

3.3.2. Report on Joint Action for Energy Efficiency



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Table of content

Table of content.....	3
1. Introduction.....	4
2. Partners	4
3. Joint Actions Definition	5
3.1. Objectives	5
3.2. Methodology	6
3.3. Template – General information of Joint Action	9
3.4. Joint Actions Results	10
4. 4. Global analysis of the objectives of the Joint Actions	18
5. Bottlenecks, Barriers, and Difficulties on Implementation of Joint Actions	37
6. SWOT Analysis	39
7. Conclusions	40

1. Introduction

MED cities and regions have adopted local energy strategies for achieving the energy efficiency targets set by EU. However, fresh approach is needed since the implementation capacities are not sufficient to meet the set goals. The ENERJ – Joint Actions For Energy Efficiency project is addressing the contribution of local communities to the achievement of the objective for EU's decarbonisation. The EU targets for ensuring security of efficient energy supply are transferred to the national and local level. In municipalities, the local public authorities are responsible for setting up their frameworks for efficient energy management by taking into account local potentials for sustainable development. The project aims at enhancing and improving the coordination of Sustainable Energy Action Plans (SEAP's) and other relevant energy Efficiency Plans. The project will develop and test a technologically oriented methodology for increasing cooperation among public authorities through Joint Actions transferring the most promising methods in the partner regions.

2. Partners

The ENERJ Project has the collaboration of the following partners:

- Anatoliki S.A. - Development Agency of Eastern Thessaloniki's Local Authorities (Greece)
- FAMP – Andalusian Federation of Municipalities and Provinces (Spain)
- IRENA - Istrian Regional Energy Agency L.t.d. (Croatia)
- Cyprus Energy Agency (Cyprus)
- Gozo Development Agency – Gozo Regional Committee (Malta)
- Metropolitan City of Capital Rome (Italy)
- GOLEA - Goriška Local Energy Agency (Slovenia)
- Albania Ministry of Energy and Industry (Albania)
- AREANATEjo - Regional Energy and Environment Agency from North Alentejo (Portugal)
- Climate Alliance Italy (Italy)
- Intermunicipal Community of High Alentejo (Portugal)

3. Joint Actions Definition

3.1. Objectives

Eleven partners in nine Mediterranean countries are active to increase in their regions and EU-wide energy efficiency in public buildings.

These questionnaires focused mainly on the Joint Actions Case that each partner will enhance in its operation area of operation and that resulted, firstly, in the establishment of new partnerships with local authorities in order to implement measures or behaviours aimed at improving energy efficiency at local level.

Taking into account the methodology foreseen for ENERJ's Project, it is vital to develop an analysis of the obstacles and enhance a common and transnational approach in order to identify common solutions to all the involved entities.

We prepared this Report that contains a comparative analysis of the Joint Actions, thus identifying and analyzing the main difficulties to be considered.

Then, the main outputs of this task are:

- Overview of existing approaches to implementation of energy strategies in each country
- Joint list of obstacles in implementation of local energy strategies
- Increased knowledge and competences of local public authorities in 9 countries, including decision-makers and managers of energy strategies,
- 9 key on-going initiatives (energy strategies) identified for assessment in participating areas.

Main conclusions: How was Joint Action defined?

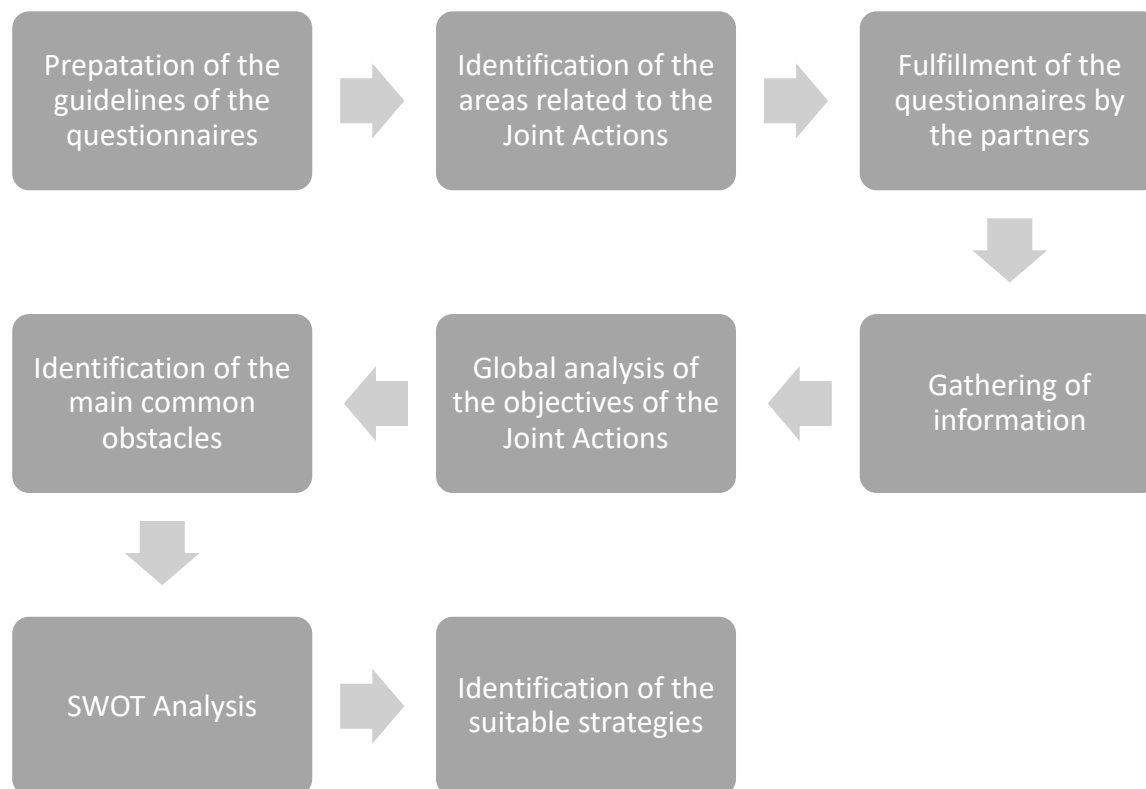
The main conclusion drawn from the Focus Group meetings and the Local Conference for the Joint Action Implementation is that the Joint Action Plan should cover the following aspects or phases of an Action Plan.

1. Diagnostic phase: energy audits.
2. Training (Technicians, politicians, users).
3. Draw up and supply a catalogue of tender documents (Public, Public-Private).
4. Assistance for access to different types of funding (European, Public-Private, Financial Instruments).
5. Planning.
6. Monitoring.

3.2. Methodology

The methodology used was based on the contribution of all WP Leaders, namely in what concerns the identification of the areas/themes to be covered as well as the best way to meet Project's objectives.

Thus, we can point out the following features:



The project's main objective is to enhance and improve the coordination and performance of SEAPs and other Energy plans concerning achieving EU and national targets on the energy efficiency in public buildings. The project's approach is based on the belief that in order to achieve tangible effects in improving energy efficiency in public building stock, policies and actions need to be coordinated and tailored to the territorial needs.

From an initial analysis of the current situation, four are the main common factors that have influenced the lack of effectiveness in the implementation of SEAPs. The first one is a general inadequacy of the proposed measures to take into account the specific territorial context. SEAPs are often too generic (not integrated into the city's specific features), based on incomplete data and not always integrated into existing local energy policies and plans. Secondly there is a general lack of "critical threshold", public awareness and qualified human resources at a

governance level. Thirdly, the scarce funding opportunities, the lack of knowledge about existing opportunities and of a multisector integrated approach and a scarce involvement of the private sector have been obstacles in making financial strategies work. Another common obstacle has been the incomplete, unshared, scattered or asymmetric information regarding energy efficiency performance of the building stock at the regional level. These are the main challenges that ENERJ project seeks to tackle by offering different forms of support to local authorities and stakeholders in order to facilitate the implementation of ad-hoc measures and target tangible results in energy efficiency for public buildings.

The project will support public bodies in the identification of specific achievable targets in EE through the coordination of Joint actions amongst municipalities, countries and territories in a multi-level governance approach. To do so, the project will develop tools and provide services that aim at creating awareness as to the added value of Joint Actions, simplifying the decision-making and implementation process of energy-related pilot actions and plans.

