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Green Partnerships

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L'Europe en Méditerranée
Europe in the Mediterranean

Projet cofinancé par le Fonds Européen de Développement Régional (FEDER)
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Partnerships are the future way of development

Dear Reader,

in front of you is the Final Publication of the Green Partnerships project, with an overview of the achievements and ambitions of the partnership to further develop and promote principles of cooperation in implementation of development projects, especially in the field of Renewable Energy Sources (RES) and Energy Efficiency (EE) as contribution to more energy efficient cities and regions.

Green Partnerships started as a response to the fact that despite the plentitude of strategic development concepts and strategies addressing the need and opportunities arising from RES and EE projects implementation, there were insufficient results in the real, local or regional environment. The question raised was, what can be done? Although RES and EE projects are seen as addressing mainly technological aspects, they are also raising as many questions as giving answers in the situation where technology is advancing much faster than the environment can implement its latest achievements. It was our strong belief that RES and EE initiatives must be addressed as development opportunities in local communities and that by connecting technological and social innovations, the combination can be a strong contribution to more energy efficient cities and regions. The backbone of the project we were to develop was cooperation: as Lead Partner coming from the agricultural sector – the Institute for Agriculture and Forestry - maybe it was the historical cooperative approach that was important for the agricultural sector and is becoming a more and more popular and innovative way of connecting farmers and end users. An inclusive approach, where opinions, knowledge and different views on things matter, where people are invited to co-develop projects and development initiatives in their local or regional environments, so that they feel that they are part of the process. This does not only lead to better solutions, but also makes for easier implementation of projects due to less opposition and results are more beneficial to wider groups of stakeholders.

What can be done to better implement Local Energy Strategies?

RES and EE projects should be addressed as local development/ business opportunities for wide groups of stakeholders.

So the Green Partnerships was born. It connected cities and regions from 11 MED countries that saw the opportunity for implementation of RES and EE projects as parts of their development plans. Crucial was the participatory approach which was developed into so called Local Action Groups (LAGs), which included relevant stakeholders from the area and outside to develop more comprehensive dimensions, including more local stakeholders in concrete business opportunities developed or as beneficiaries of the final results. Having the possibility to work trans-nationally meant that we could learn from good practices and also avoid repeating mistakes, thus joining all the knowledge accumulated and mutually support each other in improving the effectiveness of planning and implementation of RES and EE projects.

The combination of social and technological innovations makes for sustainable development projects.

The results are 24 implemented projects, most of which are described in this publication and all are published on the project's website in the Results section, all benefiting from the common pool of knowledge and experience shared by the partnership network; 11 LAGs established sharing the experience of over 150 experts; 11 concrete recommendations, building on the implementation of 24 pilot cases and 22 capacity-building workshops in partner countries, for the improvement of local energy strategies; a growing knowledge platform on the project website and, most importantly, a new participatory approach in shaping our common development future. As a lasting contribution and summary of the concept used in the projectis the Step by Step Guide, on how to make use of the Green Partnerships experience to implement your own project.

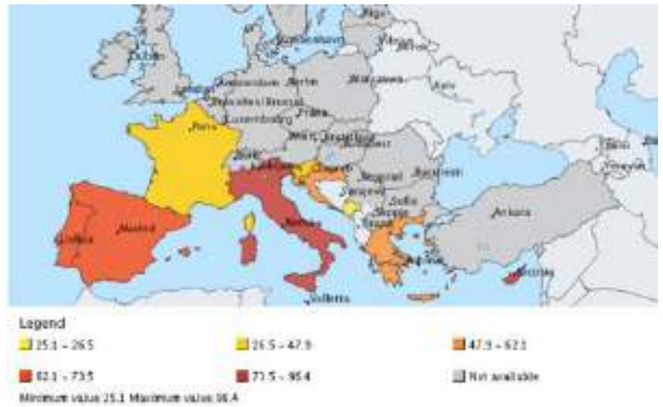
It may seem a simple project yet in its simplicity it was efficient and effective. It did not just enable partners to make concrete pilot actions with benefits to the wider community, it set in motion a principle of cooperative approach in planning and implementing RES and EE development projects. This contributed more to greener cities and regions than just technology. It contributed and tested support of the message that we all need to work together; different sectors, different individuals, different organizations, and by mastering also social innovation approaches such as LAGs, building capacity of people responsible for the preparation and implementation of development projects so that, fueled by innovative business, our future will be greener.

Stane Klemencic, Phd
KGZS-Zavod Maribor - Director

Green Partnerships has addressed the contribution of local communities to the achievement of the objective for the European Union (EU) 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. Our project's aim was to support local administrations to overcome existing obstacles and effectively implement the set measures on the way to energy efficient cities and regions. Sustainable solutions have been implemented by creating local partnerships between owners, suppliers and final users of these initiatives.

PARTNERS, INVOLVED

The partnership has assured broad geographical coverage of the almost whole MED territory since it has consisted of 12 partners from 11 MED countries. Partners represent different territorial aspects of the MED area and focus on public buildings and facilities that are large energy users and have large potentials for EE and RES use.



Picture1: Energy dependency in involved EU Member States in 2013 shows the extent to which they rely upon imports in order to meet its energy needs. The indicator is calculated as net imports divided by the sum of gross inland energy consumption plus bunkers. Source: Eurostat, April 2015.

Related to Eurostat reports (EUSTAT 2013), the EU depends on energy imports for slightly over a half (53%) of its consumption. High consumption of energy in Mediterranean countries and their high dependence on energy imports need special proceedings and new approaches to meet the challenges of the EU 2020 energy strategy. Green Partnerships has identified and treated public buildings and other infrastructures and has looked for the most convenient solutions, to be realized in the next EU financing period, for a value of approximately 12 million euro. The ambitious goal to improve energy policies has been achieved through bottom-up approaches, strongly connected with expert working groups, consisting of various knowledge and experiences by partners.

THE COMMON APPROACH

The knowledge, methods and experiences have been tested within the Green Partnerships project and published in training materials, useful for the applicative level and the non- expert public. The Step by Step Guide is a practical manual, which takes into the consideration possible different political or economic circumstances on the local/regional level and tries to improve the understanding of the necessity of energy measures and demands.

Veronika Valentar
Green Partnerships Project Manager

ALBANIA

The use of biomass and municipality waste to produce energy for the school and kindergarten in Manza Municipality

CHALLENGES AND OPPORTUNITIES

The promotion of renewable energy and energy efficiency in Albaia includes requirements to transpose acquis on renewable energy, high efficiency cogeneration based on useful heat demand, the improvement of energy efficiency of buildings, energy services and various other initiatives. Where applicable, energy-using products must fulfil eco-design requirements and household appliances must carry energy labelling.
Sustainable development has increasingly become a priority in many communities and one of its main elements is related to the production of energy from environmentally adequate sources. In this sense, bioenergy, as energy obtained from biomass, presents itself as one of the most popular alternatives to fossil fuels, with conditions to be an effective solution to the current environmental and energetic issues. In fact, biomass is the only renewable energy source (if used sustainably) that can be converted into gaseous, liquid or solid fuel by means of known technologies for conversion.
The pilot municipality selected was Manza. This municipality has an total area of 4532.92 ha, composed mainly by agricultural territory as well as forestry. Manza Municipality is a part of Durresi Region and is located in the most potential touristic area in Albania.
The main objective of this project was to promote the use of waste and organic manure from farms or communal cleaning plants for biogass production as well as the promotion of the best practices to support energy efficient consumer behavior in implementing energy efficiency measures by creating local partnerships.

STATE OF THE ART AND PROPOSED SOLUTION

EXISTING SITUATION AND PROPOSED INTERVENTION

Based on the quantity of organic manure and the number of animals, the main plants for biogas production are as follows:
a) Small plants (family size).
b) Medium size.
c) Big size or industrial type.
Each plant has the three main parts:
Mixed room.
Dixhester.
Gas collection room.

INNOVATIVE APPROACH ASPECT

Constitution of a local partnership: Biomass contracting between municipality, local suppliers and investors in form of public- private partnership The involvement of the local partnership and the educational sector for the successful dissemination and adoption of energy efficient behavior by the citizens, facilitating the steps towards an environmentally aware society. The active involvement of respective stakeholders has shown so far their commitment and willingness to contribute to the energy education of the future consumers' generation.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Recognising the potential in the area
- Several meetings and workshops with stakeholders; mayors, municipality council, engineers, etc.
- Assessing the resource potential and know-how potential in the area.

2. Development of the technical solution and business approach
- Collected all data-base regarding the capacities (livestock capacities, possibilities, trends, etc).
- Define the farmer and the place where the system will be placed.
- Preparation of the business plan for investment.
- Setting up of Public Private Partnership model.
- Selection of appropriate technical solutions.
- Preparation of selection procedures for private partner for investment in biogas system.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

To set up such familiar plant the farmer should accomplish the following requirements:
- Minimum number of animals 5 cows or 15 pigs.
- The animals should stay inside for at least 12 hours.
- Water source should be not far than 20 m.
- The equipmemts for gas production should not be far than 100 m from the plant.
- The necessary budget for the plant maintenance.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Increased knowledge and awareness of the public authorities and other institutions .
- Increased awareness and knowledge of stakeholders (farmers, pupils, investors, users).
- Increased energy efficiency and reduced energy consumption of up to 40%.
- Local initiative established.
- Changes in perception and importance of renwable energy use in local communities.
- Local potential (know-how and investment) was engaged opening new, green, working places.
- Local supply chain was also established providing for cost-efficient supply of biomass material.
- Local businesses profited from lag or other events with stakeholders.

