been evaluated by introducing KPIs to assess both the energy and the environmental impact of the site. In SPEED2030 both electrical and thermal load will be almost completely fulfilled by means of renewables thus resulting in significantly higher values for KPI indexes with respect to Savona Campus 2.0 (92% of Electrical Self-Production from Renewable Energy Sources Vs 40% of Savona Campus, 62% of CO₂ avoided emission Vs. 16% of the Savona Campus). These results show that the change in the design approach of SPEED2030 with respect to the existing Savona Campus leads to a significant reduction in emissions by using renewable energy sources for meeting both the electric and thermal demand.



Figure 8 – SPEED2030 – View of the area

SLOVENIA

ALPGRIDS PILOT SELNICA OB DRAVI

The pilot project focuses on the development of a feasibility study of a microgrid of public buildings (Selnica ob Dravi Primary School with a gym, Selnica ob Dravi Kindergarten, Culture Centre Arnold Tovornik, Selnica ob Dravi municipal building and Selnica ob Dravi Fire station - PGD) in the center of Selnica ob Dravi. A photovoltaic power plant and a cogeneration plant (CHP) for the production of electricity and heat are part of the pilot project. Both installed at the primary school. The CHP is fueled with liquefied petroleum gas. The other buildings are only energy users. The culture Centre and the PGD are heated with heat pumps which represent major switchable electricity consumers.

To establish an energy community that is a legal entity, we would need clear instructions on how to implement the legislation. This means precise guidelines for obtaining documentation on how to start the establishment and implementation of the energy community in practice. At the moment, in Slovenia there are only cases of established energy communities where existing legal entities, i.e., existing electricity suppliers and providers of solar power plants and other energy solutions enter into contracts with individuals and allow them to reduce electricity bills for users who offer roofing in the community for the installation of solar power plants, etc. When the community will be established it will involve public buildings. The school will serve as a production unit and a user. If possible, the fire station will have production and small storage system also. Others will be the users.

The pilot is presented in the testimonial video where the policy makers share their thoughts, ideas and conclusions on developing microgrid solutions and energy community in Municipality Selnica



Figure 9 – Selnica ob Dravi Primary School with a gym

DEMONSTRATING MICROGRIDS 'IN ACTION'

STUDY VISIT TO PILOT SITES

ob Dravi to use more renewable energy sources, to be more energy self-sufficient and efficient. The pilot will serve as an example of good practice to citizens. Instead of buying energy, the municipality will be able to use the saved funds for the development of cultural programs in their cultural center, which attracts more and more visitors to the municipality, both locals and the wider region, and represents a significant income.



Figure 10 – Selnica ob Dravi Kindergarten, Culture Centre Arnold Tovornik, Selnica ob Dravi municipal building and Selnica ob Dravi Fire station - PGD

DEMONSTRATING MICROGRIDS 'IN ACTION'

STUDY VISIT TO PILOT SITES

TESTIMONIAL VIDEOS

ALPGRIDS PILOT SITE in Savona



https://www.youtube.com/watch?v=J1ElhIH_P84&t=2s

ALPGRIDS PILOT SITES in Val de Quint and Val de Drôme



https://www.youtube.com/watch?v=uVRq_jNY1Bs

ALPGRIDS PILOT SITES in Austria



https://www.youtube.com/watch?v=CCp6QrA_VD0

ALPGRIDS PILOT SITE in Selnica ob Dravi



<https://www.youtube.com/watch?v=6r6k-8oC08s&t=4s>

ANNEX 1

SET OF BARRIERS AND POLICY RECOMMENDATIONS FOR POLICY MAKERS (EU LEVEL)

BARRIERS IDENTIFIED ACCORDING WITH CATEGORIES

ADMINISTRATIVE BARRIERS
1- Excessive complexity of administrative procedures and excessive articulation of offices, the complexity of technical, financial and legal requirements discourage investors and potential end users.
2- Lack of education, training and a framework for development activities aimed at the capacities of citizens, local governments and SMEs to improve energy literacy. Including the identification of subjects able to mediate information and/or manage training.
3- Lack of a program and coordination between initiatives that, in addition to informing, make it possible to identify subjects capable of guiding future LECs, i.e., to act as an interface between the consortium of users/producers that make up the single LEC and the national regulators (for Italy for example, the GSE, ARERA, other)
LEGISLATIVE BARRIERS
4- Presence of different implementation contexts according to national legislation.
5- Uncertainty of LECs legal form in the national legal system, of the evaluation of benefits, of the proximity, of the control of conformity of the LECs with the criteria that classify them as such.
6- Difficulties in establishing support schemes, cooperation with distribution system operators and the rights of energy communities to assume this role.
FINANCIAL BARRIERS
7- Lack of a framework providing guaranteed prices for exported electricity, as well as stable tax incentives on RES installation. Lack of a system that guarantees equitable remuneration of excess energy. Where provided, the incentives do not represent an attractive amount for most stakeholders. These often do not find the ratio of incentives/resources invested convenient.
8- Difficulty in maximizing the system value of smarter technologies, especially those that include storage and other flexible solutions. Presence of complex regimes governing shared self-consumption in buildings inhabited by many households or in local geographic areas.
ACCOUNTING/CONTRACTUAL BARRIERS
9- Difficulty in public administrations to find internal personnel adequately trained in the management, control and verification of contracts for the management and supply of energy goods and services.

