ENERGY SUSTAINABLE ISLAND
FOR REAL LIFE COMMUNITY

Objectives
An integrated renewable energy network shall be built on Ikaria Island (Greece), allowing renewables to become the backbone of public power supplies. The benefiting island community totals in winter 7,500 inhabitants growing to 20,000 in summer. Power supplies are presently covered 94% by diesel (6,005 kW installed capacity) and 6% from wind (355 kW). The project represents the 1st phase of a programme aiming to turn this ratio in future to the opposite, namely 90% from renewables and only 10% from diesel. But already the present project (11 MWp) is expected to cover nearly 50% of electricity demand from renewables.

Mid Term Results
This general guidelines will be addressed by the following concrete results:

Connect the basic infrastructures for future solar and windpower expansions allowing to reach the cost-effective energymix: totalled approximately 6 MW of windpower allowing to cover 90% of the islands electricity demand from renewables.

Creation of an integrated hybrid (renewables + diesel) public power supply network on an island allowing for compensation between seasonally counter-phased renewables (solar and wind-power in summer)

High penetration rates in a power grid of stochasticely behaving, i.e. non-dispatchable(*) renewable energy (wind and solar power) by exploiting the energy storage capacity of the system

Development and divulgation of reference standards, best practices and modularity requirements favouring the replicability of the projects for several Municipalities, specially in the Island.

In addition the project will result also in quiet nights for the islanders (and for tourists), since generally it will become possible to stop all diesel and the related social generating during most nights of the year, and to cover the night electricity demand only from renewables, namely hydropower and wind-power.

Outcomes and lessons learned shall focus on the management of the local industries / enterprises will benefit from the employment, technical and economic viability.

Implementation of the project will lay the foundations for future expansions of the available renewable energy capacities, which in turn will generate further income, employment and economic development.

In addition the project is expected to generate a series of not-quantifiable socio-economic benefits such as:

- Ikaria will become an important candidate for “sustainable tourism” (labeled as “sustainable” or “renewable” island) will be used by local tourist operators. The newly developing “sustainable tourism” is willing to pay more for sustainability, and at the same time it is a minor impact (damage) to the ecosystems since culturally more prepared and aware of the problem of environment.
- The project will introduce modern uptodate technology on Ikaria Island (renewable power generation, power-electronics, inverters, turbines, automatic and remote controls etc.).
- Increased qualification level of local technicians, and improved working possibilities for islanders in sectors related to the project, and the local industries / enterprises will benefit from the availability of such know-how.
- The project will lay the foundations for future expansions of renewable energy capacities, which in turn will generate further income, employment and economic development.

Technical progress
Due to finalisation of the basic design, the ongoing project is now entering the detailed design phase. During the past phase, supplementary data has been collected and simulation tools have been improved. The results verify that it will be possible to save energy and capacities, resulting in a more efficient and more accurate dimensioning of the plant. Already the first step has shown that it is interesting to install a number of wind turbines higher than the one already proposed to the Community.

ENERINE Profile
ENERIN Consortium (Ansaldo Renewable Energy Consortium) has been established by Ansaldo Group to meet the challenges of the new energy sector.

Nowadays, ENERIN is owned by four Italian Groups specialising in the environmental protection and power production industries.

The major missions of the Consortium are:

- to promote the development of renewable energy sources;
- to optimise the integration of both commercial and technical solutions to the available know-how in the renewable energy sector;
- to increase, valorise and stabilise the local availability of power sources such as solar, wind, etc.
- to draw financial means to implement the project.

ENERIN has an extensive experience in the renewable energy industry, having studied and prepared feasibility studies and projects for several Municipalities, specially in the Island. To do that, it used its direct know-how, particularly referred to the better deployment of the different power sources.

Thanks to its capabilities and experience, in February 2000 ENERIN got the ISO 9002 (Company Quality System) and the ISO 14001 (Company Environmental Management System) certifications.

Beside the direct technologies owned by the Shareholders of the Consortium, ENERIN has strategic agreements for different technologies in the field, such as: geothermal, fuel cells, mini-hydro and bio-gas technology.

Table: Energy sustainable island for Real Life Community

<table>
<thead>
<tr>
<th>Benefits produced</th>
<th>3,000 1000 1000 1000 1000 1000 1000 1000 1000 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of power demand covered by renewables (using demand forecast for 2001)</td>
<td>14%</td>
</tr>
<tr>
<td>Total demand</td>
<td>2,100 MWhyr</td>
</tr>
<tr>
<td>Renewable energy contribution</td>
<td>600 MWhyr</td>
</tr>
<tr>
<td>Renewable energy production</td>
<td>30 MWhyr</td>
</tr>
<tr>
<td>Sustainability</td>
<td>100%</td>
</tr>
<tr>
<td>Renewable energy</td>
<td>30 MWhyr</td>
</tr>
<tr>
<td>Renewable energy production</td>
<td>100%</td>
</tr>
<tr>
<td>Capacity factor</td>
<td>100%</td>
</tr>
<tr>
<td>Availability of UPS (in case of power failure)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Partnership: A number of partners co-operate to develop the project, each one with its specific know-how and resources. The partners are: PPC (Public Power Corporation), ENERIN (Consorzio Regionale Energie Rinnovabili), OEN (Organizzazione Energetica Nazionale), ENERIN (Ansaldo Renewable Energy Consortium), SEN-EN, IS-Renewable Energies, etc.

References: NNES 530 1999

INFOGRAPHIC

Energy production from Renewable Energy 2002

Community Research

ENVIRONMENTAL COMMISSION

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