FUTURE STEPS

1. Financing the investment (2015-2016)
- Public Private Partnership & (public financing via Agricultural Rural Development Directory 50%, remaining is co financed by the applicants,
- Application to relevant national calls,

2. Implementation (2016)
- Collecting system for biomass and wastes = 12. 000 €
- Equipments at the public school and kindergarten= 6.000 €;
- Installation of new system for heating: = 9.000 €

MOST IMPORTANT LESSON LEARNED

The possibilities to expand biogas production in Albania are very good: a) by the available organic residues (like animal manure, organic waste fraction) as well as b) the available energy crops (like maize silage, corn, etc). The involvement of the local partnership and the educational sector is considered extremely important for the successful dissemination and adoption of energy efficient behavior by the citizens, facilitating the steps towards an environmentally aware society.

BOSNIA AND HERZEGOVINA

Increasing energy efficiency in eco-schools and public administration buildings

CHALLENGES AND OPPORTUNITIES

Public administration buildings and school buildings are large energy consumers, due in part to size, number of users and lack of sufficient investment in renovation. Public authorities also have a key role in leading by example. Promoting and rewarding efficient energy consumption can have a large effect in changing behaviour among the private sector and citizens. Public authorities face the challenge of identifying funding for investments. Furthermore, because school buildings are managed by third parties, users lack economic motivation and awareness to commit to energy saving practices.

Pilot cases selected in the project were Elementary School Vrhbosna and Gymnasium Dobrinja in Sarajevo City, as well as four other public administration and school buildings in four municipalities of Sarajevo City. The theme of energy efficiency in buildings is relevant for all. Some are local authorities, which directly manage public buildings and define public policies. Some are education sector representatives, which are in charge of education of next generation of children and youth.

It has been analysed and decided within the project, which measures (technical solutions) for increasing energy efficiency would be implemented (saving bulbs, consumption meter etc.) and all of that with the aim to raise awareness and extend knowledge of students and professors, as well as public administration workers.

STATE OF THE ART AND PROPOSED SOLUTION
EXISTING SITUATION AND PROPOSED INTERVENTION

State of the art in one of the selected buildings (Elementary School "Vrhbosna" Sarajevo) which has been constructed in 1967, but during the war it has been totally ruined and devastated. During 1996, one part (lamella I) is reconstructed, while the other part of the school is currently under construction (lamella II). The energy source for heating is natural gas, and the oil fuel is the alternative fuel. There is no ventilation and air conditioning in the building. It is not thermally isolated and the doors and windows are in poor condition.

Proposed solution: To carry out the energy audit and obtain energy certificate for this building as example for other buildings in the City.

INNOVATIVE APPROACH ASPECT

Interactive workshop with students where they had a chance to, along with acquired knowledge, apply and present existing knowledge through exercises and riddles, as well as joint energy audit in their school.

IMPORTANT STEPS – IMPLEMENTATION STEPS

The first exercise after watching the movie about saving energy at home was to apply everything that students remembered from it to give suggestions how to save energy in school. During the second exercise, students were divided into three groups and every group had to write everything they know about different renewable energy sources: sunlight, wind and water. At the end of the workshop an Energy expedition "Energy in our school" was held in the school where, with the help of the school janitor, students and teachers have performed small energy audit of the school and fulfilled the working papers that were later used for the assessment of all school disadvantages and suggestions on improving energy efficiency in school rooms.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- Small energy audit of Vrhbosna Elementary School by their own students and janitor.
- Detailed professional energy audit by certified auditors has been carried out which collected all information on the current state the facility. On the basis of thermal-visual photos of the facility, energy losses in facility have been confirmed.
- Introduction of the energy consumption meter is one of the measures suggested for energy efficiency in school, which requires minimum of investment and which is cost-effective in the shorter period than two months.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- School children carried out the small energy audit in practice,
- Lectures on energy efficiency, energy saving and renewable energy sources,
- Practical exercise of the students and teachers in relation to energy savings in their school,
- Students and teachers encouraged in creativity and habits on EE and renewable energy,
- Having detailed energy audit carried out, school has increased the possibility in participating and applying to projects in the field of EE.

FUTURE STEPS

1. Financing the investment (2015-2016)

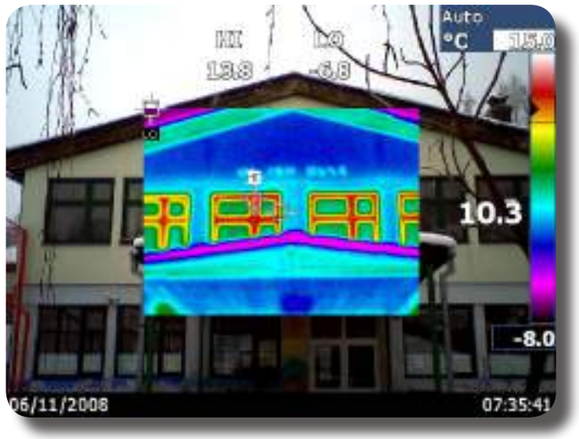
- Application to relevant national calls.

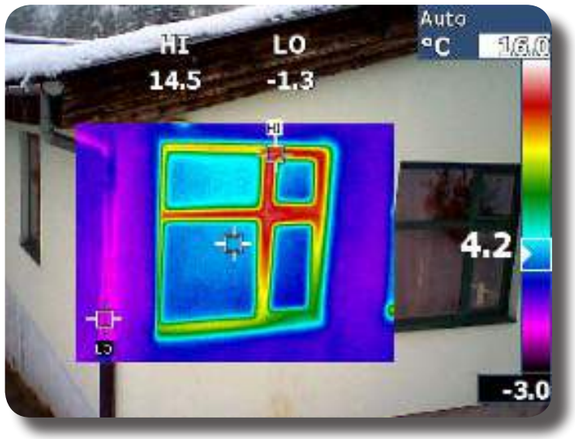
2. Implementation (2016)

- Replacement of all windows and doors = 43,946.00 €
- Thermal insulation of the outer wall of the building = 20,962.96 €
- Thermal insulation of the ceiling toward the unheated attic = 28,866.00 €
- Build in the thermal valves on the heating radiators = 1,779.29 €

MOST IMPORTANT LESSON LEARNED

Schools in the City of Sarajevo have a lot of potential to save energy. The continuous education of the teachers and students and practical examples that have been offered through this project should be replicated every year and in other schools as well other public buildings.





CATALONIA (SPAIN)

Championship for energy saving in public buildings in the Granollers Municipality

CHALLENGES AND OPPORTUNITIES

Developing of energy saving campaigns in municipal facilities. This include the creation and implementation of a methodology to raise awareness among the different user groups of these sites about the reduction of energy consumption in municipal facilities and to adopt improved energy efficiency solutions.
The actions taken consisted of the implementation of a energy consumption measurement programme and, afterwards, a campaign to strengthen the awareness of decision-makers, users, service companies, and citizens in general about responsible use of resources in public buildings. The campaign was implemented in 17 public schools from May 2013 to February 2014, and in 13 public cultural facilities since May 2014 to November 2014.
Following the GP approach the campaigns (Championships) implemented in 17 schools and 13 cultural facilities contribute to the reduction of energy consumption in public buildings and to raise the awareness of users and public workers on energy saving, energy efficiency actions and application of good practices to improve public management.

STATE OF THE ART AND PROPOSED SOLUTION
EXISTING SITUATION AND PROPOSED INTERVENTION

Championship implemented in 17 public schools and 13 public cultural facilities since May 2013 to November 2014.
Proposed solution:
1. Adoption of energy consumption measurement program in every public building.
2. Implementation of a campaign to strengthen the awareness of decision-makers, users, service companies, and citizens in general about responsible use of resources in every public building.

INNOVATIVE APPROACH ASPECT

Developing of an innovative methodology to raise awareness among the different user groups of these sites about the reduction of energy consumption in municipal facilities and to adopt improved energy efficiency solutions.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Adoption of energy saving programs
Energy diagnosy of 17 schools and 13 cultural facilities.
Periodic analysis of the energy consumption (based on the manual monitoring realised by public employees).
Formulation of specific solutions on energy use in air conditioning system, indoor lighting, and water.
Identification and reparation of energy and water leaks.
Definition of a program of measures for each center, with investment actions(quantified and ROI) and actions withouth investment.
Kind of actions: improvement of public procurement of suppliers; climatització; indoor lightingand electrical equipment; ventilation; water installation; control system of function; monitoring of consumption, etc.

2. Implementation of energy saving campaigns
Creation of working groups oriented to energy saving in every public buildings.
Involvement of participants (public workers, users, maintenance and services companies).
Creation and dissemination of communication and awareness materials (good practices on energy saving guide and other materials) and implementation of training sessions oriented to participants.

3. Benchmarking
From the results of awareness campaings application and the comparison with the energy consumptions of the same period during 2013, calculation of the average of energy and water savings by center and analysis of their efficiency and the actions that need to be done to improve it.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- 17 Public schools: compared to February 2013, in February 2014 there was an average electricity saving of 19% in all the schools and an average gas saving of 20% in 8 of them.
- 13 Cultural facilities: compared to November 2013, in November 2014 there was an electricity saving of 18% in 9 buildings and more than a 20% of gas saving in 4 of them.
- Energy saving also represents a reduction of greenhouse gas emissions of 5 tonnes of CO2 equivalent in the schools and 9 tonnes of CO2 equivalent in the cultural facilities.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Creation of methodology to record meter readings.
- Collection of knowledge on the energy consumption: WHAT and WHY.
- Finding of reasons to contribute to CHANGE habits in order to SAVE energy.
- Development of "Championship" as a "methodological legacy" to managers and users.
- Concerning schools, 14 work groups have been created with the participation of 237 students, and 136 training sessions oriented to the whole educational community have been developed. Concerning to the cultural facilities, 13 work groups have been created with a total of 40 participants, and 70 training sessions have been developed.
- Collaboration and synergies with other EU projects (Euronet 50/50 max and SERPENTE-Province of Barcelona, and MARIE-Government of Catalonia).
- Cooperation with "Catalan Strategy for Energy Renovation of Buildings- Government of Catalonia".
- Collaboration with 2 external local companies that supports the implementation of the programs and the design and production of awareness campaigns.