TECHNOLOGICAL AND TECHNICAL BARRIERS

- 10-** Absence of specific photovoltaic capacity or energy production targets of photovoltaic roofs set in relation to the technical potential of the available surfaces in each Member State/Region
- 11-** Uncertainty/Inadequacy of quantitative targets for the development of local energy communities which should constitute a percentage of the overall national/regional target for renewables.
- 12-** Costs of the energy monitoring systems of the users involved in the LECs preparatory to the optimization of the LEC itself and necessary for the definition of the electrical loads
- 13-** Difficulty/Opportunity of overcoming the power constraint of 200 kW for RES plants (e.g., Italy, Law no. 8, 28 February 2020).

COMMUNICATION AND INFORMATION BARRIERS

- 14-** Delay in decisions on enabling frameworks for local energy communities and difficulties in identifying new citizens' rights to generate, self-consume and share energy
- 15-** Ensure visibility of the LECs that have been established. Find a way to communicate that the users/producers who have joined in a LEC bring an added environmental value to the community they belong to.

EQUAL OPPORTUNITIES AND NON-DISCRIMINATION

- 16-** Difficulty in guaranteeing non-discriminatory access to energy for all citizens and supporting measures to combat situations of energy poverty.
- 17-** Loss of opportunities for the development of potential new economic activities that can generate sustainable well-being mainly in rural and mountain areas.

RECOMMENDATIONS FOR POLICY MAKERS

Barrier category	N°	Recommendation
Administrative barriers	1	Procedures (e.g., regulatory and administrative) and support schemes should be simplified/created, for example by creating single points of contact (One-Stop-Shops), and by reducing technical, financial and legal requirements.
	2	Providing education, training and capacity building activities to citizens, local governments and SMEs will improve the energy literacy of all citizens.
	3	Stimulate coordination between public entities (e.g., Local administrations, Energy Agencies, Universities, ...) or even private individuals (Research Centers, professional firms, ...), so that in addition to informing, the emergence of single aggregating subjects is encouraged, is able to "trigger" a CoE, to guide it and to interface with regulatory bodies (for Italy GSE, ARERA, ...)
Legislative barriers	4	Renewable energy communities must be properly defined taking into account key characteristics such as energy sharing, consistency between the definitions of local energy community (LEC) and citizen's energy community (CEC), the relationship between communities energy (EC) and collective self-consumption. Lawmakers should adopt the legislative framework on renewable energy communities as quickly as possible. However, such adoption cannot reduce the quality of the legislation and must allow for sufficient evaluations, reflections and consultations so that the measures adopted are actually fit for purpose.
	5	Establish a legal form of the LECs in the national and regional legal system that can guarantee the evaluation of the criteria relating to the benefits, proximity, compliance control of the LECs in a coordinated manner in the Member States.
	6	Maintain a stable and cooperative policy environment for the promotion of renewable energy, noting that local energy communities are often involved in generating, supplying, distributing and using renewable energy
Financial barriers	7	LECs members should receive guaranteed prices for exported electricity, as well as tax incentives on renewable hardware. A fair remuneration of excess energy should be ensured. In addition, incentives should be introduced that provide reward on a dynamic basis.
	8	The system value of smarter technologies, which often includes storage and other flexible solutions, needs to be maximized. In addition, simple schemes should be made available for shared self-consumption in buildings inhabited by many households or in local geographic areas.
Accounting/Contractual barriers	9	Appropriately train the internal staff responsible for contracts so that they are adequately prepared to manage, control and direct the supplier with respect to what is contractually agreed.
Technological and technical barriers	10	A photovoltaic capacity or energy production target of photovoltaic roofs that should be set in relation to the technical potential of photovoltaic roofs in each Member State/Region, ideally staying around 50% by 2030.