The project aims to form a new type of role among existing structures taking care for public building stock energy efficiency – a Joint Actions Coordinator (JAC). JAC will have the qualifications of energy managers. His or her role is providing support to municipalities in the definition and coordination of integrated joint EE interventions on public building stock.

The ENERJ project's online database and platform will help JAC in the decision making and guidance at governance level. The platform contains a collection of building stock energy efficiency data, regional overview of SEAPs, good practices, energy plans and policies, guidance on new financial mechanisms and allows a better visibility of the investment financing opportunities for private stakeholders (tenders, EPC, etc.), thus strengthening the collaboration with private companies that are willing to invest in this sector.

The ENERJ project builds on the awareness that a joint approach to energy planning, especially for small local authorities, can allow achieving more effective results than an isolated one, since – as it was also acknowledged for by the EU Commission (see i.e. the Quick Reference Guide for Joint Sustainable Energy Action Plan issued within the framework of the Covenant of Mayors) – aggregated municipalities can:

- more easily identify opportunities for high-impact actions
- benefit from economy of scale
- more effectively tackle the problem of lack of human and financial resources
- bundle efforts on SEAP preparation, implementation and monitoring.

In cases of Joint SEAP approach, the group of signatories is strongly encouraged to appoint a body/authority responsible for coordinating the SEAP development and implementation processes. It is recommended to delegate this work to the respective Covenant Territorial Coordinator or the most active or advanced municipality among the group or the agglomeration in the case of urban areas.

It is important to stress, that the Covenant of Mayors, although widely accepted in EU member states (especially Italy, France and Spain) as an effective concept of an action plan to tackle climate change, is on a voluntary basis. Some member states have introduced similar mandatory Energy planning on regional or local level.

ENERJ establishes a joint action approach that parts from the current situation in a given geographical area, regarding the energy planning in place, data availability, funding options, etc. and promotes the implementation of the existing plan (mostly SEAP) with the help of a Joint action coordinator (JAC) who can effectively plan, design, implement, manage and monitor joint actions for energy efficiency.

In order to effectively plan, design, implement, manage and monitor joint actions for energy efficiency, preferably within the framework of joint SEAPs or similar strategies certain prerequisites must be met.

An appropriate governance structure is crucial for the successful implementation of any energy efficiency action plan. In case of joint energy planning, coordination and governance have an even greater importance. Therefore, it is necessary for municipalities undertaking joint energy efficiency actions to create a dedicated body/authority or a steering cabin, responsible for coordinating the development, implementation, management and monitoring of energy efficiency actions on the whole involved territory. The steering cabin could involve different competences and should be managed by the energy manager.

The energy manager is a crucial figure in all phases of the energy efficiency interventions, from the energy planning, to the elaboration of the main tendering documents, to the monitoring of the implementation of the energy measures. The energy manager should also stimulate the policy makers' commitment on energy efficiency issues. In most countries, the law makes it compulsory, for bigger municipalities, the appointment of an internal energy manager, and recommends it also for groups of neighbouring small municipalities.

3.3. Template – General information of Joint Action



Project co-financed by the European
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Local Joint Action

General information

Partner	
Name of the Joint Action	
Organization Involved	
Municipalities involved or/and entities	

The background please describe the lessons learned from the project that constitute the basis for the development of the Joint Action	
The Joint Action please list and describe the actions implemented	
Players involved please indicate the organizations in the region who were involved in the development and implementation of the joint action and explain their role	
Time table Please explain the time needed for the realization of the Joint Action and the scheduled activities planned	
Expected costs	
Founding system provided	

Each partner was asked to fill out a simple template with the proposed joint actions that resulted from the focus groups and the national conference.

Subsequently, after some reflection and internal work, the municipalities were asked to produce a more extensive document that answered the following topics:

- Background (motivation, previous work)
- Stakeholders
- Definition of Joint Action and description of it
- Main Targets
- Time table

- Financing Strategy
- Expected Results

3.4. Joint Actions Results

The development of joint actions was based on the methodology proposed in D.3.1.1 - Guidelines for Joint Actions Definition. So, according the Application Form of ENERJ, 9 Joint Actions were defined (one per country).

Anatoliki S.A. - Development Agency of Eastern Thessaloniki's Local Authorities (Greece)

- **Energy Upgrade of Municipal Buildings**

ANATOLIKI, after the relevant consultation with the three municipalities, gathered all the necessary data (structural and energy related data) and prepared a common tender for the implementation of energy audits in 12 buildings of the three municipalities. This joint approach provided all the necessary data for the further definition of the Joint Action, as well as a consistency in the proposed interventions.

The second step is the definition of the way that the energy upgrade of the 12 municipal buildings could be implemented. A main issue that has to be determined is the scheme through which these Municipal Buildings would be Jointly upgraded, including the examination of the organizational, financial and operational aspects of the proposed model.

Since each Municipality is an autonomous organization in Greece, the overall way of the implementation of the Joint Actions is a topic of consultation with the Municipalities, including the options of a common programming contract or the most recent initiative of energy communities. The overall consultation is in progress, in the context of focus groups that have been set up, as well as in the context of local conferences.

- The Law 4513/2018 established the institution of Energy Communities. This institution includes the joint perspective with a formulation of a cooperative scheme between municipalities and public bodies. The institution has permanent characteristics, while seems to be convenient for the definition and planning of joint actions. The elaboration of the Law is recent and therefore a great field of study is opened. After the 2nd focus group, the involved Municipalities expressed their interest on potential formulation of an energy community, and the ENERJ project will focus on this.

- The programming contract is a type of program that is organized and implemented by municipalities and by public bodies, it has a finite duration and serves a specific purpose through the implementation of actions that are defined in the programming contract.

These two cases i.e. the option of the programming contract along with the option of the energy communities will be further examined and compared. The legislative framework will be analyzed, and use cases will be formulated for each option so as the positive and negative aspects of each case to be recognized and compared.

FAMP – Andalusian Federation of Municipalities and Provinces (Spain)

- **REDEMA – Andalusian Municipalities Energy Network**

From FAMP, together with the collaboration of the Andalusian Energy Agency, it is promoting the launch of REDEMA, an Energy Network of Andalusian Municipalities, which reflects REDEJA, the main instrument used by the Andalusian Energy Agency to carry out energy efficiency actions in public buildings owned by Andalusian Government. REDEJA has been taken as an example by other Spanish regions, due to its great usefulness and interest.

The main motivation for launching REDEMA is to generate a meeting point for local action, which promotes energy policies aimed at energy savings and the use of renewable energy and self-consumption of electricity. In this way, it will contribute to sustainable and intelligent growth, favouring the coordination of more joint actions.

Main targets

In the process of the development and implementation of REDEMA (Energy Network for Andalusian Municipalities), its specific objectives have been defined to achieve of contribute to sustainable and intelligent growth, favouring a new local development model:

- Promotion of energy policies aimed at energy saving, use of renewable energies and self-consumption of electricity.
- Favour the coordination of joint actions between local governments.
- Serve as a linked cooperative workspace and technical assistance for the adhered municipalities.
- Highlight and increase the actions and instruments created visibility.
- Act as an exchange forum.
- Development of training and boost awareness between municipal technicians and politicians.
- Development of information and awareness-raising actions.

- **Creating a synergistic effect on the use of local resources in the renovation of public buildings**

Istrian county has a large number of buildings which are used by different organizations and authorities and are under protection of Conservation Department as cultural heritage buildings. Large number of these type of buildings needs energy efficiency restoration but any kind of renovation of these buildings demands previously obtained permission of Conservation Department. These kind of renovation works require complicated procedures on both

planning and implementation level. IRENA identified multiple obstacles for these kind of interventions in Istrian region. Problems such as lack of local expertise on both planning and implementation level, lack of funds, general level of financial commitment needed especially in relation to the one required to refurbishment of other type of buildings, lack of competences on the level of public administration were identified.

In order to alleviate some of these problems, joint action of project ENERJ was proposed. The general idea of the joint action is to merge the competences and financial capabilities of local authorities in order to remove (or at least significantly reduce) the obstacles that each single community (either city or municipality) needs to deal with when faced with the necessity of energy refurbishment of heritage building.