FUTURE STEPS

1. Local Strategy for Energy Saving in Public Buildings (2015)
Analysis and forecasting of energy savings activities in municipal buildings for 2015-2020, based on the results from energy saving programs and campaigns developed between 2012-2014. The commitment is to improve the actions taken to date in terms of energy saving and efficiency in relation to the several lines and topics.

2. Improvement of indoor lighting of 2 public libraries (2015)
Replacing existing lighting to low energy lighting.
Potential energy savings: 65.948 KWh/year.
Investment: 30.000 €.
ROI: 3 years.

3. Improvement of energy efficiency in 3 public office buildings (2015)
Actions focused on reducing leaks of energy through closures and openings (doors and windows), improving efficiency of indoor lighting system, heating and cooling systems, isulation, ventilation and electrical office equipment, oriented to reduce power consumption.
Investment: 9.000 €.

MOST IMPORTANT LESSON LEARNED

Behavior is a "key factor" in the potential energy savings in public buildings. Investments in "non tech" measures are necessary and have good return on investments.

CROATIA

Use of solar energy for water heating installation of solar collectors on public buildings

CHALLENGES AND OPPORTUNITIES

The great challenge today is to reduce energy consumption and to use renewable energy sources as much as possible. Lower consumption of conventional fuels lead to lower emissions of carbon dioxide (CO2), the primary contributor to global warming, and other pollutants. In order to reduce the consumption of natural gas and thereby the costs, existing system on public building was analysed and it was proposed to upgrade it with the installation of plate solar collectors through which the annual energy needs would be covered from the free energy of the sun.
The pilot action has been implemented at the Home for elderly and disabled, situated in Town of Koprivnica. The home has 270 users and 72 employees. At the beginning of the 90s a first stage of building construction began, during which heat system was connected to boiler room in 400 meters distant hospital. A second stage of construction began in 2002, and in 2004 funds for construction of their own boiler room were acquired. Still, great energy lost was recorded. For this reason, new boiler room was constructed in the building attic. However, embedded boilers aren't adequate for heating mode of the Institution. Also, systems essential for good functioning weren't incorporated. For example, system for cleaning sludge and system for refilling and demineralization.
Until today 90% of lighting is replaced, plastic doors and windows, compressor station and new cooling device were installed. Also, energy certificate and conceptual design for installation solar collectors on the roof were made.
Following the Green Partnerships approach Home for elderly and disabled, together with regional authorities and local planners and designers found the most cost-effective solution for energy savings.

STATE OF THE ART AND PROPOSED SOLUTION

EXISTING SITUATION AND PROPOSED INTERVENTION

State of the art:

- Year of the construction – 1990, 2002.; area of 8.865,76 m2 – energy class – E.
- The total Referent annual consumption of natural gas for the facilities of the Home is 197,543.33 m3 / year, which corresponds to the heat energy of 1,865,321.03 kWh / year.
- Total Referent annual CO2 emissions in the environment due to the consumption of energy and water for the Home is 641.376 t/year, while Ref. annual CO2 emissions due to the consumption of the natural gas is 375,322 t/year.
- Two hot water condensing boilers on natural gas of 0,5 MW operate alternately, and preparing hot sanitary water and heating water, stored in the reservoir with capacity of 12000 l.
- Current hot water tank, volume 12.0 m3, supplies average consumption of 17.5 m3 / day. In the period of morning care, 6:00 to 9:00, spent 5 m3, while in the night period, 22:00 to 6:00 pm maximum consumption is 2 m3. The rest of the consumption is distributed evenly throughout the day.
- The walls are mostly made as sandwich brick wall 12 cm thick, with filling the space between the walls with expanded polystyrene 4 cm thick. Gable walls and side balcony walls are designed as sandwich walls, with bearing construction of reinforced concrete 16 cm thick coating of 12 cm brick and filling expanded polystyrene 4 cm thick.
- The windows are mostly derived from PVC profiles, double-glazed insulated glass 4/12/4 and 4/16/4 mm without low emission coating or filling with inert gases, the heat transfer coefficient frame Uf = 1.60 W / (m² K) and the coefficient thermal transmittance of glazing Ug = 2.90 W / (m² K) resulting in average values of thermal transmittance window Uw = 2.51 W / (m²K).
- Electricity consumption in the reference year (heating, ventilation and cooling systems, lighting, laundry, office and kitchen equipment, elevator) : 481.523 kWh.

Proposed solution:

1. Implementation of EE measures – energy class – D.
2. Installation of solar collectors for preparing sanitary water and heating water.
3. A good practise example which can be multiply on other public buildings.

INNOVATIVE APPROACH ASPECT

Collaboration between Institute for Spatial Planning, Department of Education, Culture, Science and Sport of the County and different experts within LAG – joint initiative for implementation of the best energy efficiency solutions on the Home for elderly and disabled, which can become a good practice example and multiply on other public buildings.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Identification of potential savings
Moderated meetings and site visits with stakeholders; staff of the Home, employees of the Institute, engineers,
Assessing natural and know-how potential in the area.

2. Technical documentation for solar collectors installation
Preparation of the construction engineering design (technical description, evidence of fulfilment significant and other requirements, control and quality assurance program, evidence of evaluation cost of construction, drawings).
Preparation of the mechanical engineering design (technical description, technical calculations, control and quality assurance program, evidence of evaluation cost of construction, drawings).

3. Implementation
Financing opportunities.
Building permits.
Installation and implementation.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- Reduction in CO2 emissions for 34,100 t/y.
- Savings of 17.966 m3 natural gas per year.
- Price of natural gas – about 0,70 €/m3.
- Cost reduction – about 12.576 €/y.
- Investment return period – 6.6 years.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Local initiative established.
- Example of good practice for other homes for elderly and disabled, or other public buildings.
- Raise of awareness among users of the home and their families.
- Local experts and small companies were activated as members of the LAG or technical documentation makers.

FUTURE STEPS

1. Financing the investment (2015-2016)
Self financing.
County or local municipality.
Public Private Partnership.
Application to relevant national calls.
ESCO (Energy Service Company) model.
Private investment etc.

2. Implementation (2016)
Installation (three field plate solar collectors, 120m2 total, and solar heating substations; two heating water inertial tanks, 2000 l each; low-temperature gas boiler nominal output of 48.9 kW; plate heat exchanger for hot water; heating lines)= 83.000 €.
Building construction, craft works (storage, surroundings) = 600 €.

MOST IMPORTANT LESSON LEARNED

Based on energy certification for public buildings which has showed cost-reduction possibilities, we made decisions about the most effective technical solutions to achieve savings by using renewable energy sources. This example of good practice, in cooperation with an experienced team, will multiply its effects to other public buildings.

CYPRUS

Wooden biomass heating in public builtding and Regeneration of the west tank of Pedieos River that runs through Lakatamia from North East to South West.

CHALLENGES AND OPPORTUNITIES

In an attempt to increase energy efficiency levels, strengthen institutional capacity and facilitate knowledge building, the Municipality of Lakatamia has undergone two feasibility studies for the installation of a biomass burner at a Lakatamia swimming pool and for the minimal green waste management at Lakatamia Town Hall. During the capacity building workshops on biomass and solar energy in Cyprus, the key discussion topics focused on the environmental and financial benefits of using biomass as a fuel and the advantages of adopting a passive solar energy system. From these experiences, results have shown that the project had a promising start, steady progress and the implementation of green energy methodologies will keep generating practical changes. In fact, the Municipality of Lakatamia is currently working on the architectural design of three buildings and an all-inclusive city park as features of a soon-to-be regenerated area on the West Bank of the Pedieos river.

In reference to the two studies conducted by the Cyprus Energy Office, the concluded best solution was to use wood chips, produced from municipal green waste, as fuel for the biomass burner to heat the swimming pool. The feasibility studies have shown that the Municipality can build green municipal wastes by converting them to solid biomass, which will use as fuel for the heating of the public swimming pool. This solved two problems that had to face the Municipality, the heating of the municipal swimming pool and the management of the municipal green wastes.By adopting this biodegradable method, the two-fold scope of increasing levels of energy efficiency in buildings while ensuring environmental sustainability was successfully achieved. The benefits of implementing these systems has also strengthened institutional capacity, teaching municipal employees about biomass and solar energy whilst also changing technical perspectives stakeholders elaborated upon during two meetings on the subject. On a financial standpoint, the low-cost use of biomass has reduced dependence on imported sources of energy by saving €700 per 10 tons in the collection and transportation of fuel, provided at no extra cost as part of municipal standard duties. On an environmental front, there has been a significant change in air quality and energy consumption levels resulting from a reduction in emissions and dust debris generated by the eco-friendly and silently efficient operation of the biomass burner. In regards to the use of a photovoltaic system, the great advantages are its low maintenance, low energy costs and excellent comfort in the extraction of natural energy for the heating and cooling of living spaces.

Apart from the discussed economic and environmental advantages, the implementation of both solar and biomass projects has significantly raised awareness on alternative energy methodologies and their practical benefits while simultaneously building institutional capacity within the municipality and enabling knowledge transfer of best practices among Green Partnerships members.

Current use of oil boilers to be relieved by additional use of biomass boiler. Milling machine + dehumidifier + biomass boiler to be installed and connected to water pipes.

Advantage: Biomass boiler is mobile and can be used to heat other municipal buildings.