	11	A target for energy communities which should constitute a percentage of the overall national/regional target for renewables; as energy community projects tend to increase public acceptance, this percentage should be significant. In addition, non-energy targets should also be defined, such as the number of (renewable) energy communities and the number of their members.
	12	Energy monitoring systems preparatory to the establishment of an LEC: need to contain the investment or to provide for facilitations by the Public Body. Local Governments and Authorities could structure a tool/solutions/other ways to support LEC development.
	13	Overcoming the power constraint of 200 kW for RES plants which, currently, seems to be only a "technical constraint" connected with the development of smart grids (e.g., Italy - Law no. 8, 28 February 2020).
Communication and information barriers	14	Decisions on enabling frameworks for energy communities and end users should not be delayed by paying particular attention to features such as new citizens' rights to generate, self-consume and share energy, support schemes, cooperation with distribution system operators and rights of energy communities to assume this role, vulnerable families, access to data, information and training, capacity building and the role of local authorities and municipalities.
	15	Include Local Energy Communities in Local/Regional plans by reporting best practices and informing about the economic, social and environmental benefits deriving from LECs at the local/regional level. Report the LECs as "benchmark of excellence" within the local and regional planning tools.
Equal opportunities and non-discrimination	16	Ensuring equal access to energy and energy services is one of the EU policies and one of the 3 Pillars of the Covenant of Mayors for Climate and Energy initiative. Member States and Local Governments must plan measures to support access to energy for all citizens, in particular for people and families living in situations of "energy poverty".
	17	Create favorable local conditions for the development of LECs that can involve local actors (Local Governments, SMEs, citizens, other stakeholders) and provide all-inclusive services (One Stop Shop) that support the development of a sustainable economic driving force linked to LECs.

ANNEX 2

SPECIFIC BARRIERS AND RECOMMENDATIONS IN THE NATIONAL AND REGIONAL CONTEXT OF EACH PARTNER

Country	Partners	Barrier(s)	Recommendation(s)
France	PP1 AURAE PP9 CNR	<ul style="list-style-type: none"> • Difficulty for municipalities to obtain the load curves of their buildings • Complexity of procedures and contracting solutions for collective self-consumption • Difficulty to reach an economic balance for PV plants 100 kWc, without subsidies • No valorization of flexibility 	<ul style="list-style-type: none"> • Procedures with DSO's IT tool to be simplified and secured • Work out standardized contracts and processes and explain them to EC and municipalities • Enable tax exoneration on collective self-consumption, like for individual self-consumption • Define with DSO's which flexibility services could be valued and how
Italy	PP2 IRE PP6 DeMEPA PP10 Udine PP12 UNIGE	<ul style="list-style-type: none"> • Only a scheme of collective self-consumption from renewable sources has been regulated, by transposition, with some restrictions, the EU Directive 2018/2001 (renewable self-consumers) • For renewable energy communities including a plurality of self-consumers (public, commercial and industrial users), the 200 kw renewables power limit is too restrictive • For self-consumers of the same building (condominium), the definition of a convenient power of renewable source to be installed is quite impossible or too expensive: end users have only data on a monthly basis while the incentive is defined on an hourly basis. • The establishment of a renewable energy community has to be performed through a private writing among the self-consumers, without any format or guidelines for the main significant aspects (such as the allocation of incentives among the self-consumers, how to operate in the event of recession from the community by a self-consumer). <ol style="list-style-type: none"> 1. The presence of an extremely complex incentive scheme: in Italy the user can currently choose among 4 types of incentives or agreements: Scambio sul posto (exchange on site), Ritiro dedicato (remuneration of excess energy), Tariffa Omnicomprensiva (all-inclusive tariff), Renewable Energy Community/ Collective Self-consumption 2. In 2020 about 750MW of new PV capacity has been installed in Italy, (+3.8% with respect to 2019). The most used incentive has been the Scambio sul Posto (57%). The current trend is very far from that necessary to match the 2030 target. If the REC incentive scheme will not significantly overcome the benefits from the past schemes, the major effort to establish and manage an Energy Community could not be justified. Furthermore, the trend of RES installations towards 2030 will not improve significantly 3. Target on photovoltaic roofs: the present law requires a low level of PV capacity only for new buildings. For existing buildings, it is not mandatory to install any photovoltaic plant 4. The rules for expenses deduction on building makeover (from 50% to 110%) (included RES self-generation as intervention for efficiency increase) are not stable, but extended year by year causing uncertainty for investors 	<ul style="list-style-type: none"> • Transposing also the EU Directive 2019/944 (citizen energy community) • To extend the limit considering that there already is a geographic constraint of a same substation for all the self-consumers. • GSE, the public company in charge of paying the incentive, must provide the hourly consumption data of the renewable energy community using the same procedure adopted to evaluate the incentives. • A set of simple applicable rules must be defined (and updated over time) by the Regulatory Authority (or by a public body delegated for the purpose) <ol style="list-style-type: none"> 1. Define a new and simpler incentive scheme. In the case of multiple choice, could the incentive level be prioritized based on the most promising configuration? 2. If the REC is pursued as one of the preferred schemes, should the associated incentive be the greatest in all the most likely configurations? 3. Standards and technical rules cannot generally be applied retroactively except for security requirements. To facilitate the installation of photovoltaic systems on existing buildings, a specific incentive scheme should be applied <p>The deduction of expenses for generation from RES installations on existing buildings should be extended at least for 3-5 years</p>