The goal of the action is to define universal, easily applicable and replicable technical solutions that can be applied to multitude of similar buildings. Since heritage buildings are mostly restrained by technical possibilities of intervention, especially in relation with need of exterior preservation, synergies with technical solutions installed on other public buildings/facilities can significantly reduce their carbon footprint.

With that in mind, joint action of ENERJ proposes creation of models for energy refurbishment of heritage public buildings via use (partially or completely) of locally available resources (e.g. RES based installations on other public buildings/facilities).

Two neighboring communities (cities of Poreč and Rovinj) were chosen for piloting of this model on the basis of call published after second focus group. Dual set of actions will be proposed for both of them, one related to the offsite renewable energy production and the other to the public building refurbishment that will be partially/completely accomplished by transfer of that energy to it.

Initial proposal for energy production was based on the possibility of wave energy use which has a locally added benefit within form of climate change adaptation measure (land erosion). During

the focus groups, and with the assistance of authorized technical design experts, Cities of Poreč and Rovinj will cooperate on development of technical documentation that will be easily replicated on both sites thus reducing its cost. The solution will be easily replicable in other coastal communities and in other public buildings within the territory of two cities originally involved in the joint action.

City of Poreč already proposed one of their buildings to be used as focal point of joint action. Selected building is kindergarten "Radost II" in city of Poreč on address Otokara Keršovanija 14.

Through focus groups there was a conclusion that a conservation basis for the kindergartens building needs to be done and currently it is in process of creation.

CEA - Cyprus Energy Agency (Cyprus)

- **Energy Upgrade of public Buildings**

The initiation of the Joint Actions was a joint procurement for 8 buildings of the 6 local authorities for the provision of energy audits and energy performance certificates for the identified buildings. This provided the baseline for the future definition of the joint actions, identifying common areas that need addressing and common upgrading solutions. The next step will be the definition of the upgrading plan for the identified buildings. CEA can provide the technical expertise for any tendering process that will require the purchasing of the technical equipment and/or the case of using ESCOs for the implementation. The focus groups have showed that without a governmental grant the complete energy upgrading will be difficult for the small communities. Therefore, two scenarios are likely to facilitate the energy upgrading are:

1. selectively tendering for various solutions as part of a joint tender between the local authorities where few measures will be implemented per tender
2. the involvement of ESCOs for the number of buildings involved as a joint EPC (Energy Performance Contract)

The third option is for the Ministry of Insights (which funds the Communities budget) to include all buildings upgrading as a single tender process and implement the solutions identified by the Energy Audits.

Gozo Development Agency – Gozo Regional Committee (Malta)

- **Joint preparation of ELENA project for the energy retrofit of public buildings in Gozo**

ELENA has been discussed many times during project meetings as a profitable occasion for ensuring the energy retrofit of public buildings with the minimum financial commitment by the public authorities. Therefore, GDA believes that it can be successfully implemented in Malta taking advantage of the ENERJ project.

A first Focus Group meeting with the Local Councils' Association has taken place in July in order to raise their interest. As a preliminary step, a collection of basic data on available public buildings is currently ongoing with the aim of selecting the most appropriate buildings that will be part of the stock to be proposed for funding

Metropolitan City of Capital Rome (Italy)

- **Metropolitan energy efficiency actions on public buildings**

CMRC is Covenant of Mayors Coordinator for 50 Municipalities of the metropolitan area, 36 of which have developed their own SEAP. CMRC, as Coordinator, has been exploiting the tools made available by the ENERJ project to actively involve the Municipalities in the setting-up of a database of the public buildings stock, gathering data on the buildings' dimensional and technological features as well as on their energy performances. More specifically, CMRC has launched the monitoring of the SEAPs actions and has started – in collaboration with a number of Municipalities – a survey of the energy-related characteristics of public buildings, in order to collect all the necessary data to develop a feasibility study for their energy renovation (joint action). Moreover, the exchange of experiences and good practices carried out within the ENERJ partnership has enabled CMRC to identify the financing channels and tools/programmes which can be the most effective to achieve the objectives of the metropolitan and municipal SEAPs. In particular, during the focus groups, CMRC has shared and developed with the Municipalities of the metropolitan area a proposal for the EIB programme ELENA.

The actions to be developed are the following:

- 1 – Analysis of the joint database and identification of the target buildings and energy renovation actions that are most suitable (cost effective) to achieve the project objectives
- 2 – Preparation of a full feasibility study to submit to ELENA, taking into account also the management, administrative and procedural aspects of the joint action implementation.

GOLEA - Goriška Local Energy Agency (Slovenia)

- **Refurbishment of sports hall lightning systems in Primorska region**

The basic demand set has been determined having in mind that a successful collaboration between different, and preferably large number of municipalities can be achieved only if the need for the type of this intervention is recognized in this municipalities, and the mutual relations, responsibilities and benefits are very clear and well defined.

It has become clear that larger interventions on building envelope or HVAC systems are not appropriate because of high investment required, harder baseline definition a large set of influencing factors (degree days, occupancy, etc.).

Due to easier and cheaper measuring equipment implementation, easier baseline definition and less influencing factors energy efficiency interventions on electrical consumers came in the shortlist. After a thorough building stock data analysis for the Primorska region, it has been recognized that a large potential exists on lightning equipment replacement. Especially large potential lies in sports halls, as they tend to be occupied 10 to 15 hours a day. The baseline definition and the measurement of savings is relatively simple, the investment is moderate, and the potential for an EPC has been identified. According to the selection criteria defined in the framework of the project, we have identified 10 sports halls in the area of Primorska, for which we analysed the potential for energy refurbishment of the lighting system. At the time of inspection, a list of existing lighting (type of lamps, number, ignition, height, condition) and other necessary data were obtained, such as the facility's usage regime and maintenance costs. Based on the analysis of the lighting systems, we made a proposal for renovation for all the facilities involved. For all facilities, the transition to the most current technology - LED lights - is foreseen. In addition to energy savings, they also have a long lifespan and low maintenance costs.

Albania Ministry of Energy and Industry (Albania)

- **Improvement of Energy Efficiency in Public Buildings**

The joint action developed started with the signing of a cooperation protocol for the development of a partnership for the implementation of ENERJ Project.

The established partner allowed Ministry of Infrastructure and Energy to become involved as a "Joint Actions Coordinator", initially carrying out a work of energy audits in four Municipalities, involving about 12 buildings (3.3.2). This work allowed the evaluation of the energy performance and of the indoor air quality of the associated fractions, thus promoting the improvement of the thermal behavior of the buildings, the prevention of

anomalies/irregularities, the thermal comfort of the environment, as well as the verification and detection of opportunities for energy rationalization. At this stage, it was possible to identify the energy needs, to analyse the impact of the proposed measures on the local economy and to promote energy efficiency and the use of renewable energy sources, as well as the analysis of the possibility of its implementation.

In the next stage, key stakeholders (policy-makers, municipal departments and local energy managers) were involved in a decision-making process regarding priorities (after assessing the local potential), alternative solutions and goals.

Taking this into account, 9 of the 12 buildings analyzed were defined as intervention priorities.

It was identified as most profitable means of financing the Call for tender in the thematic of energy efficiency in local infrastructures belonging to public administration, framed within the Action Plan of Energy Efficiency for the period 2018-2020. Ministry of Infrastructure and Energy is working with Swiss Embassy through SECO found for supporting all Albania Municipalities involved of ENERJ project.

In collaboration with Ministry of Infrastructure and Energy, Municipalities is working to prepare the applications that foresee interventions in the opaque surroundings, in the environs surrounding, in the interior lighting, in the technical systems of the buildings, installation of solar thermal systems for the production of hot sanitary water and photovoltaic solar for self-consumption. These interventions represent an annual reduction of primary energy consumption in public buildings of around 1,260,642kWhe, representing a saving of around 45.3 %.

