

EIE/05/103/SI.42001805**Deliverable 4.8****Abstract version of Master Plan**

for innovative energy structures in Locride Region in Italy, which could be feasible for funding in the Structural Funds Programmes in the period 2007- 2013.

Elaborated by ETA – Renewable Energies, November 2007

1. Background**Objectives**

Master Plan of Locride Region - the Italian target region of Energy 4 Cohesion (E4C) project - is a strategy document giving a basic picture about the energy sector of target region, summarising the possibilities of higher RES utilisation as well as potentials for EE measures implementation.

Targeted towards Structural Fund Support

The cornerstone of the E4C – strategy is to support the implementation of energy pilot actions in the selected region feasible for public financial support, with main focus on **European Structural and Cohesion Funds (SF and CF)** during the funding period from 2007-2013. E4C strives to overcome the various constraints which currently hinder the broader use of Structural Funds for innovative energy actions in less developed and rural regions of Europe.

Cooperative Approach

In the region all main stakeholders were brought together for a successful and efficient definition of innovative energy actions in the respective region. The E4C actor cycle includes municipalities, households, media, capital provider and financial experts. Within this actor cycle Italian project partner ETA was responsible for the coordination of the different actors,

and the preparation of the regional Master Plan. Main focus was put to integrate suggestions and ideas existing in the region rather than exposing priorities from outside.

2. Master Plan Structure

Comprehensive investigations were undertaken, starting from an abstract and general view on the regions, leading to concrete innovative energy set-ups, consisting of a range of RE and EE projects. A comprehensive and detailed methodology was used. It includes 3 main elements:

- 1. Target region portrait** – The target region portrait presents a first overview of the region for what concerns the actual energy situation (production and utilisation). Collected data are the base for the beginning of the development of the energy planning.
- 2. Energy Vision of Locride Region** - The Energy Vision chapters started from two main goals. The first one was to understand real needs of the target region, and based on this, understanding the possible potential of RE sources in the area. The second one, to create sustainable, diffuse and decentralised RE actions between the Locride area for implementation of clean energy production and for a rational use of territory. The possibility to developed the RE actions through structural funds is a necessary condition in this present Energy Vision, so the availability of the funds will be defined and monitored regularly. Energy Vision considers several adapted initiatives; only the most interesting and feasible by structural funds will be highlighted. An ulterior economical and financial analysis will be made in order to show the projects that can be easily replicated on the territory. Several economic indexes will be used to threat this argument.
- 3. Identification of concrete actions or action bundles** – containing and analysing concrete projects eligible for funding from EU funds in the period 2007 – 2013 that would contribute to fulfilment of objectives and goals of the Energy Vision

In this way it is ensured that concrete action potential is highlighted which is imbedded in an overall RE promotion concept for the region.

3. Identified Project Proposals for Locride Region

Project Proposal 1 – PV Plants
The total PV installation of 130 kW is foreseen in at least 7 Municipalities
Current state
The PV installation in the area is very limited, but very promising. Moreover the adhesion of these PV plants to “Conto Energia” will have a positive effect on bordered municipalities.
Technological solution
Installed capacity: 130 kW; Annual electricity production: 193 MWh
Investors
Several Municipalities will cover the role of Investors in this project. Private citizens are able to adhere to the Programme.
Benefiting groups
Municipality – will be the main investors of the plants; Other investors – private citizens who will decide to adhere to Programme; Agricultural company – ensuring market for technical crops planting, incomes from electricity sales, higher economic yield from the land; Banks – if will use the grants to finance the installation.
Logistics
Installation will be mainly based on the roof of several municipal, public, private buildings.
Financing
Banks: programme Conto Energia is so profitable that banks decided to support with grants the PV which adhere to this programme (even for a 100% of investments cost). Other investors: Many National/ International companies of investors are interested in this programme and in this type of investment.

Expected investment costs
PV systems: 903.000 Euro
Expected implementation time
Year 2008

Project Proposal 2 – Biogas CHP Plant
Biogas plant for the sale of electricity produced by the plant.
Current state
A biogas plant is still missing in this area. It will help Municipalities to take care of Municipal Solid Waste (MSW) because the management of waste is a concrete problem for the local authorities.
Technological solution
The biogas plant is associated to a cogenerator for the production of electricity. The technology is provided by Biotech, considering a BTA technology
<i>Technical parameters cogenerator</i>
Installed capacity: 1800 kW
Annual hours per year: 8000
Annual power production: 14.400 MWh
Investors
Municipalities: Municipalities with problem about management of the Municipal Solid Wastes;
Private: Private companies which take care of Municipal Solid Wastes.
Benefiting groups
Municipality – efficient collection and utilisation of residues and MSW ;
Resident people – higher employment;
Agricultural company – ensuring market for technical crops planting, incomes from electricity sales, higher economic yield from the land;

Logistics
Most of input raw material will come directly from the border municipalities; the missing material will be given by agricultural workers (residues from plantations)
Financing
<p>Banks – financial grants are available .</p> <p>Financial Institution – energy sector is a promising business in Italy due to the very high cost of energy supply.</p> <p>Municipalities – the municipalities that will provide the input material will participate to financing the project.</p>
Expected investment costs
Biogas station + cogenerator system: 15.000.000 Euro
Expected implementation time
Year 2009/10