Identified Opportunities

1. The implementation of both solar and biomass projects has significantly raised awareness on alternative energy methodologies and
2. their practical benefits while simultaneously building institutional capacity within the municipality and
3. Enabling knowledge transfer of best practices among Green Partnerships members.

STATE OF THE ART AND PROPOSED SOLUTION

EXISTING SITUATION AND PROPOSED INTERVENTION

During the capacity-building workshops on biomass and solar energy in Cyprus, the key discussion topics focused on the environmental and financial benefits of using biomass as a fuel, the nature and production of compost, the advantages of using a biomass burner at Lakatamia swimming pool, the use of burner ashes as fertilizing material, the knowledge transfer of good practices used in exemplary photovoltaic projects in Europe, discussing the main principles of passive solar buildings and the benefits of implementing passive solar principles. For a deeper exploration of these themes, the group visited a biomass burner at a Nicosia swimming pool, a photovoltaic system on the roof of a Town Hall, and a series of presentations provided more detailed information on the subject matters. In evaluating the workshops, the overall feedback was very well received and significant input was enjoyed in both of them.

Biomass

Considering that biomass does not contribute to environmental problems such as the green house effect and acid rain, its use has proven to be eco-friendly. Biomass use as a fuel is also easy to maintain and decreases dependence on imported sources of energy. Financially speaking, it is low in cost due to reduced transport, storage and burning of wastes fees. In fact, Lakatamia swimming pool saves €700 per 10 tons in the collection and transportation of fuel, provided at no extra cost as part of municipal standard duties. In addition, Dr. Polydorides noted that burner ashes are to be treated under solid waste rules and could be used as fertilizers where ground PH remains unaffected. Also, the relatively silent operation of the biomass burner as well as its contribution to reducing emissions and dust is another great advantage for its use. As a result, the economic and environmental benefits, coupled with technological advancement, have made burners into a very popular energy efficient option worldwide.

In terms of compost use and production, its positive effects include improvement of ground fertility, improvement of natural ground traits such as infiltration and water holding capacity, mulching, and suppressing diseases. Throughout the process of composting, products free of pathogenics and weed seeds can be created; and the biodiversity in green areas can thrive in an environment free of pesticides. For these reasons, the utilization of natural resources contributes to a sustainable green economy, reducing CO2 emissions, improving soil fertility, generating new products and creating new jobs. Based on this understanding, the municipality has been focusing on utilizing these natural resources for their many benefits. In doing so, it has strengthened institutional capacity and increased its experience in the use of renewable sources of energy.

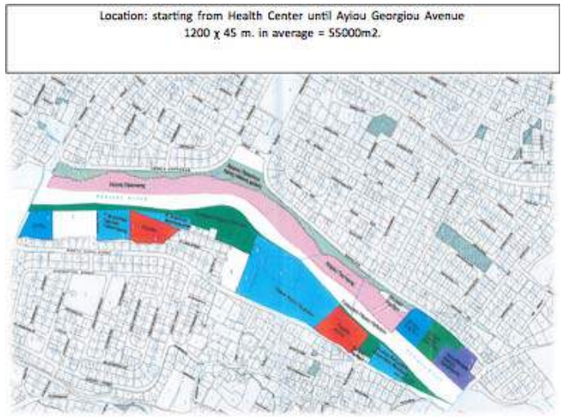
Bioclimatic design

As the Pedieos linear park represents an environmentally sensitive area special attention will be given so as the projects mentioned above will be designed making full use of renewable energy sources, use of recycled water, autonomous solar collectors for open public lighting etc.

The principles of bioclimatic design will also be followed when dealing with the preparation of the architectural design of the buildings mentioned above.

INNOVATIVE APPROACH ASPECT

Constitution of a local partnership: Biomass contracting between municipality, local suppliers and investors in form of public- private partnership



IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Recognising the potential in the area
Moderated meetings and workshops with stakeholders; mayors, municipality board, engineers,
Assessing natural and know-how potential in the area.

2. Development of the technical solution and business approach
Preparation of the business plan for investment.
Setting up of Public Private Partnership model.
Selection of appropriate technical solutions.
Preparation of selection procedures for; concessionaire for supply of heat, private partner for investment in biomass heating system.
Tender for heating concession.
Building permissions.

3. Implementation
Contract/tenders signature for the architecture and research implementation.
Research and economics analysis of biomass implementation and building permissions,
Installation and implementation in the near future for biomass technology due to other economical , mostly, issues.

ACHIEVEMENTS

IMPROVEMENT OF LEGISLATIVE FRAMEWORK

- Used of metrologies introduced from the Cyprus Energy Office Reports regarding energy saving.
- Continue training of our Staff.
- Target to implement strategies which will help us to became more effective and efficient in energy saving.
- Continue knowledge transfer among Green Partnerships members.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

Key pilot actions decided:

- Feasibility study from the Cyprus Energy Office March 2014 title "Techno economical feasibility study on Solid Wood Biomass Resources and Use of Green Waste at Lakatamia Municipality".
- Feasibility study from the Cyprus Energy Office March 2014 title "Municipality Pool Energy Audit according to the Report energy Audit code 171/2012".
- Until end of May we will have the "Architectural spatial placement for on the 2km long open green space area" finished.

FUTURE STEPS

After the approval that was given to us to proceed with the design of the following:

- Detailed bioclimatic plans for environmental centre.
- Botanical garden and City Park.
- Regeneration of riverbank.

We have proceeded during December 2014 and completed a preliminary architectural master plan for the 2km long open green area along Pedieos River.
We have prepared tender documents (so as to select the group of planners (architects / engineers/ quantity surveyor), published tenders and have set up a technical committee and assessed the tenders received.
The tender has been assigned to Christ. Avraamides & Partners and we are already working on the design of the above projects so as to meet the deadline of the program which is the 31st of May 2015.
We also completed a soil survey of the area in order for the engineer to decide the foundation type of the proposed building.

Future actions

1. Place/Use/Test - Implementation phase of biomass and municipality waste for production of energy is the main renewable source. A biomass boiler and/or biomass burner will be used/added to a dehydrator and a milling machine to Public (Municipality) Buildings.
2. Implementation and Regeneration of the West Bank of the river that runs through Lakatamia for NE to SW and
3. Bioclimatic design of the open green space area and implementation bioclimatic plans for the center of environmental education
4. Used of LED Lighting installation to all Municipalities Parks and Public Roads

MOST IMPORTANT LESSON LEARNED

The area is situated in the centre of the municipality and covers an open green space area of approximately 2km length and about 50m wide. The aim of the municipality is to proceed with a detailed architectural spatial planning of the area in order to provide leisure, educational, recreational and sports activities for not just the residents of the municipality but for the greater Nicosia area as well. Such a long term project will provide Lakatamia Municipality with an "identity" something that is currently missing from the area.
To this end the municipality has been working on the preparation of the activities and projects to be included in the area and has established a working team and various meetings have been set up with the relevant government departments to agree the procedure and the nature of the activities/ projects.

The preliminary list of activities/ projects includes:

- Central square area.
- Museums.
- Open cinema and small amphitheatre.
- Restructuring walls inside the river bed.
- Centre for environmental education & awareness.
- Botanical garden, playgrounds, recreational area, kiosks.
- Natural corridors (walking, cycling paths).
- Sports facilities, parking area etc.

As the Pedieos linear park represents an environmentally sensitive area special attention will be given so as the projects mentioned above will be designed making full use of renewable energy sources, use of recycled water, autonomous solar collectors for open public lighting etc.
The principles of bioclimatic design will also be followed when dealing with the preparation of the architectural design of the buildings mentioned above.

FRANCE
Local authorities involvment in RES projects

CHALLENGES AND OPPORTUNITIES

Strengthening local authorities and population involvement in development and investment on Renewable Energy (RE) power plant projects is necessary to improve their integration and a real local economic development. But this kind of project is currently mainly developed by the private sector and a few individual investors. Therefore, it's necessary to promote a new approach on the local private-public partnerships.
The pilot action has been held in the rural territory of Pays Asse, Verdon, Vaïre, Var (A3V), where a project of small hydro power plant has been planned in the Municipality of Méailles. The project owner and developer was an association of irrigators, in charge of the management of a canal. After a few years of studies on environmental impacts and feasibility, they agreed to this new approach in order to recover the participative governance of the canal of the early twentieth century. We were able to rely on local organisations dedicated to such participative projects.
Following the GP approach, the project holder decided to involve the municipality, some local SME's and a few citizens in the development of its small hydro power plant, participating as cofounders on the capital of the power plant management company.

STATE OF THE ART AND PROPOSED SOLUTION
EXISTING SITUATION AND PROPOSED INTERVENTION

State of the art: a local hydropower plant project under development, involving only one stakeholder and private funds.
Proposed solution:
1. Mobilizing local stakeholders, private and public by awareness meeting actions.
2. Feasibility study on administrative status of private-public company.
3. Publication of a guide on multi-stakeholders renewable energies project development.

INNOVATIVE APPROACH ASPECT

Involving public local authorities as well as citizens into a private project of renewable power plant still remains innovative in Europe.

IMPORTANT STEPS – IMPLEMENTATION STEPS

IMPORTANT STEPS: - IMPLEMENTATION STEPS

1. Technical support for the feasibility studies

- Participation to steering committees of the project.
- Review of the studies.
- Advice on the technical and financial choices.

2. Analysis of the administrative status for a private-public partnership

- GERES wrote a report on this analysis, describing the different models.
- A French guide will be published on this base, with the national French partner "Energie Partagée".
- A training on this topic has been provided to the local stakeholders as well as an analysis workshop on Méailles specific case.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- 13 local elected representatives trained.
- Hydro power plant of 180 kW (1150 kWh/an) under process.
- 0,8 M€ of investment.
- 200 000 € of private-public capital is forecasted.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- A training for local authorities representatives has been held on the topic of "local authorities involvement in renewable energy power plant".
- Report on legal structures for energy power plant exploitation under public/private partnership.
- A regional event has been held in Marseille.