AREANATejo - Regional Energy and Environment Agency from North Alentejo (Portugal)

- **Improvement of Energy Efficiency in Public Buildings**

The joint action developed by AREANATejo can be divided into two main tasks:

- 1) The evaluation of the energy performance of buildings and consequently the work developed to carry out funding to the proposed investments;
- 2) Parallel to the first task, the characterization and quantification of the energy consumption in the region, by sector (domestic, industry and agriculture) and by type (electric energy and fuels), extrapolating its evolutionary tendency until 2050, all this through the elaboration of Municipal Energy Matrices. This task aims to create a valid local strategic planning instrument, combined with the promotion of the reduction of energy intensity by improving energy efficiency and the

use of endogenous energy resources by identifying measures and targets for sustainable local development of the entire region involved.

On the first task, it began with the celebration of a cooperation protocol, signed between AREANATEjo and the municipalities, for the development of a partnership for the implementation of the ENERJ project.

The established partner allowed AREANATEjo to become involved as a "Joint Actions Coordinator", initially conducting a work of Energy Audits in all Municipalities, involving about 14 buildings (task 3.3.2 of the ENERJ project), where it was possible to make an evaluation of the energy performance and indoor air quality of the associated fractions of each building, promoting the improvement of the thermal behaviour of the installation, the prevention of anomalies/pathologies, the comfort of the environment and to verify and detect opportunities for energy rationalization.

It was possible, at this stage, to identify energy needs, analyse the impact of the proposed measures on the local economy and ER and RES, as well as the analysis of the possibility of its implementation.

In the next step, key stakeholders (policy-makers, municipal departments and local energy managers) were involved in a decision-making process on which priorities were to assess local potential, alternative solutions, and setting goals.

Then, they were defined the main intervention priorities in some of the analysed buildings.

It was identified as most profitable means of financing the Call for tender in the thematic of energy efficiency in local infrastructures belonging to public administration, framed within the Alentejo Regional Operational Program for the period 2014-2020: "Alentejo 2020". It has a total allocation of 1.082,9 M€, of which 898,2 M€ come from ERDF and 184,7 M€ come from ESF. The program is composed by four agendas and 10 strategic axes, articulated among themselves.

In collaboration with AREANATEjo, Municipalities prepared applications that foresee interventions in the opaque surroundings, in the environs surrounding, in the interior lighting, in the technical systems of the buildings, installation of solar thermal systems for the production of hot sanitary water and photovoltaic solar for self-consumption. The applications were submitted in a first phase until April 30, 2018 and were reviewed at a later stage until December 28, 2018. This revision was due to some constraints found that would result in the non-approval of some of the proposed investments.

For the second task, AREANATEjo is currently analysing the interest of the Municipalities of the Alto Alentejo region in the elaboration of the Energy Matrices, so that, as soon as possible, the development this service can be contracted to a specialized company in the area, according to all technical specifications already defined by AREANATEjo.

The elaboration of Static and Prospective Energy Matrices should be structured around the following general objectives:

- i. To allow the updating of the statistical inventory related to energy demand and greenhouse gas emissions, by sector of activity, year and energy vector with integration of the energy matrix and the other numerical, statistical, geographic and document elements in an electronic web platform A static characterization and simulation model of decisions on regional public projects, plans and policies should be made available/developed;
- ii. Provide reliable and up-to-date information on reliable support, aimed at the use of energy, economic, social and environmental indicators, for the promotion of energy and climate efficiency and for the mobilization of public, business and private agents;
- iii. Support initiatives aimed at promoting the local and regional sustainability strategy and to boost their respective impacts on innovation, competitiveness, investment attraction, internationalization and economic growth.

Static and Prospective Energy Matrices should characterize the energy flows and consequent greenhouse gas emissions in the involved territory. It should also determine the energy balance based on historical and recent data on the use of energy sources and vectors and their distribution and allocation by sectors of economic activity.

This task assumes an high importance, taking into account the monitoring of energy efficiency measures implemented in the region (monitoring and control), but also in the preparation of future interventions, in a planned and phased method with all stakeholders.

4.4. Global analysis of the objectives of the Joint Actions

According to the intervention areas of each one of the partners involved in ENERJ Project, and taking into account the needs of the local actors in terms of meeting the commitments made under the SEAPs and focus groups meetings, we notice that the measures to promote "energy efficiency in buildings" arise as the most "attractive", both from a technical and economic points of view.

Cooperation between stakeholders on different levels and the implementation of local joint actions is a good practice example for policy decision-makers as well as for local and regional administrations, committed for future preparation of their strategic documents. New financing issues are especially important for the non-EU countries, where they are faced with the lack of funding options. Private-public partnerships and green procurements keep confronting with such problems as unfair trade, competition by fossil fuels and imported materials and sometimes regulations, which make little sense at the local or regional level. For the further cooperation

and better functioning of the energy policies, the following recommendations should be taken into account:

- Bottom-up approaches to regional/ local energy cooperation should be allowed, facilitated and promoted.
- Communicate with policy decision-makers about the bottlenecks and try to find the tools for their elimination.
- Enhance capacities to strengthen the local / regional economies for higher energy independence.

All the Joint Actions identified for the partners cover the following aspects or phases of an Action Plan:

1. Diagnostic phase: energy audits.
2. Training (Technicians, politicians, users).
3. Draw up and supply a catalogue of tender documents (Public, Public-Private).
4. Assistance for access to different types of funding (European, Public-Private, Financial Instruments).
5. Planning.
6. Monitoring.

Joint Actions Definition phases



The individual analysis of each one of the Joint Actions allowed the identification of the pilot implementation areas, the target audience and its connection with the SEAPs or other guiding documents of the Local Energy Policy.

The table below summarizes each one of the joint actions identified:

Metropolitan City of Capital Rome (Italy)

JOINT ACTION	Metropolitan energy efficiency actions on public buildings
The Background	<p>Problems regarding the actual implementation of SEAPs are common to most municipalities and to some of the ENERJ partners:</p> <ul style="list-style-type: none"> • their elaboration is based on desires rather than real capacities by the municipalities • they do not take into account the feasibility of actions from the financial point of view • they do not take into account the feasibility of actions from the point of view of the actual capabilities of the municipalities' human resources <p>The ELENA initiative has been identified as the best possibility to actually implement some of the actions of local SEAPs and, in general, the energy retrofit of the public buildings, for the following reasons:</p> <ul style="list-style-type: none"> • availability of financial resources (both co-financing and bank loans), crucial for undertaking a comprehensive & coordinated energy retrofit of public buildings • possibility of establishing a centralized, co-financed Project Implementation Unit having the technical capacities to handle, manage and monitor the implementation of the actions, overcoming the technical and financial difficulties experienced by the Municipalities
Coordination & Governance Structure	<p>CMRC, as CoM coordinator in the metropolitan area, performs monitoring, planning & programming activities involving its own building stock, and aims at coordinating the Municipalities' actions in the same field. To reinforce this role, CMRC intends to:</p> <ul style="list-style-type: none"> • Strengthen its internal management structure, by reinforcing linkages among its energy manager, the technical staff from the different areas, the in-house company CapitaleLavoro, and Climate Alliance consultants. • Coordinate with the bodies that provide energy data and maintain installations (Region of Lazio, ENEA, GSE...) • Coordinate with the municipal energy managers (sharing of data and SW tools, capacity building , etc.) • Carry out a lobbying activity towards financing bodies (notably the Region of Lazio), aimed at defining new selection criteria for future calls – Municipalities having adopted energy planning instruments and having designed complex projects and joint actions must get extra scores in the evaluation!
Main Goals	<ul style="list-style-type: none"> • Improvement of the energy efficiency of as many as possible municipal buildings in the metropolitan area, under EPC contracts or project financing (also co-financed by the EIB through the ELENA initiative) • Establishment of a Project Implementation Unit coordinated by CMRC (Territorial Coordinator of CoM) • <i>Achieving these goals will also foster the implementation of some of the actions of the municipal SEAPs.</i>
Stakeholders involvement	<ul style="list-style-type: none"> • Organisation of 4 Focus Group meetings, addressed to all Municipalities of the metropolitan area: • FG 1) Presentation of the ELENA programme and identification of opportunities and criticalities of a joint action; • FG2&3) Definition and sharing of a roadmap for the preparation and submission of a proposal for joint actions, coordination for collecting data on public building stock

