

## RES-e Regions: WP 4: Specific technology promotion

### Technology selection for ARE Liguria, Italy – Small scale Hydro-power and forest biomass CHP

#### **Background**

**Mini-Hydro** – The Liguria Region, even with its peculiar geo-morphological features, has a high hydro-electrical potential that allowed the development of many plants generally used as compensation reservoirs in order to be able to deal with periods of shortage. Such potential has been the object of numerous studies over the last years, which contributed to locating different basins distributed to a great extent over the Tyrrhenian side of the region.

**Biomassa CHP** – given the large supply available of woodland biomass and the lack of a forestry protection policy, the energy use of the wood could be placed under the responsibility of territorial management and maintenance. The recently approved Environmental Energy Plan, moves in this direction, and actually proposes plant solutions based on the use of woodland biomass cogeneration.

#### **Current situation**

**Mini-Hydro** – In Italy hydroelectric plant are those supplied by renewable sources with a capacity of less than 3 MW, according to the classification of the Italian Authority for Electric Energy and Gas. Presently in Liguria the active power plants reach a total production of about 20MW, with average single plant production of about 400 kW.

**Biomass CHP** – presently there are no power plants for the production of electric energy from woodland biomass, but the start up of PEAR (2002-2005) foresees the realisation of pilot schemes in selected areas of Liguria, and to be repeated on the whole region by 2010.

#### **Barriers**

**Mini-Hydro** – the mainly torrential aspect of watercourses and there limited length represents one of the major obstacles to the spread and use of this potential power. The existence of territorial and legislative restrictions has been a second obstacle to the development of hydroelectric resources; therefore it would appear necessary to point toward projects containing likelier levels of feasibility and construction. The last obstacle in the realisation of power plant is the greater investment cost compared to low productivity (output) in terms of kWh/p.a.

**Biomass CHP** – the main hurdle to the spread of small biomass cogeneration plant ; the initially high investment costs for their realisation, notwithstanding green certification for a limited period of 8 years from the activation of the plant, and so they are not economically appealing.

A further barrier to biomass cogeneration development is the lack of knowledge concerning the technical characteristics of the plant and the possible applications are interesting simply in the case of electric energy production which is self-consumed or released to the grid, and possible to use without dissipating a part of the heat produced.

## ***Opportunities***

***Mini-hydro*** – today the main hydroelectric opportunities lie with the disused or inactive power plants located around Liguria and by the chance to make use of the geodetic springs through aqueduct conduits. A regional call for tenders, for the realisation of mini-hydro power plants which are technically and structurally feasible, was recently approved. The production of hydroelectric energy with a capacity below 3 MW is evaluated and recognised by Green Certification.

***Biomass CHP*** – the main occasion for developing woodland biomass cogeneration plant is supplied by the massive local resources in Liguria. By using biomass obtained from the clean-up and maintenance of the woodlands would permit on the one hand, the upkeep of the woodlands helping in the prevention of hydro-geological disruption or fires, and on the other hand the use of low value wood or residue for the production of energy. Even biomass production of electricity is recognised and evaluated by Green Certification.

## ***Target Groups***

The groups to be involved in the promotion of both Mini-Hydro and CHP are:

- Public Administrations and EE LL
- Field experts
- Local woodland associations
- Private companies
- Trade associations
- Service companies (heat management, etc)
- Technology suppliers

## ***Actions needed***

The required measures for the diffusion of Mini Hydro and CHP plants are the following:

- Promotion of adequate training and information campaigns
- Increased involvement of EELL and field experts
- Rationalisation and implementation of measures for economic and fiscal incentive
- Simplification of authorisation procedures for the creation of plants