FUTURE STEPS

- Launching the crowdfunding campaign.
- Creation of the private-public company.
- Investment and construction of the power plant.

MOST IMPORTANT LESSON LEARNED

The crowdfunding for local energy production project is well received by the inhabitants and the SME's, and allows a better local acceptance of such projects.

GREECE

Green neighbourhood – Bioclimatic design of open spaces in an urban area in the Municipality of Rethymno

CHALLENGES AND OPPORTUNITIES

During the last decades, urban centres were developed neglecting the environment, local climate, resources and local potential. The lack of green spaces and the increase of the Urban Heat Island Effect are dominant; cities face challenges for energy efficient interventions. This pilot action foresees the development of a green neighbourhood through bioclimatic improvements of open spaces, in an urban area in the Municipality of Rethymno (3rd largest city of Crete, 55,500 citizens). The neighbourhood is located in an urban road, with 4-5-floor domestic buildings and absence of vegetation. The high temperatures during summer create a feeling of discomfort during daytime. Lowering the average outdoor temperature with the use of bioclimatic tools will decrease the energy consumption in nearby buildings, increase thermal comfort and will encourage habitants to use the city's open spaces.

A multi-stakeholder local partnership was formed involving local expertise, removing obstacles and facilitating consultation with citizens to incorporate their needs and expectations. Alternative scenarios were developed to decide on the most proper, as well as value for money solution.

STATE OF THE ART AND PROPOSED SOLUTION

EXISTING SITUATION AND PROPOSED INTERVENTION

The pilot area is characterized by urban gorge phenomenon due to numerous streams leading to the sea and heat island effect mainly due to the lack of vegetation. The climatic conditions involve mild winters, hot summers, strong winds and humidity. Simulation analysis and on field measurements showed a significant increase in thermal comfort and a decrease of 2-3°C in the mean daily temperature. The microclimate improvement will decrease the cooling load for the surrounding buildings which can be directly translated into lower CO2 emissions and energy savings.

INNOVATIVE APPROACH ASPECT

The technical study uses bioclimatic tools and is in line with the existing urban revitalization plan; it involves the use of innovative and cold materials, the increase of vegetation and the introduction of water surfaces; local stakeholders worked through the whole process to stimulate neighbours' behaviour change. The study concludes to a replicable model applicable within the Municipality and to MED cities.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Constitution and motivation of a competent Local Action Group.
2. Identification of the pilot area, linking the project to the SEAP's and Spatial Planning priorities.
3. Field measurements, simulations - Assessment of alternative scenarios / technical solutions .
4. Public consultation to incorporate stakeholders' opinion and achieve consensus.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- Improvement of microclimatic conditions; Increase of thermal comfort, decrease by 2-3°C the summer average daily temperature.
- Lower CO2 emissions, energy savings and reduction of the electricity bills in nearby public buildings and households.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Improvement of the citizens' quality of life.
- Citizens' activation will improve the effectiveness of measures undertaken.
- Raise awareness on energy efficiency potential.
- Support the Municipality to meet the SEAP targets.

FUTURE STEPS

Identification of funding opportunities, submitting for funding from National Strategic Reference Framework (2014-2020); Replication of the study in other neighbourhoods.

MOST IMPORTANT LESSON LEARNED

- Applying bioclimatic principles in urban areas may be highly beneficial for S. Europe's climate conditions, offering increased thermal comfort in the summer and decreased energy use for heating and cooling.
- Authorities' priority is on reducing costs; benefits of quality improvements need to be quantified and taken into account in the local SEAP.

Figure 1. The city of Rethymno

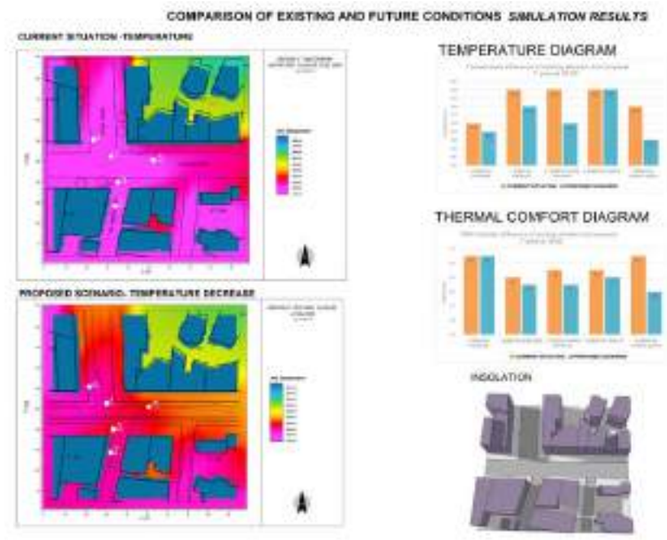


Figure 2. Bioclimatic upgrade of urban area – Assessment of alternative scenarios

GREECE

Improvement of public lighting in the historic center of the city of Rethymno

CHALLENGES AND OPPORTUNITIES

Public lighting studies should satisfy basic principles: energy saving, appropriate lighting level for safety and visual comfort of pedestrians and proper illumination of the historical landmarks. This pilot action studies the alternatives for the improvement of public lighting infrastructure and management, so that it becomes more efficient, economic, eco-friendly and in harmony with the architectural environment. It proposes combined solutions that reduce the energy consumption and operating costs, upgrade the lighting conditions and pay special attention to the historical monuments.

In cooperation with the Green Partnerships Local Action Group, identified challenges were addressed through a transparent participatory decision-making process; citizens' opinion was recorded, through a field research and taken into account in the technical study. Capacity building activities with regard to the efficient public lighting aspects were held.

STATE OF THE ART AND PROPOSED SOLUTION

EXISTING SITUATION AND PROPOSED INTERVENTION

Public lighting levels in the historic center of Rethymno are higher than the indicated from the relevant standard (ELOT/EN 13201-4), increasing unreasonable the municipal energy bills. The study proposes a new strategy for re-siting and upgrading the lighting infrastructure, resulting to increased energy efficiency, uniformity and optical comfort, increasing the safety feeling of pedestrians, highlighting the important landmarks and reducing municipal energy bills by 40%. Proposed solution involves new luminaires, integrates LED technology and efficient management practices.

INNOVATIVE APPROACH ASPECT

The action applies an holistic approach integrating the basic characteristics and parameters of lighting fixtures (luminaires height, spacing, light distribution range) in correlation with the lighting criteria (energy saving, uniformity and intensity), related European standards, historic monuments/ landmarks, the stakeholders consultation, citizens' expressed feelings and needs and other quality values. The study area is consisted by a square and a typical commercial street in the historic center; providing thus a replicable approach, challenging expansion within the municipality and similar initiatives to MED cities.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Mapping the study area; measurements on situ, analysis of existing situation and statistical data.
2. Consultation with LAG, to agree on the approach to be followed.
3. Simulation of alternative technical solutions; Decision on priorities, respecting the historic environment.
4. Capacity building; Training session for municipality staff, awareness campaign.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- Up to 30% energy savings.
- Up to 42% lower electricity bills.
- Compliance to relevant EU standards.
- Proper illumination of historic monuments and landmarks of touristic interest.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Capacity building workshops for technical actors.
- Increase the city's "value" as a touristic destination.
- Awareness raising about energy efficiency in lighting to local businesses and citizens.

FUTURE STEPS

Submit for funding to relevant call for proposals in the frame of National Strategic Reference Framework (2014-2020). Expand the implementation study to the whole area of the historic centre.

MOST IMPORTANT LESSON LEARNED

Public lighting strategies should evaluate additional parameters, such as safety and attractiveness.
Public lighting studies should take into account light from other sources (such as storefronts), also citizens' opinion and perceptions.

Figure 1. Views of the Mikrasiaton square, at the historic center of Rethymno.

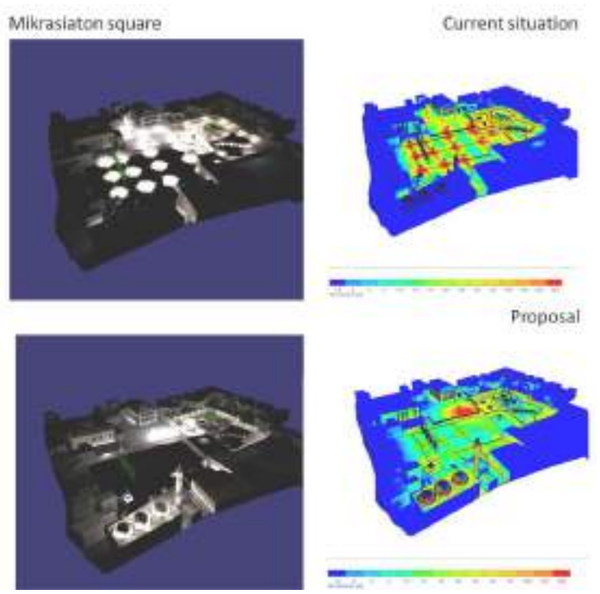


Figure 2. Simulation of the current situation and the proposed interventions.

GREECE

Water pumping energy efficiency improvement

CHALLENGES AND OPPORTUNITIES

The energy cost of pumping and treating water impose a significant expenditure on municipal water utilities (~90.000€/ month) for the Municipality of Rethymno. Rethymno is a touristic destination with high seasonality also to the water supply demand; an additional challenge to be taken into account. The pilot action studies appropriate efficiency measures towards energy and water savings through the improvement of infrastructure, exploitation of RES, better management practices and minimisation of loses. Two major pumping stations were studied, one for potable and one for waste water. Energy efficiency interventions were proposed to decrease the energy demand and improve energy efficiency, at least 20%.