	<ul style="list-style-type: none"> • FG 4) Discussion on data collection problems; presentation of measures for financing interventions • 14 Municipalities of the metropolitan area involved • Experts were involved as technical consultants for the development of the joint action • ENEA – Italian Ministry for the Environment – Lazio Region participated in the Focus Groups and presented initiatives and good practices for energy efficiency in public buildings. • Only Municipalities that are already well-structured and committed towards energy transition (approved SEAP, appointed energy manager and/or dedicated office) participated actively in the Focus Groups and provided the required energy data. • A more incisive support action must be undertaken to assist the other Municipalities on the organizational ground. • Even more committed Municipalities often provided incomplete data, and lamented a lack of resources for energy audits and similar preliminary activities – in this sense the ENERJ web platform can be a useful support tool.
Problems encountered	<ul style="list-style-type: none"> • Some of the buildings are historic buildings, which are usually under cultural or landscape restrictions: this reduces or hinders the retrofit actions that can be undertaken (e.g. actions on façades and plasters, replacement of windows, installation of PV modules). • Some buildings have already been equipped with PV plants: this restricts ESCOs' possible interest in engaging in EPC contracts, since it is more difficult to considerably improve the energy performance and/or ensure quick payback times without the contribution of PV systems installation. • In some cases, the Municipalities experience difficulties in collecting even the most basic data. • <i>All this could hinder the achievement of a critical mass of investments able to justify the submission of an ELENA proposal. Indeed, ELENA requests a minimum amount of investments on energy retrofit actions in order for them to be considered eligible for the EIB loan.</i>
Strategies to solve problems	<ul style="list-style-type: none"> • During the last Focus Group meeting, a specific focus was dedicated to the difficulties in collecting data and municipalities have been advised on how to overcome them. • A training course for the municipalities' technical staff is currently ongoing. • If no critical mass of energy retrofit actions is achieved (for the purposes of the ELENA proposal), additional investments on the street lighting systems are proposed to the municipalities to ease the participation of ESCOs in the bidding procedures

GOLEA - Goriška Local Energy Agency (Slovenia)

JOINT ACTION	Refurbishment of sports hall lightning systems in Primorska region
The Background	<p>When discussing and researching possible energy efficiency interventions, few basic demands have been set:</p> <ul style="list-style-type: none"> - technical solution technically simple intervention, highly replicable - investment low to moderate - financing An intervention interesting for EPC - energy savings definition easy to determine (baseline definition, measurement after the implementation) <p>Installation of LED lightning systems in sports halls was identified as a suitable pilot action</p> <p>On a basis of the document selection criteria " 10 sports halls were identified in the region of Primorska sports halls are owned by municipalities:</p> <ul style="list-style-type: none"> - sports hall in statistical region of Goriška and Obalno Kraška - sports hall in use at least 5 days week and 6 hours day - lighting system was not renovated in last 5 years - absence of ongoing energy contracting or other service that ensures energy savings from provision of lighting of the facility
Coordination & Governance Structure	<p>The main objective of the focus groups meetings was to join a group of relevant entities of the territory that can contribute to the definition of the joint actions at local level</p> <p>The consultation/discussion topics were:</p> <ul style="list-style-type: none"> - local Energy strategy What kind of parameters do they have to take into consideration; - priorities and existing local potentials; tailor the priorities to the local needs; - solutions that would fit the local community; - obstacles hindering the efficient implementation of the identified projects; - technical solutions for future investments; - funding opportunities and other financial issues;
Main Goals	<p>Main indicators:</p> <ul style="list-style-type: none"> • replacement of 441 MH reflectors with LED lights in 10 sports halls • total investment cost : 225.462,64 € (VAT excluded) <p>Expected results are:</p> <ul style="list-style-type: none"> • energy use decrease by 56%, (117 MWh) • energy use and maintenance costs decrease by 26.800 €/ year • 57,2 tons of CO2 emissions saved
Stakeholders involvement	<p>GOLEA has, together with local stakeholders, recognized large potential on implementation of individual measures for energy efficiency and renewable energy sources in public buildings. Whereas a significant number of public buildings were subject of deep energy renovation of public in past years, a large number of buildings exists where only one or few measures have to be done These smaller projects are scattered and less interesting for third party financing (ESCOS). Combining these individual projects to one large</p>

	<p>joint action could have positive result of achieving an economy of scale, that would attract private capital and enable realization of the investment. In the second phase we have checked all available data on the public sports halls in our área.</p> <p>Data sources were municipal Local energy concepts Energy certificates existing energy audits and Energy management system operated by GOLEA</p>
Problems encountered	<p>Most of the selected buildings use reflector lamps with metal halide (MH) lamps with nominal power of 400 or 1.000 W. In one case a detailed design was already made for a project of installation of LED lightning in a sports hall. This helped a lot in terms of the estimation od investment costs</p> <p>A pricelist of the main equipment was also obtained from LED lightning manufacturers</p>
Strategies to solve problems	<ul style="list-style-type: none"> - For each individual building , a calculation of energy savings was elaborated - Certain assessments and simplifications had to be made , since we did not have a detailed design for each individual building

IRENA - Istrian Regional Energy Agency L.t.d. (Croatia)

JOINT ACTION	Creating a synergistic effect on the use of local resources in the renovation of public buildings
The Background	<p>Main problem:</p> <ul style="list-style-type: none"> • Cultural heritage very limited options for building envelope refurbishment • Lack of national guidance standards • Lack of local expertise • Lack of funds, general level of financial commitment needed especially in relation to the one required to refurbishment of other type of buildings • Lack of competences on the level of public administration
Coordination & Governance Structure	<p>Conservation Department Pula – takes care of cultural heritage buildings preservation in Istrian county. Their statement and cooperation are needed for any kind of refurbishment which needs to be done.</p> <p>Cities of Poreč and Rovinj – are chosen for piloting of this model and will cooperate on development of technical documentation that will be easily replicated on both sites thus reducing its cost.</p> <p>Port Authority of city of Poreč and Rovinj – a non-profit legal entities with the rights and obligations established by the Maritime Law and Sea Ports. Their role is to provide technical documentation about sea energy (wave, thermal) under jurisdiction of their authorities.</p> <p>Parentium L.t.d. Poreč – local self-government and administration which founder is City of Poreč. It is in charge for building the city and for energy efficiency and environmental protection.</p>
Main Goals	<ul style="list-style-type: none"> • The initial idea is to develop a model for energy refurbishment of both of these buildings by using visually unobtrusive methods (completely or partially) in form of offsite renewable source energy production. • possibility for use of electric energy produced via wave based power plant installed in water break for covering of energy demands • joint action to merge the competences and financial capabilities of local authorities in order to remove the obstacles that each single community needs to deal with when faced with the necessity of energy refurbishment of heritage building • Joint public procurement • Istrian county and local authorities has large number of cultural heritage buildings • need for a comprehensive, and also energy, renewal that requires complex procedures at the planning and implementation level
Stakeholders involvement	<p>13th March 2018. first FG with local stakeholders</p> <ul style="list-style-type: none"> • to provide to participants an overview of the ENERJ project , main objectives and activities • announcement of the public call that will be published in order to better inform all municipalities of Istrian county about joint actions implementation • large number of buildings which are used by different organizations and authorities and are under protection of Conservation Department as cultural heritage buildings <p>27th March 2018. second FG Conservation department Pula</p> <ul style="list-style-type: none"> • Multiple obstacles identified • lack of local expertise on both planning and implementation level • lack of funds

	<ul style="list-style-type: none"> • general level of financial commitment needed especially in relation to the one required to refurbishment of other type of buildings • lack of competences on the level of public administration • call for inclusion of local authorities in joint action
Problems encountered	<p>Problem facing planning and implementation of such projects highlighted:</p> <ul style="list-style-type: none"> • High standards of energy reconstruction adapted to new buildings which consequently preclude the use of Structural Funds in such projects, • Harmonization of the financial justification of the project and the request of the conservation service, • Lack of Guidelines for Implementation of energy efficiency projects in protected buildings and historical units, • Reliability of investment in reconstruction of such buildings comparing to investment in other types of buildings, • Lack of experience in writing project assignments, evaluating technical and project solutions, and evaluating financial justification for investing in different technical solutions or parts of a project.
Strategies to solve problems	<p>To define the methodological approach to the restoration of protected and other complex public buildings through the stimulation of the cooperation model of several units of local and regional authorities (Istrian County) with the ultimate goals:</p> <ul style="list-style-type: none"> - increasing the level of staffs ' technical training and the availability of various technical knowledge - exchange of experiences and best practice of restoration of protected and other complex buildings - reduction of rebuilding costs by encouraging joint procurement planning of any process, whether it was making technical documentation or a physical renewal lectures and practical exercises - enabling municipal / city staff and the Istrian County to independently process the renovation of protected and other complex buildings and by creating a framework for cooperation and exchange experience and staff. -By enabling access to staff whose professional profile is lacking in a particular local government unit has been identified as the key benefit of such activity.