Project Proposal 3 – Bio- heating Plants for Distric Heating
District heating system construction for heat supply of public buildings, households and private sector.
Current state
These initiatives are destined to territories where is still missing any natural gas connection. The only alternatives to diesel for heating, is biomass.
Technological solution
DH system construction in the village including at least 150 m of heat pipelines
Technical parameters of the boiler room:
Number of boilers: 10
Installed capacity: 3.200 kWt
Annual heat production: 4.480 MWh
Fuel consumption: 1.340 t of wooden chips

Investors
<p>Municipalities - the interested Municipalities will have a role of Investors in the Project</p> <p>Private citizens – final users will also be investors</p>
Benefiting groups
<p>Municipality – reduced costs on heating;</p> <p>Residents – reduced costs on heating, higher employment</p> <p>Forestry workers – the wood chips to fuel the boilers will be provided by local forestry workers, higher economic yield from the land;</p>
Logistics
Wooden chips will be supplied from local forestry workers.
Financing
<p>Municipality – the interested Municipalities will be financing a part of the Project;</p> <p>Energy Saving Company (Esco) – this kind of companies are not existing yet on the area of Locride but it could be an interesting business for them.</p>
Expected investment costs
DH system (boiler rooms + heat pipelines): 1.875.000 Euro
Expected implementation time
Year 2009

4. Conclusion and Outlook

The finalisation of the Master Plan is the most important phase of the Energy 4 Cohesion Project. The selection of the energy actions presented in this studio was made by a detailed analysis and investigation between Majors of Municipalities of Locride and main stakeholders of the area. These collected impressions and data were compared with the existing Energetic Plan of Reggio Calabria, in order to include in our analysis all the main actions and initiatives considered necessary by the Administrative Province of Reggio Calabria.

This Master Plan is formed by three different Energy Actions. Two of them are formed by decentralised RE initiatives on the territory (PV installations; Bioheating plants), while the other is a single RE initiative (Biogas plant). After that the single data of each Energy Action were presented, here below are listed the gathered data sorted out from the Master Plan:

- **Total Investment cost:** 17.778.000 €
- **Total Structural Funds:** 5.618.100 €
- **Total Installed power:** 2.440 kW
- **Marginal cost per each installed kW:** 3.6145 €/kW
- **Total annual electricity production:** 14.593 MWh_{el}
- **Total Annual heating production:** 12.208 MWh_{th}
- **Number of job foreseen:** around 50 people
- **Total amount of avoided CO₂:** around 4.450 ton

The above gathered data are the primary positive effects produced by the Master Plan. Other secondary benefits are related to these actions. The main ones are listed here below:

- **Environmental benefits:** the development of wooden chips supply chain related to bioheating plants project is one of the most important effects on the territory. Locride area is a mountainous/hilly area and the forestry work sector, even if already existing, can be developed much more. The possibility to create richness and the new synergy between agricultural/forestry workers and power plant owners can be considered a very positive and useful initiative for the Locride area.

- **Advertisement of the territory:** Locride area find in tourism sector one of its main attraction. The presence of clean and sustainable power plants for energy production can represent a very good “label” for this territory. Sustainable tourism is increasing a lot during last years and also this area could have positive effects due to RE installations.
- **Increase the energetic culture of population:** the supply of energy is an important problem that has to be evaluated. To create a deeper environmental conscience is an important aspect to be developed. The installation of PV plants related to” Conto Energia” Programme can have positive effects on the acknowledgment and diffusion of a sustainable conscience.

After the analysis conducted it is possible to summarise the data collected in Locride. This territory has an high potential for what concerns primary energy utilisation and production of energy through RE plants. The limited number of economical initiatives doesn't help local entrepreneurs to take initiatives in the energy sector.

Now in Italy, since the 1st of July 2007, an important event related to energy market happened. The supply of the electricity market becomes free for all kind of electricity producers. This phenomenon was already existing since 1999, but the development of the market permits now to create specific “green contracts” for users (following the example of Germany) that guarantee a supply of energy by RE sources. The cost per kWh consumed will be higher that normal for final users, but the supply of electricity will comes only from clean sources of energy.

This fact will give a strong input to energetic market and it is possible that new interest will focus on this matter.

The finalisation of the Master Plan is formed by the economical calculation for the investments. The data considered and evaluated for each project, are:

- equity share;
- structural fund amounts;
- grants by banks.

Main economic indexes were analysed, highlighting the most profitable projects.

The lack of a definitive Operative Regional Programme didn't help the development of the economical analysis. Anyway, the experiences and data collected gave a clear idea of how structural funds will be used and in which percentage on the total cost of investment will be given.

Latest news showed that the Operative Regional Programme ESF (POR) has already available on the webpage of Calabria Region, at the following Internet site:

www.regione.calabria.it .Unfortunately the Operative Regional Programme RSFD is still not available and most of the energetic matters will be treated in this document. The utilisation of remaining funds from FP6 is still allowed. Postponement of the tender's deadline was foreseen for this first months of the year. Here below there are listed some information extracted from POR ESF.

Latest Information	
Biomass	3.500.000
Max installed power	1MW
% on total investment value	40%

To calculate the eligible fund, following data will be considered (in the max % of):

Types of foreseen costs	% on total investment value
Design of the plant	5% of investment
Civil works	10% of investment
Soil	5% of investment
Machineries	80% of investment
TOTAL	100%

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