The local partnership supported the project's development providing access to required raw data and the utility's design initial plans, also insights related to the utility's operation and the system's inefficiencies. Local technical expertise was exploited through the involvement of researchers, engineers, technology providers and the water utility technical staff.

STATE OF THE ART AND PROPOSED SOLUTION

EXISTING SITUATION AND PROPOSED INTERVENTION

The technical study focus on specific loops of the water and sewage network. The power factor in the water supply system and water treatment plant was measured and improved. Control of leakages was performed. Alternative scenarios to improve energy efficiency, through the improvement of the existing pumps operation, the replacement of pumps with energy efficient ones and the improvement of the system's configuration were investigated. The integration of a PV system was assessed to provide electricity during peaks. The level of required investment and payback period were estimated.

INNOVATIVE APPROACH ASPECT

The technical study uses actual data to investigate representative and replicable cases on an old water system, taking into account the most recent tools and technologies. The active participation of local stakeholders (municipality, local engineers and the municipal enterprise of water) assisted in the definition of the proper typologies of the main pumping systems. Results of the study are going to be exploited in order to reach funding for the system's energy performance improvement.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Study on current operating cost, technical characteristics and technical limitations.
2. Identification of proper interventions and technologies to improve energy efficiency.
3. Assessment of alternative scenarios in terms of feasibility, energy savings, initial investment and ROI.
4. Consultation with local water company and municipal decision makers.
5. Development of a technical annex incl. technical specifications of proposed technologies.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- Improvement of the energy efficiency of the pumping and water treatment plant; energy savings 15-20%.
- Decrease of operational costs ~20%.
- Reduction of Greenhouse Gas Emissions ~20%.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Support the water utility staff to design more efficient operation of the city's pumping stations.
- Potential replicability of the methodology to the whole pumping and water treatment system.
- Support the Municipality to reach SEAP's targets.

FUTURE STEPS

Plan to finance the project implementation through national funds, loan and municipal resources; Support the municipality through the tendering and commissioning process.

MOST IMPORTANT LESSON LEARNED

The integration of RES (PV) in the water pumping system can assist to reduce energy costs, covering peak demands more efficiently.
New telemetry equipment and optimization practices are necessary to maximize the benefits when studying the appropriate energy intervention for the water treatment networks.

Figure 1: Examples of good practices in sewage systems

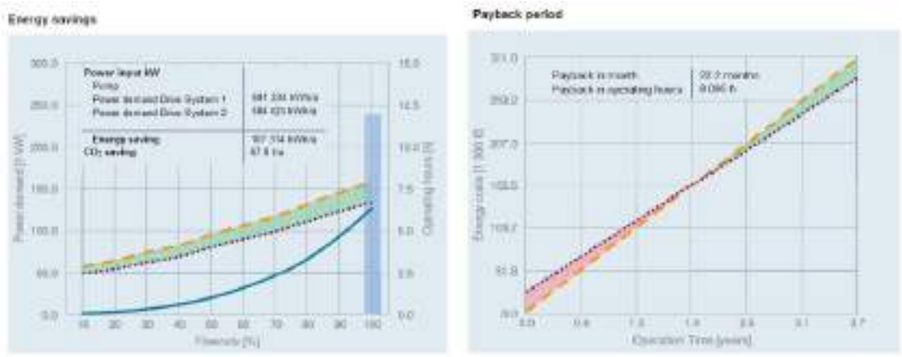


Figure 2: Potential energy savings and payback period of the propose intervention

ITALY

Building financial capability for energy efficiency and renewable energy sources

CHALLENGES AND OPPORTUNITIES

The main challenge faced in order to support energy efficiency and renewable energy sources initiatives is the access to funding. Crucial elements for successful access to funding include: information and knowledge about existing opportunities, learning from best practises implemented in similar areas, creativity towards win-win solutions involving as many local stakeholders as possible, enhancing co-operation among the first (private), second (public) and third (social economy) sectors to unfold investments for the common good.

The pilot action has been developed in co-operation with the Province of La Spezia, in the north-western Liguria region, through its Covenant of Mayors Office, a Covenant Support Structure. All 32 municipalities which make-up the La Spezia Province, for a total 2014 population of 222,377 inhabitants, have approved own Sustainable Energy Action Plans (SEAPs). Their target is, through the increase of energy efficiency and energy production through renewable energy sources, to go beyond the 20% cut of their CO2-equivalent emissions.

Based on the Green Partnerships approach a project application has been finalized for the Horizon 2020 Energy Efficiency – Market Uptake Project Development Assistance, one of the follow-up funding instruments of the Intelligent Energy Europe ELENA, European Local ENergy Assistance and of the European Energy Efficiency Fund.

STATE OF THE ART AND PROPOSED SOLUTION

EXISTING SITUATION AND PROPOSED INTERVENTION

The pilot action has served the purpose of:

1. Providing information and tools on existing national and EU funding opportunities for the SEAPs implementation; share best practises of already implemented local public-private partnerships in Turin and Padua; support local public-private partnerships to promote energy efficiency and renewable energy sources investments through EU support.
2. Creating the conditions for the submission of the Horizon 2020 application, with the energy efficiency upgrade of public lighting and of over 123 public buildings.
3. Raising awareness on local sustainable energy policies, the Covenant of Mayors and energy efficiency potentials in school buildings in eight La Spezia high schools.
4. Training La Spezia local authorities staff and civil society organisations on energy certification methodologies, policies and funding.

INNOVATIVE APPROACH ASPECT

The bottom-up leverage role with local authorities and stakeholders allowed by a MED Programme partnership to support energy efficiency and renewable energy sources developments at the local level.

IMPORTANT STEPS – IMPLEMENTATION STEPS

The pilot action has been implemented through four measures:

1. Strengthening local public-private partnerships in supporting energy efficiency and renewable energy sources
   - Updates on national and EU policy developments and funding opportunities for energy efficiency and renewable energy sources investments.
   - Mapping local public-private partnership potentials, capitalising on the INTERREG PAST, PAtto dei Sindaci Transfrontaliero (Cross-border Covenant of Mayors) project, of which the La Spezia Province is partner.
   - Identification of local investment priorities.
2. Mobilising funds for investments in sustainable energy at local level
   - Joint learning on the new Horizon 2020 programme and the Project Development Assistance scheme.
   - Support to the La Spezia Province Covenant of Mayors Office ECOGIS database with the energy analysis review of 123 public buildings, including school ones to be part of the Horizon 2020 application.
   - Identification of the investments to be activated and of the technical solutions to be proposed including those for public lighting upgrading.
3. Raising awareness and implement energy efficiency upgrading in schools
   - Sharing of information on climate changes and what anyone of us can do to cope with them and on the Covenant of Mayors as EU climate change-related best practise.
   - Energy efficiency at school to improve everybody's living conditions and local sustainable energy policies.
   - Identification of the upgrading priorities in the La Spezia high schools buildings.
4. Training civil society organisations in energy certification.
   - Identification of the training needs for the implementation of the La Spezia Province SEAPs: they have included the funding aspects and policy development.
   - Obstacles to be addressed and available solutions.
   - Implementation of the training sessions, with the participation of all local stakeholders.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- Four local partnerships established on the four pilot action measures.
- Two capacity-building workshops five local action groups meetings.
- 22% cut, by 2020, in the La Spezia Province CO2-equivalent emissions.
- Energy analysis review of 123 public buildings.
- One Horizon 2020 Energy Efficiency – Market Uptake Project Development Assistance application with estimated public-private partnership investment of over 6 million euro; 300 new energy efficiency-related jobs created by 2020; upgrading in 123 public buildings with an average +25% energy efficiency in the targeted buildings.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Increased awareness on available funding opportunities to support, in the SEAPs implementation, new local energy efficiency and renewable energy sources initiatives.
- Improved knowledge of new national and EU energy policies and legislation.
- Activation of local public-private partnerships and know-how.
- Awareness-raising in La Spezia high schools and energy efficiency upgrading plans in their school buildings.
- Involvement of civil society organisations, together with the other local stakeholders in improved energy efficiency efforts.
- Insights on the impact of the institutional changes, which have drastically reformed Provinces in Italy.

FUTURE STEPS

1. Strengthening local public-private partnerships in supporting energy efficiency and renewable energy sources.
2. Mobilising funds for investments in sustainable energy at local level.
3. Raising awareness and implement energy efficiency upgrading in schools.
4. Training civil society organisations in energy certification.

MOST IMPORTANT LESSON LEARNED

The non-profit sector may act as link between the private and public ones and foster new local energy efficiency and renewable energy sources awareness-raising and funding initiatives, supporting SEAPs implementation and EU energy and climate policies.

MONTENEGRO
Jezerstica

CHALLENGES AND OPPORTUNITIES

The main challenge was how to connect the mini hydro power plant Jezerstica to the energy network and make it fully operational. This was the first mini hydro power plant built in Montenegro and its putting into operation has been prolonged due to legal and administrative issues. The idea was to propose a solution for overcoming these issues.
Montenegro is strategically oriented towards promoting clean technologies and renewable energy. Eventhough, it has great potential for (renewable) energy production, especially in hydropower, it imports
Around 50% of its electricity needs. Therefore, if the enabling of Jezerstica would be successful, it would set an example to other potential investors in this area.
Following the Green Partnerships approach investors of Jezerstica connected to local authorities, local SME's, government authorities and potential investors, to try and find the best technical and most acceptable cost/efficient solution for putting the mHPP into operation.

STATE OF THE ART AND PROPOSED SOLUTION
EXISTING SITUATION AND PROPOSED INTERVENTION

The installed capacity of SHPP Jezerstica on the river Lim, in the Berane municipality, is 1.0 megawatt (MW), while its average annual production is projected at 3.0 gigawatt-hours. Costliness of new transmission lines needed is 20 mil €.
Proposed solution:

1. The study of the connection and operation of distributed energy sources in the power system of Montenegro.
2. Develop local partnerships in order to combat administrative barriers and possibly provide more investment.