Anatoliki S.A. - Development Agency of Eastern Thessaloniki's Local Authorities (Greece)

JOINT ACTION	Energy Upgrade of Municipal Buildings
The Background	<p>ANATOLIKI has contributed in the formulation of the energy policy of the Municipalities and the implementation of actions that provided energy efficiency gains in the municipal building sector and in other sectors of the economy. An important parameter of this cooperation is the availability of energy related data that have been generated through energy audits and through emission inventorying (real energy consumption data for all Municipal buildings for a wide timeframe).</p> <p>The ENERJ project constitutes an evolution of this cooperation, where the so far bilateral cooperation with the Municipalities takes Joint characteristics with the examination and implementation of coordinating and common actions. ANATOLIKI, as the Lead Partner of the ENERJ project, mobilizes three Municipalities of the wider area of Thessaloniki; Kalamaria, Pilea – Hortiatia, Thessaloniki, in order to define, describe and specify energy upgrade joint actions in the municipal buildings' field.</p>
Coordination & Governance Structure	<p>Since each Municipality is an autonomous organization in Greece, the overall way of the implementation of the Joint Actions is a topic of consultation with the Municipalities, including the options of a common programming contract or the most recent initiative of energy communities. The overall consultation is in progress, in the context of focus groups that have been set up, as well as in the context of local conferences.</p>
Main Goals	<p>The first step for the definition of the Joint Action was the implementation of energy audits in several target buildings of the three Municipalities.</p> <p>ANATOLIKI, after the relevant consultation with the three municipalities, gathered all the necessary data (structural and energy related data) and prepared a common tender for the implementation of energy audits in 12 buildings of the three municipalities. This joint approach provided all the necessary data for the further definition of the Joint Action, as well as a consistency in the proposed interventions.</p> <p>The second step is the definition of the way that the energy upgrade of the 12 municipal buildings could be implemented. A main issue that has to be determined is the scheme through which these Municipal Buildings would be Jointly upgraded, including the examination of the organizational, financial and operational aspects of the proposed model.</p> <p>Since each Municipality is an autonomous organization in Greece, the overall way of the implementation of the Joint Actions is a topic of consultation with the Municipalities, including the options of a common programming contract or the most recent initiative of energy communities.</p> <p>- The Law 4513/2018 established the institution of Energy Communities. This institution includes the joint perspective with a formulation of a cooperative scheme between municipalities and public bodies. The institution has permanent characteristics, while seems to be convenient for the definition and planning of joint actions. The elaboration of the Law is recent and therefore a great</p>

	<p>field of study is opened. After the 2nd focus group, the involved Municipalities expressed their interest on potential formulation of an energy community, and the ENERJ project will focus on this.</p> <p>- The programming contract is a type of program that is organized and implemented by municipalities and by public bodies, it has a finite duration and serves a specific purpose through the implementation of actions that are defined in the programming contract.</p>
Stakeholders involvement	ANATOLIKI, along with the three Municipalities are expected to have a key role in the overall initiative. Other organizations that could be included in the overall initiatives are the Public investment bank (covering the financing part), the Public Power Company with its subsidiary in renewable energy sources (PPC Renewables) having the role of the technical consultant or the Energy Service Company (ESCO), as well as other public bodies depending on the nature and the characteristics of the selected scheme.
Problems encountered	Regarding the interventions specified in the context of the audits of the 12 Municipal buildings, the overall cost for upgrading them at least to energy class B, has been estimated to approximately 1,5 m euro, with an average payback period of 16,5 years. Interventions could be financed by the National Development Fund (ESPA), a loan by the Deposit and Loans fund, and my Municipal own means.
Strategies to solve problems	In case of the implementation of all the proposed interventions for the 12 buildings the maximum energy gain is expected to reach 58% compared to the situation before the interventions (i.e. energy gains of 1.678 kWh/year).

AREANATEjo - Regional Energy and Environment Agency from North Alentejo (Portugal)

JOINT ACTION	Improvement of Energy Efficiency in Public Buildings
The Background	<p>In recent years, AREANATEjo carried out several energy audits and diagnosis to municipal buildings under the responsibility of its associated municipalities. Besides allowing the identification of consumption and costs associated with each building, this work also allowed the identification of the most important energy efficiency improvement measures for each one. Within the framework of ENERJ Project, it was possible to continue with this work (task 3.3.2), thus boosting as well the preparation of tools and data that may allow the assembly of funding sources for the identified measures.</p> <p>We can highlight as well that the municipalities involved in ENERJ Project showed, since the beginning, their interest in pursuing the objectives and tasks in what concerns the preparing of a joint action.</p>
Coordination & Governance Structure	<p>In collaboration with AREANATEjo, Municipalities prepared applications that foresee interventions in the opaque surroundings, in the environs surrounding, in the interior lighting, in the technical systems of the buildings, installation of solar thermal systems for the production of hot sanitary water and photovoltaic solar for self-consumption. The applications were submitted in a first phase until April 30, 2018 and were reviewed at a later stage until December 28, 2018. This revision was due to some constraints found that would result in the non-approval of some of the proposed investments.</p>
Main Goals	<p>The joint action developed by AREANATEjo can be divided into two main tasks:</p> <ol style="list-style-type: none"> 1) The evaluation of the energy performance of buildings and consequently the work developed to carry out funding to the proposed investments; 2) Parallel to the first task, the characterization and quantification of the energy consumption in the region, by sector (domestic, industry and agriculture) and by type (electric energy and fuels), extrapolating its evolutionary tendency until 2050, all this through the elaboration of Municipal Energy Matrices. This task aims to create a valid local strategic planning instrument, combined with the promotion of the reduction of energy intensity by improving energy efficiency and the use of endogenous energy resources by identifying measures and targets for sustainable local development of the entire region involved.
Stakeholders involvement	<p>Qualified Experts (for energy evaluation of buildings) / Municipal technicians / Municipal executive bodies</p>
Problems encountered	<p>The mentioned tasks that make up the Joint Action defined by AREANATEjo hope to provide the region with tools for management and availability of online information. They are expected to contribute particularly to sustainable growth, addressing the challenges of transition to a low-carbon economy based on more efficient use of resources and the promotion of greater resilience to climate risks and disasters.</p>
Strategies to solve problems	<p>Regarding the first task, the evaluation of the energy performance of buildings and consequently the raising of funds to carry out the proposed investments, applications were submitted to the aforementioned Notice regarding energy efficiency in public administration local infrastructures. The investment value of the applications is still under analysis, with a contribution rate estimated</p>

	<p>by the European Development Fund by means of non-refundable grants of 51.4% and the remaining investment supported by the Municipalities involved.</p> <p>Regarding the second task, the elaboration of Municipal Energy Matrices, it is estimated that the procedure for acquiring this service will be launched in January 2019 with an associated investment of approximately 29.000 euros. This task will be developed and funded by the ENERJ project, within the framework of the implementation of the Joint Action.</p>
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FAMP – Andalusian Federation of Municipalities and Provinces (Spain)