Austria	PP3 WEIZ PP5 4Ward Energy	<ul style="list-style-type: none"> Excessive complexity of administrative procedures and excessive articulation of offices, the complexity of technical, financial and legal requirements discourages investors and potential end users. Difficulty in maximizing the system value of smarter technologies, especially those that include storage and other flexible solutions. Presence of complex regimes governing shared self-consumption in buildings comprising many households, or in local geographic areas. → National situation: The use of Storage systems currently leads to paying grid fees and taxes twice, once while charging, once while de-charging. Lack of security for investments, since there is a possibility of LEC members dropping out of the LEC at any given time. Difficulty/Opportunity of overcoming the power constraint of 200 kW for RES plants (e.g., Italy, Law no. 8, 28 February 2020). → In certain state of Austria limits for 20 kWp PV capacity occur 	<ul style="list-style-type: none"> Create standardized contracts and processes to ease the work of potential founders of energy communities Define storage systems (or flexibilities) generally in the legal system, as units that don't have to pay grid fees or taxes twice, since they will play an important role in the future energy system. Allow for certain restrictions on the "free to leave or join at any given time" provided by the EC in case of major investments Neglect such limits for energy communities if power consumption within the community is guaranteed.
Slovenia	PP4 Energap PP11 Selnica	<ul style="list-style-type: none"> Complexity of administrative procedures (for the regulation of self-sufficient community the investor needs almost three times more documentation than in the case of individual self-sufficiency). Long waiting periods for obtaining approval for the connection of power plants by electricity distributors and in many cases refusing consents due to network incapacity 	<ul style="list-style-type: none"> Increased investments in strengthening already built networks and investments in intelligent networks with new technologies that take into account the dynamic demands of consumption and planned diversified production Eliminate administrative requirements and barriers for customers that prevent them from choosing to participate in collective self-sufficiency or Energy communities
Germany	PP7 BAUM PP8 Rothmoser	<p>National context: The EU rules of Clean Energy Package have not been implemented. The only energy sharing mechanism that is defined in German legislation is called Mieterstrom (tenant electricity). As of §21 EEG Abs. 3 Satz 2, the shared energy shall not be transmitted over the public grid.</p> <p>Regional context: The 10H-rule which defines that the minimum distance between a wind turbine and the next dwelling must be at least 10 times the distance between both, is effectively prohibiting further wind energy deployment in Bavaria.</p>	<p>National context: The following changes in the German Renewable Energy Act should be made:</p> <ul style="list-style-type: none"> In §21b Absatz 3 (included since 2017, not changed 2020) Satz 1, Nummer 2, „ohne Durchleitung durch ein Netz“ (means: without using the public grid), should be deleted. In fact, these five words imply in the majority of cases that all parties of a tenant electricity model must be located within the same building. This restricts the implementation of tenant electricity models to single buildings and prevents effectively, that they involve participants from different buildings within the same urban district - contrary to the purpose of the EU Renewable Energy Directive. In addition, the legal term "Quartier" (quarter) which is introduced in 2020 in §21b Absatz 3 Satz 1, needs to be defined appropriately within the German Renewable Energy Act. As a general rule, legal terms need to be defined in a legal act in order to be effective. Otherwise, interpretation is left to the judicial authority, thus effectively preventing application of the model offered by the law by those who refrain from going to court for its implementation. <p>Regional context: Remove 10H-rule. National legislation is sufficient to establish that environmental, nature protection and citizens involvement is ensured.</p>

ANNEX 3

ACTION TEMPLATE TO INTRODUCE MEASURES IN LOCAL PLANS

ACTION TITLE					
Action no.					
Sector	E.g., Residential, Tertiary, Public, Public/Other				
Energy poverty related					<input type="checkbox"/>
Action type	E.g., Local electricity production District heating/cooling Cogeneration/Trigeneration Smart grid Integrated Action Communication/Information/Technical support Other				
Emission factor	E.g., IPCC				
Data source	E.g., Inventory Baseline Emission Inventory Monitoring Emission Energy Baseline				
BASELINE YEAR:			EXPECTED RESULTS		
Final energy consumption		MWh	Energy saved		MWh
Energy production		MWh	Increased energy production		MWh
Estimated emissions		tCO₂	Emissions avoided		tCO₂
INFORMATION					<input type="checkbox"/> Benchmark of excellence