INNOVATIVE APPROACH ASPECT

Constitution of a local partnership: Investors, local authorities and others have made partnership and proposed new piece of legislation that would help further integration of Jezerstica into the energy system.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Improvement of the Sustainable Energy Action Plan.
   - Improvement of existing and defining new measures.
   - Defining of specific corrective and preventive measures for better implementation of the SEAP.

2. Making the study of the connection and operation of Jezerstica.
   - Meeting with LAG and government official in order to prepare the study.
   - Selection of appropriate technical solutions for connection.
   - Determining of necessary preconditions for putting Jezerstica its operation.

3. Implementation
   - Agreement with municipality.
   - Energy Agency of Montenegro permission.
   - Connection to the transmission network.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- New and improved Sustainable Energy Action Plan.
- Better communication with local authorities.
- Solution of Connection to the transmission network.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Local initiative established.
- Interest from other investors to learn from the example of Jezerstica.
- Local potential was engaged - opening new, green, working places.

FUTURE STEPS

1. Financing the investment (2015-2016).
   - Public Private Partnership (between investor and local/government authorities).
   - Attracting new investments application to relevant national and international calls.

2. Implementation (2016).
   - Investment proposal for new transmission lines = 50.000 €.
   - New transmission lines = 20.000.000 €.

MOST IMPORTANT LESSON LEARNED

The most important lesson was how significant is to engage local authorities and other stakeholders in resolving the issue of one of the most important energy-efficient projects in Montenegro. Since during the implementation of the project, the authorities in Berane (Municipality where Jezerstica is placed) have changed, this represented one of the biggest obstacles in implementing the project, but also taught us the importance of this partnership.

PORTUGAL
Installation of more efficient lighting systems in municipal buildings

CHALLENGES AND OPPORTUNITIES

In recent years, AREANATejo has been promoting several Energy audits in Municipal Buildings (City Halls, Libraries, Municipal Swimming Pools, Office Buildings...) on its intervention area. As main result, we can point out several energy efficiency improvement measures, which foster energy and environmental good practices and contribute to the reduction of energy consumption and subsequent associated reduction of CO2 emissions.

Taking into account the main goals of GREEN PARTNERSHIPS Project (namely the establishment of local partnerships), the implementation of energy efficiency improvement measures in municipal buildings constitutes an opportunity to promote these partnerships and, simultaneously, raise awareness among Municipalities, as local authorities, for the analysis of their ecological footprint.

The installation of more efficient lighting systems was implemented in the first quarter of 2015 in the following municipal buildings:
- Municipal Auditorium José Carlos Ary dos Santos (Avis);
- Municipal Swimming Pools' Complex of Castelo de Vide;
- Municipal Library of Castelo de Vide;
- Sá Nogueira Building (Crato);
- Municipal City Hall of Crato;
- Municipal City Hall of Elvas;
- Municipal City Hall of Marvão.

Securing stable energy supply for public buildings in remote or smaller population areas is a challenge due to general lack of energy supply mix available.

STATE OF THE ART AND PROPOSED SOLUTION
EXISTING SITUATION AND PROPOSED INTERVENTION

State of the art:

Based on the analysis of equipment and energy consumption of the a.m. municipal buildings, it was recommended (among others) the following short-term measure: replacement of existing lamps by more efficient ones, in order to reduce energy consumption and allow annual savings.

The proposed intervention in the 7 buildings was the installation of efficient lighting technologies (LED), based on 3 innovative characteristics: low consumption, higher duration and reduction of CO2 emissions:

- Municipal Auditorium José Carlos Ary dos Santos (Avis)
  a) Replacement of TFL8 of 18 W and 36 W
  b) Replacement of incandescent light bulbs of 60W
  c) Replacement of 500 W and 1000 W projectors
  d) Replacement of CFL of 13W

- Sports Complex of Castelo de Vide
  a) Replacement of metal halide lamp of 150 W
  b) Replacement of TFL8 lamps of 36 W and 58 W
  c) Replacement of CFL of 18 W

- Municipal Library of Castelo de Vide
  a) Replacement of TFL8 of 18 W and 36 W
  b) Replacement of CFL of 13 W

- Sá Nogueira Building (Crato)
  a) Replacement of TFL8 of 18 W, 36 W and 58 W
  b) Replacement of CFL of 13 W

- Municipal City Hall of Crato
  a) Replacement of TFL8 of 18 W, 36 W and 58 W

- Municipal City Hall of Elvas
  a) Electronic ballasts for TFL8
  b) Control devices and lighting regulation

- Municipal City Hall of Marvão
  a) Replacement of FTL8 lamps of 36 W and 58 W
  b) Replacement of incandescent lamps of 40 W and 60 W
  c) Replacement of FCL of 11 W and 18 W

INNOVATIVE APPROACH ASPECT

In the past years, AREANATejo stablished a several partnerships with the municipalities of our acting region. This partnerships allowed to implement several measures in order to improve energy efficiency of municipal buildings. The development of energy audits was the first step.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Analysis of the improvement measures proposed in previous energy audits' reports.
- Meetings with the main stakeholders involved.
- Discussion of energy efficiency measures.

2. Development of the technical solution.
- Setting up of a Public Tender for equipments' acquisition.
- Selection of appropriate technical solutions.
- Award of the most economical offer.

3. Implementation
- Contract signature.
- Contacts with the Municipalities responsible for the facilities.
- Installation and implementation.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

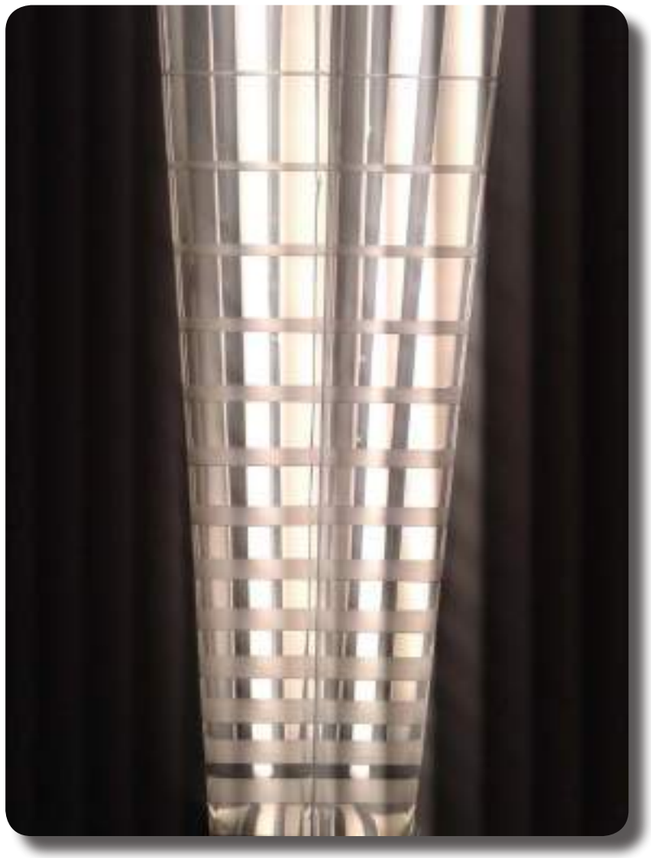
Municipality	Investment	Reductions		
		kWh	€	Payback
Avis	11 500,00 €	9 933	1 289,00 €	2,2
Crato	3 000,00 €	2 540	401,00 €	1,9
Castelo de Vide	7 500,00 €	6 285	837,00 €	2,2
Elvas	4 000,00 €	4 570	665,00 €	1,5
Marvão	3 000,00 €	4 879	746,00 €	1,0

FUTURE STEPS

With the implementation of this measure, AREANATejo can prepare the replication to other municipal buildings, taking into account that the main results can easily disseminated.

MOST IMPORTANT LESSON LEARNED

The identification of all lighting systems (type and lamp power) was the main difficulty in this measure. With these data it was possible to prepare the final survey in order to choose the most appropriate LED equipment for each installation.



SLOVENIA
Wooden biomass heating for public buildings

CHALLENGES AND OPPORTUNITIES

Securing stable energy supply for public buildings in remote or smaller population areas is a challenge due to general lack of energy supply mix available. Apart from that, there is also a question of cost efficiency of selected energy sources and financing potential of smaller municipalities to finance necessary infrastructure, the issue of the use of public buildings and their energy regimes, coping with specific climate situations and specific micro location of the municipality in question.

The pilot municipality selected has been the municipality of Lovrenc na Pohorju. It's about 90% covered by the forests, with a population of about 3,000 inhabitants, a few small companies registered and responsible for several public objects to maintain. Lowering the cost of energy in those buildings, including local know-how and potential in developing a local added-value chain in energy production was the goal that the municipality set itself.

Following the Green Partnerships approach the Lovrenc na Pohorju municipality has connected local SMEs, local forest management and potential investors, to try and find the best technical and also locally acceptable cost/efficient solutions for provision of energy for the public school and kindergarten.