JOINT ACTION	REDEMA: Energy Network of Andalusian Municipalities
The Background	With the intention of generating synergies at the local level, between public and private entities, and promoting an economy that uses resources efficiently, that is greener and more competitive, FAMP launched the Participatory Energy Efficiency Laboratory, as an innovative practical exercise. This Laboratory is conceived as a collaborative work space, identified as a good practice by the EU and has generated key synergies, giving the opportunity for public and private companies to work together for the same purpose.
Coordination & Governance Structure	<ul style="list-style-type: none"> - Covenant between FAMP and County Councils for Joint Tenders., including this possibility in the next Energy County Council Plans, using also "framework agreements" between County Councils and Private Companies, realising a list of potential companies. - Conferences to increase the visibility of Local Governments in their efforts to boost a Low Carbon Economy.
Main Goals	<p>FAMP will foster cooperation among local authorities to work together on energy efficiency measures through the creation of an Energy Network which channels this Action Plan in the local entities that adhere to these Municipality Energy Network: REDEMA.</p> <p>Joint Action description</p> <p>From FAMP, together with the collaboration of the Andalusian Energy Agency, it is promoting the launch of REDEMA, an Energy Network of Andalusian Municipalities, which reflects REDEJA, the main instrument used by the Andalusian Energy Agency to carry out energy efficiency actions in public buildings owned by Andalusian Government. REDEJA has been taken as an example by other Spanish regions, due to its great usefulness and interest.</p> <p>The main motivation for launching REDEMA is to generate a meeting point for local action, which promotes energy policies aimed at energy savings and the use of renewable energy and self-consumption of electricity. In this way, it will contribute to sustainable and intelligent growth, favouring the coordination of more joint actions</p>
Stakeholders involvement	In the process of identifying a possible Joint Action for ENERJ, meetings were held by FAMP with a selected group of experts: the ENERJ Focus Groups. The generalized conclusion by all the participants revolved around the importance of unify efforts to foster EE initiatives in the municipalities, especially among those municipalities with less capacity (with less than 20,000 inhabitants), so they would be promoted through the County Councils and the Provincial Energy Agencies. The usefulness of these joint actions on these municipalities is explained due to the fact that SEAPs are very generic in almost all municipalities and do not have an integrated approach in existing local energy policies, the municipalities have a lack of qualified human resources as well as inefficient financial strategies and low association with the private sector.
Problems encountered	In the process of identifying a possible Joint Action for ENERJ, meetings were held by FAMP with a selected group of experts: the ENERJ Focus Groups. The generalized conclusion by all the participants revolved around the importance of unify efforts to foster EE initiatives in the municipalities, especially among those municipalities with less capacity (with less than 20,000 inhabitants), so they would be promoted through the County Councils and the Provincial Energy Agencies. The usefulness of these joint actions on these municipalities is explained due to the fact that SEAPs are very generic in almost all municipalities and do not have an integrated

	approach in existing local energy policies, the municipalities have a lack of qualified human resources as well as inefficient financial strategies and low association with the private sector.
Strategies to solve problems	The main Good Practice considered during Focus Groups as potential solution was REDEJA (Andalusian Government Energy Network for Andalusian Government Public Buildings). REDEJA is an instrument created to promote within the Andalusian Administration principles of energy saving and diversification and to implement renewable energy facilities in its buildings. It was created with the aim of agglutinate efforts, centralizing information, generating a common database to obtaining energy and economic savings in the different public centres, in many cases higher than 40%, through a specific, coordinated and efficient management of the energy bill of the Regional Government of Andalusia. REDEJA works on four main lines of action dedicated to the optimization of electricity supply contracts, carrying out sector studies and energy audits, investing in equipment and infrastructure and providing advice and trainings.

Albania Ministry of Energy and Industry (Albania)

JOINT ACTION	Improvement of Energy Efficiency in Public Buildings
The Background	<p>Ministry of Infrastructure and Energy carried out several energy audits and diagnosis to public buildings under the responsibility of its associated municipalities. We also evaluated the characteristics of the energy systems and the patterns of energy use for the building. The building characteristics already we collected the architectural/ mechanical/electrical drawings and collected from a compilation of utility bills over several years. We analyzed of the historical variation of the utility bills by seasonal and weather effects on the building energy usage. Within the framework of ENERJ Project, according (task 3.3.2), thus boosting as well the preparation of tools and data that may allow the assembly of funding sources for the identified measures. We have prepared highlight as well that the municipalities involved in ENERJ Project showed, since the beginning, their interest in pursuing the objectives and tasks in what concerns the preparing of a joint action.</p>
Coordination & Governance Structure	<p>Ministry of Infrastructure and Energy is working with Swiss Embassy through SECO found for supporting all Albania Municipalities involved of ENERJ project.</p> <p>In collaboration with Ministry of Infrastructure and Energy, Municipalities is working to prepare the applications that foresee interventions in the opaque surroundings, in the environs surrounding, in the interior lighting, in the technical systems of the buildings, installation of solar thermal systems for the production of hot sanitary water and photovoltaic solar for self-consumption. The applications are in process for analyzed and submitted.</p>
Main Goals	<p>The joint action developed started with the signing of a cooperation protocol for the development of a partnership for the implementation of ENERJ Project.</p> <p>The established partner allowed Ministry of Infrastructure and Energy to become involved as a "Joint Actions Coordinator", initially carrying out a work of energy audits in four Municipalities, involving about 12 buildings (3.3.2). This work allowed the evaluation of the energy performance and of the indoor air quality of the associated fractions, thus promoting the improvement of the thermal behavior of the buildings, the prevention of anomalies/irregularities, the thermal comfort of the environment, as well as the verification and detection of opportunities for energy rationalization.</p> <p>At this stage, it was possible to identify the energy needs, to analyses the impact of the proposed measures on the local economy and to promote energy efficiency and the use of renewable energy sources, as well as the analysis of the possibility of its implementation.</p> <p>In the next stage, key stakeholders (policy-makers, municipal departments and local energy managers) were involved in a decision-making process regarding priorities (after assessing the local potential), alternative solutions and goals.</p> <p>Taking this into account, 9 of the 12 buildings analyzed were defined as intervention priorities.</p> <p>It was identified as most profitable means of financing the Call for tender in the thematic of energy efficiency in local infrastructures belonging to public administration, framed within the Action Plan of Energy Efficiency for the period 2018-2020. Ministry of Infrastructure and Energy is working with Swiss Embassy through SECO found for supporting all Albania Municipalities involved of ENERJ project.</p>

	These interventions represent an annual reduction of primary energy consumption in public buildings of around 1,260,642kWhe, representing a saving of around 45.3 %.
Stakeholders involvement	Local Energy Companies, Qualified Experts for Energy, Municipal Technicians.
Problems encountered	
Strategies to solve problems	The action developed results from what was proposed and programmed in the National Action Energy Efficiency in Albania 2020, an instrument for promotion, developing and implementation investment of integration of energy efficiency measures in Albania Territory. It contains strategic orientations, intervention and investment priorities, based on an evaluation of needs of Albania which, on its turn, is based on the existing resources and capacities, aiming at finding solutions of greater rationality and coherence in what concerns the development of programming options for Albania Territory.

CEA - Cyprus Energy Agency (Cyprus)

JOINT ACTION	Energy Upgrade of public Buildings
The Background	<p>The Cyprus Energy Agency that was established by the European Commission and the Union of Communities has its main targets to promote sustainable development, energy efficiency and renewable energy sources. Through these targets, a number of bilateral cooperations occur including the SEAPs as CEA is the official information point for the Covenant of Mayors. Within the SEAPs and SECAPs the local authorities have set targets for decreasing their negative impact to the environment.</p> <p>Within those action plans, the common targets include the reduction of energy consumption for the local authorities. One of the large consumers of energy is the buildings owned by these local authorities and therefore targets were set for upgrading those buildings. The most effective way to identify the energy consumption and the savings potential is through energy audits.</p> <p>The ENERJ project helps the local authorities to see energy consumption and its reduction as a joint target that areas will need to tackle together. The Cyprus Energy Agency as a partner to the ENERJ project, mobilizes one Municipality (Pegeia) and five Communities (Drousia, Pano Arodes, Kato Arodes, Kathikas and Neo Chorio) that are part of the Akamas Peninsula, to identify the potential for energy upgrading.</p>
Coordination & Governance Structure	<p>The ENERJ project will help define the Action Plan for the Local Joint Action within the timeframe of the project. The plan is expected to be finalized a year after the end of the project, while the actual interventions could be implemented on different stages, depending on the approach that will be decided by the Local Authorities.</p> <p>The next step will be the definition of the upgrading plan for the identified buildings. CEA can provide the technical expertise for any tendering process that will require the purchasing of the technical equipment and/or the case of using ESCOs for the implementation. The focus groups have showed that without a governmental grant the complete energy upgrading will be difficult for the small communities. Therefore, two scenarios are likely to facilitate the energy upgrading are:</p> <ol style="list-style-type: none"> 1. selectively tendering for various solutions as part of a joint tender between the local authorities where few measures will be implemented per tender 2. the involvement of ESCOs for the number of buildings involved as a joint EPC (Energy Performance Contract) <p>The third option is for the Ministry of Insights (which funds the Communities budget) to include all buildings upgrading as a single tender process and implement the solutions identified by the Energy Audits.</p>
Main Goals	<p>The initiation of the Joint Actions was a joint procurement for 8 buildings of the 6 local authorities for the provision of energy audits and energy performance certificates for the identified buildings. This provided the baseline for the future definition of the joint actions, identifying common areas that need addressing and common upgrading solutions.</p>
Stakeholders involvement	<p>CEA is expected to have an important role for the coordination and the technical assessment of the energy upgrading of the buildings along with the Municipality and the five Communities. Other organisations that could be involved include the Energy ~Service of the Ministry of Energy, Commerce, Industry and Tourism which is the body responsible for the energy efficiency of buildings and RES</p>