Responsible sector	Municipality Region other		
Stakeholder(s)	involved/engaged		
Timeline	<input type="checkbox"/> Expected	<input type="checkbox"/> Ongoing	<input type="checkbox"/> Implemented
	Duration: years	Expected start (year):	Expected end (year):
Costs and financing	Costs: €		
Financing according to the municipal budget	<input type="checkbox"/> Not financed	<input type="checkbox"/> Scheduled	<input type="checkbox"/> Foreseen in the budget <input type="checkbox"/> Financed
	<input type="checkbox"/> Municipal funds		Amount: €
	<input type="checkbox"/> External funds (third-party financing)		Amount: € Third-party financing:
INDICATORS (KPIs)			
KPI (1)			
KPI (2)			
DESCRIPTION			
Action			
Expected results			
References			
ACTION WEB PAGE			
Cartography attached	<input type="checkbox"/> Cartography/supporting images		
Area where the action is located			
Web references			

ABBREVIATIONS

ARERA	Italian National Authority for Energy Grids Regulation and Environment
CEA	Collective Energy Action (s)
CEC	Citizens Energy Community
CEP	Clean Energy Package
CSC	Collective Self-Consumption
GSE	(<i>Gestore Servizi Energetici</i>): Italian National Energy Services Operator
REC	Renewable Energy Community
LA(s)	Local Authority(ies)
LEC(s)	Local Energy Community(ies)
SB	Sounding Board
SECAP(s)	Sustainable Energy and Climate Action Plan(s)

RESPONSIBLE PARTNER FOR THE COMPILATION OF THIS DOCUMENT



Comune di Udine
Via Lionello 1
33100 Udine, Italy
E-mail: bruno.grizzaffi@comune.udine.it

WITH CONTRIBUTIONS FROM



CNR – Compagnie Nationale du Rhône
Direction Transition Énergétique et Innovation
2 rue André Bonin
69316 LYON CEDEX 04, France
E-mail : g.bontron@cnr.tm.fr



ENERGAP - Energetsko podnebna agencija za Podravje
Smetanova ulica 31, 2000 Maribor, Slovenia
Phone (+386) 2 234 23 60
E-mail: vlasta.krmelj@energap.si



Franz-Pichler-Straße 30
8160 Weiz, Austria
Phone (+43) 3172 603 0
E-mail : office@innovationszentrum-weiz.at



4ward Energy Research GmbH
Reininghausstraße 13A
A-8020 Graz
E-mail: thomas.nacht@4wardenergy.at
in cooperation with Reiterer & Scherling GmbH



IRE spa – Infrastrutture Recupero Energia agenzia regionale Ligure
Via Peschiera 16
16122 Genova, Italy
E-mail: verardo@ireliguria.it

PROJECT LEAD PARTNER AND CONTRIBUTOR



**Auvergne
Rhône-Alpes**
Énergie Environnement

Auvergne-Rhône-Alpes Energy Environment Agency
Rue Gabriel Péri 18, 69100 Villeurbanne, France
Phone: (+33) 0478372914, +33 0472563365
E-mail: patrick.biard@auvergnerhonealpes-ee.fr
noemie.bichon@auvergnerhonealpes-ee.fr



**Università
di Genova**

Università degli Studi di Genova
Centro di Servizi per il Ponente Ligure
Technical Office – Sustainability, Savona Campus
Via A. Magliotto, 2
17100 Savona, Italy
E-mail: paola.laiolo@unige.it



Rothmoser GmbH&Co. KG
Am Urtelbach 4
D-85567 Grafing bei München
Phone (+49) 8092 7004 0
E-mail: florian.rothmoser@rothmoser.de



Via Madrid 16
20090 Segrate, Italy
Phone (+39) 0249518538
E-mail: pasquale.motta@demepa.it



**OBČINA
SELNICA OB DRAVI**

Občina Selnica ob Dravi
Slovenski trg 4
2352 Selnica ob Dravi, Slovenia
E-mail: info@selnica.si



B.A.U.M.

Gotzinger Str. 48
81371 München, Germany
E-mail: m.stoehr@baumgroup.de

Interreg Alpine Space



This project is co-financed by the European Regional Development Fund through the Interreg Alpine Space programme