STATE OF THE ART AND PROPOSED SOLUTION
EXISTING SITUATION AND PROPOSED INTERVENTION

State of the art: 2 oil boilers: 500 kW and 290 kW; year of installation: 1973 and 1980; energy renewed public school, new kindergarten.
Proposed solution:

1. Installation of central biomass heating system operated by local SME.
2. Develop a local supply chain for biomass.

INNOVATIVE APPROACH - ASPECT

Constitution of a local partnership: Biomass contracting between municipality, local suppliers and investors in form of public- private partnership. The aim of the partnership is to strengthen the position of local suppliers, who could be investors to the local micro- biomass systems. The local economy will be improved through the use of local energy sources, providing of working places and reduction of greenhouse gas emissions.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Recognising the potential in the area.
   - Moderated meetings and workshops with stakeholders; mayors, municipality board, engineers.
   - Assessing natural and know-how potential in the area.
2. Development of the technical solution and business approach.
   - Preparation of the business plan for investment.
   - Setting up of Public Private Partnership model.
   - Selection of appropriate technical solutions.
   - Preparation of selection procedures for concessionaire for supply of heat, private partner for investment in biomass heating system.
   - Tender for heating concession.
   - Building permissions.
3. Implementation
   - Contract signature.
   - Building permissions.
   - Installation and implementation.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- Single heating system for multiple users (Wood chips boiler, 90- 95% efficiency rate, automatic supply).
- Price of distributed heat: 50 EUR /MWh.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- Reduction in CO2 emissions for 57% (savings of 30.000l oil/per year = 81 t of CO2, source: SEAP).
- Local initiative established.
- Interest from other municipality to learn about the process implemented in Municipality of Lovrenc na Pohorju.
- Local potential (know-how and investment) was engaged opening new, green, working places.
- Local supply chain was also established providing for cost-efficient supply of biomass material.

FUTURE STEPS

1. Financing the investment (2015-2016)
   - Public Private Partnership & (public financing via Slovene Rural Development Fund 40-60%, remaining is co- financed by private company, association of forest owners has got a priority).
   - application to relevant national calls.
2. Implementation (2016)
   - 2 heating boilers (wood chips with automatic supply) = 60.000 €.
   - Installation (pumps, heating sub- stations, heating lines)= 30.000 €.
   - Building construction (storage, surroundings) = 20.000 €.

MOST IMPORTANT LESSON LEARNED

Concerning the use of energy, municipalities stay under the pressure to save costs for public expenses. Implementation of the project has shown many obstacles, of which many of them could be solved by conversations between interested participants. The final solution is a win- win situation between different actors, where social, economic and ecological indicators are optimized.

SLOVENIA

Introduction of energy management in old cultural heritage building

CHALLENGES AND OPPORTUNITIES

Buildings and their users are responsible for almost 40% of the energy use and CO2 emissions produced in the world. Therefore, energy management and efficient energy use in buildings are very important, especially in public buildings. Buildings presenting a cultural heritage are even more complicated to implement energy efficiency measures. Therefore, it is very important to prepare energy efficiency good action plan including investment and noninvestment measures to be implement in right order.

To present the introduction of energy management issues in public building protected as the cultural heritage - Institute of Agriculture and Forestry Maribor has been selected. Within the energy management tools remote energy monitoring system was introduced and energy certificate prepared. On the basis of real data, expert's knowledge and user's experiences action plan for energy efficient measures was developed.

Following the Green Partnerships approach energy management system and energy certificate were introduced and prepared by energy experts. The energy efficient measurements were listed in cooperation with the building owner and users and other experts in the field of building renovation.

STATE OF THE ART AND PROPOSED SOLUTION

EXISTING SITUATION AND PROPOSED INTERVENTION

1. Among the first activities concerning the reduction of energy consumption, the Energap started with systematic collection and analysis of the data (consumption of heat, electricity and water for the past three years) and establishment of the energy management system including energy accounting and bookkeeping.
2. Preparation a detailed energy audit of the building with energy efficiency measurements identification.
3. The Energy Performance Certificate was issued.
4. The Energy efficiency action plan was discussed with the building owner and users.

INNOVATIVE APPROACH ASPECT

Constitution of a local action group and local partnership to prepare and implement energy efficiency action plan for buildings that are protected by cultural heritage law. At the same time energy management system was installed to monitor the future energy savings and consequences of energy saving measurement.

IMPORTANT STEPS – IMPLEMENTATION STEPS

1. Presentation of the energy efficiency in building problems and solutions to the building management.
2. Preparing and collecting all energy related data (heat, electricity, cold and hot water), analysis of energy parameters and setting real time energy indicators.
3. Prepare energy audit of the building. Energy efficient measurements have to be discussed with owner, users and experts. Short and long term aims should be set in measurable units (in kWh, kg, ..).
4. Implement activities from the action plan and monitor the results achieved. If needed corrective measures should apply and then monitor again. Results should be presented to the owner, management board and users of the building.
5. After 5 years or earlier action plan should be revised.

ACHIEVEMENTS

TECHNICAL – ENERGY EFFICIENCY

- The energy management system with constant energy monitoring was introduced.
- The energy audits were done and energy certificate issued.
- The energy efficiency action plan was prepared.

DEVELOPMENT, CAPACITY-BUILDING AND AWARENESS-RAISING

- The building users and their management team were involved.
- The action plan was developed in cooperation with the users, energy and building experts to achieve maximum energy efficiency including cultural heritage aspect.

FUTURE STEPS

1. Energy management and monitoring system will work continuously. Implementation of the energy efficiency action plan will be monitored.
2. Possible financial sources to implement investment measures will be identified.
3. Investments in energy efficiency will be executed.
4. All measurement will be monitored according to planed and achieved savings in energy, CO2 emissions and money.
5. All cultural heritage aspects and guidelines will be used.

MOST IMPORTANT LESSON LEARNED

Energy management system is a very important tool for achieving energy and cost savings. It is very important to have real energy data collected and analysed and energy indicator prepared. In addition, constant monitoring of energy use should be in place. All proposed energy efficient measurement has to be presented to and discussed with the users and their management board because they are very important stakeholders to implement them. Energy and building experts should be involved to achieve maximum energy efficiency of the building and at the same time incorporate cultural heritage aspects.

CONCLUSIONS

The common approach is shown in results achieved through the Green Partnerships 24 pilot cases. The starting point was one with no, or lacking implementation of local energy strategies or Sustainable Energy Action Plans (SEAPs). Improvements and the overcoming of obstacles faced have been dealt with in 8 expert working groups, constituted among the 11 participating MED regions.
Existing communication practices, based on specific local or regional circumstances have been combined with know-how exchanges and bottom-up participatory approaches, which have resulted in new investment proposals and new practices strengthening local economies. The most common obstacles, identified in MED regions have been:

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

The analysis of the barriers has shown that many SEAPs and local energy strategies have been drafted as an obligation for the fulfillment of mandatory regulations or directives. The consequence is the lack of cooperation among different stakeholders and many administrative barriers which mostly concern misunderstandings or non-flexibility by administrations. Regions and local communities also don't have sufficient technical staff or experts at their disposal and this directly impacts on efficient implementation of strategies, mostly with wrong decisions.
The Green Partnerships teams found solutions to remove or at least reduce the impact of obstacles for better implementation of local/ regional energy strategies.

Obligatory steps, to improve implementation processes, should include:

1. Better communication between stakeholders and their involvement.
Crucial components for successful implementation of any process are communication technologies and their involvement to the practice. This step is the most important in the first phases of development of mid or long- term policy documents, e.g. SEAPs or local energy strategies. Green Partnerships could not structurally change existing process patterns, but it did result in specific improvements and in suggestions and proposals on how the processes may further improve in the future.

»Tell me and I'll forget. Show me and I might remember. Involve me and I will understand. « Benjamin Franklin

2. Capacity-building and awareness-raising for better energy efficiency and renewable energy sources use.
Education and awareness-raising for citizens and public employees play a key role in understanding why it is necessary to act locally and what can be done by individuals in their homes. Municipalities or regional authorities can take a leading role here. With a municipal communication strategy on sustainable energy use, local actions may be encouraged. The tools of the public awareness-raising strategy and efficient communication can provide, together with practical advice, information for individual citizens and households that explain how such savings can be realised. The awareness campaigns and capacity-building, implemented by Green Partnerships have resulted in a wide range of measures and actions, which will improve the effectiveness of local energy policies.

»If you talk to a man in a language he understands, that goes to his head. If you talk to him in his language, that goes to his heart.« Nelson Mandela

3. Setting the partnership.
The partnership between investors, authority, consumers and suppliers should be built on strong fundamentals, playing with open cards and with the long-term efficiency for all involved parties. Strong partnership is equal, non-discriminatory and equivalently involves social, ecological and economic effects. Implementation of EE and RES measures is still expensive. Partnership relieves financial obligations and shares benefits. A green partnership sets standards for efficient, long-term partnerships.

»Partnership by definition, serves both partners, without domination or unfair advantage. Together we have been partners in adversity- let us also be partners in prosperity« John F. Kennedy

4. Expert working groups.

Expert working groups, at the local or regional level, play an essential role by balancing effects supporting sustainable decision-making processes. The key experts are often narrow in their thinking, so the consortium of different experts should find solutions and approaches which meet modern standards and technological solutions. The coordinator of the expert working group should always compromise the issues and choose criteria for their selection. Green Partnerships pilot cases show different technical solutions, arising in long-term decision-making processes.

»There are as many opinions as there are experts. « Franklin Roosevelt

5. Acceptability in local/ regional environments.

Because of different administrative, natural or other kinds of barriers, found solutions are often not accepted. Involvement of local/ regional environments in the decision-making process, as well as prompt information, media communication, know-how exchanges and sharing of best practice cases stimulate the accessibility of new projects and solutions. Green Partnerships shows you 24 best practices how to improve your approach by implementing your strategy!

»The biggest problem is not to let people accept new ideas, but to let them forget the old ones.« John Maynard Keynes

Picture: Implementation of local/ regional strategies

CONCLUSIONS

FUTURE CHALLENGES

Cooperation between stakeholders on different levels and the experimental implementation of 24 pilot cases in the MED region 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.
- **Help yourself with the Green Partnerships Step by Step Guide and improve energy strategies !**

Veronika Valentar
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