	penetration in Cyprus, the Ministry of Insights as the budgeting authority of all Communities, the District of Pafos (which includes the Akamas peninsula examined) and the technical solutions offered by ESCOs.
Problems encountered	The most cost effective interventions suggested by the Energy Auditors of the buildings amount to a cost of 40,000 EUR with energy savings of 48 MWh and a 5 year average payback time. Other measures of higher cost could also be included, in order to improve the energy efficiency of those buildings.
Strategies to solve problems	The buildings that will be upgraded are expected to reach an energy class of at least B according to their EPCs. Furthermore a considerable amount of RES will be installed.

Gozo Development Agency – Gozo Regional Committee (Malta)

JOINT ACTION	Joint preparation of ELENA project for the energy retrofit of public buildings in Gozo
The Background	ELENA has been discussed many times during project meetings as a profitable occasion for ensuring the energy retrofit of public buildings with the minimum financial commitment by the public authorities. Therefore, GDA believes that it can be successfully implemented in Malta taking advantage of the ENERJ project.
Coordination & Governance Structure	
Main Goals	•
Stakeholders involvement	The Local Councils' Association is acting as intermediary between the project partner and the municipalities that might be interested. MIEMA (Malta Intelligent Energy Management Agency) is also available for providing technical support to the implementation of the action
Problems encountered	•
Strategies to solve problems	•

5. Bottlenecks, Barriers, and Difficulties on Implementation of Joint Actions

Through the analysis of the documentation on joint actions provided by all partners, complemented with the Common Model for Comparison of Existing Implementation Approaches, they were identified the key bottlenecks, barriers and difficulties on the implementation of pilot cases.

These will be duly described according to the implementation areas of each one of the pilot cases and taking into account the following issues:

- Financial issues
- Legislation issues
- Administrative barriers

When implementing the measures to improve energy efficiency, we shall take into account some aspects that will outline the proper planning of the pilot case and also carry out its monitoring:

1. Data collecting – energy consumptions and costs;
2. Data analysis – annual or monthly desegregation of energy consumption and costs;
3. Definition of measures – clearly identify the measures to be implemented, taking into account the goals to be achieved and the current building conditions;
4. Development of a technical and economical study – boost the identification of the better technology to implement, thus proceeding with the technical and economic feasibility study;
5. Education and raising awareness on energy efficiency – promote awareness raising actions regarding the rational use of energy by the building users;
6. Implement the pilot case – implement the pilot case according to the a.m. assumptions;
7. Monitoring and evaluation – develop a monitoring plan to ensure the monitoring of the implementation of the pilot case as well as to effectively verify and confirm the estimated results.

Nevertheless, the availability of human resources with technical skills is one of the key features to implement a pilot case of this nature.

Financial issues

One of the main difficulties in the implementation of pilot cases under the area “energy efficiency in buildings” is the lack of funds to finance the several measures identified in the technical and economic feasibility studies. Once the majority of the buildings are responsibility of the municipalities and/or public entities, we shall take into account the financial availability of these entities. Often, the use of national or European funds, with high subvention rates, may be a solution to adopt.

Legislation issues

The European and National legislation must always be taken into account when considering the implementation of a pilot case in the area of energy efficiency in buildings.

The Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, aims to promote the energy performance of buildings and building units. The methodology for calculating the energy performance of buildings takes into account some elements, specifically:

- Thermal characteristics of a building (thermal capacity, insulation, etc.);
- Heating insulation and hot water supply;
- The air-conditioning installation;
- The built-in lighting installation;
- Indoor climatic conditions.

Objective: Nearly zero-energy buildings: By 31 December 2020, all new buildings shall be nearly zero-energy consumption buildings. New buildings occupied and owned by public authorities shall comply with the same criteria by 31 December 2018.

At times, some difficulties lie in the correct interpretation of the existing legislation or in the urge need to amend the legislation in accordance with the new policies and targets for energy efficiency.

Administrative barriers

When implementing a pilot case in the area of energy efficiency in buildings, we should analyze the existing administrative structures in each country, region and city. The division of these structures, their structure and functioning, may represent increased difficulties when

implementing the pilot case. This issue shall be examined together with the review of the existing legislation in order to comply with all procedures, namely: (1) procurement procedures, (2) purchase of equipment or services, (3) inclusion in investment plans of Municipalities, if and when applicable, and (4) compliance with internal procedures.

6. SWOT Analysis

The set of joint actions to be implemented in ENERJ, were subjected to a SWOT analysis:

Strengths <ul style="list-style-type: none">• Scope of the Project• Areas of high public interest• Technical knowledge of the teams involved in each area• Multiplier effect• Innovative character	Weaknesses <ul style="list-style-type: none">• Thematic too scattered• Legislative barriers• Administrative barriers
Opportunities <ul style="list-style-type: none">• Creation and establishment of new partnerships• Creation of opportunities for local investment• Transferability• Overcome of market barriers• Foster a proposer review of legislation	Threats <ul style="list-style-type: none">• Funding difficulties• Need for future monitoring• Economic crisis• Changes in feed-in tariff

7. Conclusions

According to the intervention areas of each one of the entities involved in ENERJ Project, and taking into account the needs of the local actors in terms of meeting the commitments made under the SEAPs, we notice that the measures to promote "energy efficiency in buildings" arise as the most "attractive", both from a technical and economic points of view.

With the implementation of these pilot cases, it is foreseen the overcome of the following barriers:

- Lack of technological knowledge,
- Administrative barriers,
- Lack of capacities for efficient implementation,
- Lack of cooperation with stakeholders in the strategy preparation phase.

The set of Joint Actions presents several positive features that will result in a better compliance with Project's objectives:

- Scope of the Project
- Areas of high public interest
- Technical knowledge of the teams involved in each area
- Multiplier effect
- Innovative character
- Creation and establishment of new partnerships
- Creation of opportunities for local investment
- Transferability
- Overcome of market barriers
-
- Foster a proper review of legislation

The target public mostly covered by the Joint Actions implemented or to be implemented under the Project ENERJ is:

- Public Administration (decision makers, technicians and municipal employees)
- Buildings' users
- Investors
- Citizens in general

In addition, it was given priority to municipal buildings in the implementation of Joint Actions, namely:

- Energy Upgrade of Municipal Buildings (Greece)
- REDEMA – Andalusian Municipalities Energy Network (Spain)
- Creating a synergistic effect on the use of local resources in the renovation of public buildings (Croatia)
- Energy Upgrade of public Buildings (Cyprus)
- Joint preparation of ELENA project for the energy retrofit of public buildings in Gozo (Malta)
- Metropolitan energy efficiency actions on public buildings (Italy)
- Refurbishment of sports hall lightning systems in Primorska region (Slovenia)
- Improvement of Energy Efficiency in Public Buildings (Albania)
- Improvement of Energy Efficiency in Public Buildings (Portugal)

Nevertheless, we shall take into account that there are some barriers, mostly related to financial issues (budget available for investments, existence of proper financing structures), as well as administrative and legal issues, which may cause some constraints on the proper implementation of all Joint Actions.

The methodology to follow under ENERJ Project will count on with the involvement of all WP Leaders and well as the Expert Working Groups that will work together in the identification of the guidelines and solutions to be taken into account.