Energy Cooperatives

How can they be promoted in the Greek islands

Sifnos, 6 September 2014

Local energy planning for Sifnos
Where we stand? What are we aiming for?

Kostas Komninos, Energy expert
DAFNI – Network of Sustainable Aegean Islands
The DAFNI network

- Network of Sustainable Aegean Islands: Not for profit organization
- 33 island-members and 2 Regions
- Aim: To promote sustainable development to Aegean islands through integrated actions
- Covenant of Mayors supporter
  - 10 signatories
- Pact of Islands founding member
  - 16 signatories
- Sustainable Islands Network founding member
The Pact of Islands

- Initiative launched in 2011 under the ISLE-PACT project co-funded by DG-ENERGY
- Local sustainable energy planning focusing on the islands’ special characteristics
- Island Sustainable Energy Action Plans (ISEAPs) produced for the signatories
- Methodologies for planning and monitoring the ISEAPs provided to the signatories
- ISEAPs have to be monitored and updated at least every 2 years

64 signatories from:
- Cyprus
- Denmark
- Estonia
- Greece
- Italy
- Malta
- Spain
- Sweden
- Portugal
- United Kingdom
Island Sustainable Energy Action Plan

What is an ISEAP?
- The ISEAP is a useful tool for the local authority and the community to define their energy and environmental policy and demonstrate the way and the actions to accomplish their vision towards sustainability at local level.

Why to have an ISEAP?
- Because the local authority by developing a well defined sustainable energy strategy gains the knowledge and advantage to master its own energy development and resources and plan its own projects.

Also by participating to European initiatives like PoI and CoM the island:
- becomes a member of a family of regions that share similar visions and can exchange knowledge and experience
- gets access to financing mechanisms directed especially to authorities committed to sustainability with developed SEAPs
- gains publicity by being promoted through the dissemination mechanisms of the initiatives
ISEAP of Sifnos

- Submitted 30/4/2012
- Minor involvement of the municipality during the ISEAP development process
- The year 2005 was selected as the base year of the energy planning process
- The plan covers the period till 2020
- An implementation report demonstrating the progress of the ISEAP should be delivered every 2 years (30/4/2014...!)
- The ISEAP is dynamic and should be frequently updated.
- The ISEAP was a good start now we need to move it steps forward.
ISEAP – Development

1. Initiation
   - Wide political support
   - Preparation of administrative structure
   - Gain support from the local community and the stakeholders

2. Planning
   - Description of the current island profile – Baseline energy and emission inventory
   - Define - study and organize the possible actions
   - Define the local vision and the goals of the SEAP
   - Communicate the SEAP to the local community and the stakeholders

3. Implementation
   - Reassure the political and financial support from the local authorities
   - Retain the interest of the local community and the stakeholders

4. Monitoring
   - Monitor periodically the energy demand and the CO2 emissions
   - Monitor the progress of the actions, reporting possible delays and inaccuracies
ISEAP – The base year

1. Municipal electrical and fuels consumption
2. Total fuel consumption

Technical Data
- Technologies used
- Energy efficiency coefficients
- Type of fuels used

Statistical Data
- Demographics – Transportation
- Tourism – Local Climate

Questionnaires
- Residential sector
- Tertiary sector

A. Existing data from local authorities
B. Results from bottom-up analysis

Final Energy Consumption

× Emission Factors

CO₂ emissions
ISEAP of Sifnos

Objectives and Targets

- The objectives set for the target year 2020 focus on:
  - increasing the island’s energy supply security,
  - reducing its dependence on fuel imports and
  - reducing the island’s energy and CO\textsubscript{2} emissions footprint.

- Specifically, the targets set for 2020 focus on:
  - reducing by 6% the primary energy demand
  - and by 20% the CO\textsubscript{2} emissions in comparison to the projections of the business as usual scenario,
  - meeting the 21% of the primary energy demand and the 39% of the electricity demand by the use of local renewable energy sources.
ISEAP of Sifnos - Results

Final Energy Demand per carrier and sector in the base year

- Diesel: 31.2%
- Fueloil: 2%
- Electricity: 51%
- Gasoline: 3%
- LPG: 2.6%
- Solar: 4%
- Biomass: 6%
- Solar: 4%
- Tertiary sector: 43%
- Tertiary sector: 43%
- Secondary sector: 7.3%
- Transports: 5.2%
- Primary sector: 2%
ISEAP of Sifnos – Results

Final Energy Demand – Residential sector
Baseline year 2005

<table>
<thead>
<tr>
<th>Residential</th>
<th>Hot water</th>
<th>Heating and cooling</th>
<th>Lighting</th>
<th>Cooking</th>
<th>Refrigerator and freezers</th>
<th>Laundry machines and dryers</th>
<th>Dish washing</th>
<th>Other electric appliances</th>
</tr>
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<table>
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<tr>
<th>Energy Type</th>
<th>Baseline 2005</th>
<th>Diesel</th>
<th>LPG</th>
<th>Solar</th>
<th>Biomass</th>
<th>Total</th>
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<tbody>
<tr>
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<td>13.991</td>
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<td>762</td>
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<td>1.703</td>
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<td>Refrigerator</td>
<td>0.3%</td>
<td>7%</td>
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<td>Dish washing</td>
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ISEAP of Sifnos – Results

Final Energy Demand – Residential sector
Baseline year 2005

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<td>53</td>
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</table>
ISEAP of Sifnos – Results

Business As Usual – CO2 emissions from final use

![Graph showing CO2 emissions from final use from 2005 to 2020 with a steady increase over the years. The values range from 15.8 Ktons in 2005 to 27.8 Ktons in 2020. The percentage increase is shown as a line graph with specific values for each year.]
ISEAP of Sifnos – Results

Final Energy Demand per carrier and sector in 2020

Business As Usual scenario

Electricity from public grid 53%

Diesel 31%

Fueloil 1%

LPG 3%

Gasoline 2%

Solar 4%

Biomass 6%

Residential 43%

Tertiary 44%

Primary 2%

Secondary 7%

Transports 4%
ISEAP of Sifnos – Results

ISEAP scenario – CO2 emissions from final use

After Including all the Actions

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</tbody>
</table>
ISEAP of Sifnos – Results

ISEAP scenario – Electricity

MWh

Diesel  Fueloil  Wind  Solar  TOTAL

ISEAP of Sifnos – Results

Final Energy Demand per sector and carrier in 2020

ISEAP scenario

- **Electricity from public grid**: 61%
- **Biomass**: 6%
- **Solar**: 8%
- **LPG**: 3%
- **Diesel**: 18%
- **Gasoline**: 2%
- **Fuel oil**: 2%

- **Residential**: 45%
- **Tertiary**: 42%
- **Secondary**: 7%
- **Primary**: 2%
- **Transports**: 4%
The following table summarizes the contribution of each sector in the reduction of CO$_2$ in comparison to the BAU scenario in the target year 2020.

<table>
<thead>
<tr>
<th>Action Sectors</th>
<th>CO$_2$ emissions reduction</th>
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<tbody>
<tr>
<td>Residential</td>
<td>7,7%</td>
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<tr>
<td>Primary</td>
<td>0,8%</td>
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<tr>
<td>Secondary</td>
<td>2,4%</td>
</tr>
<tr>
<td>Tertiary</td>
<td>24,9%</td>
</tr>
<tr>
<td>Transports</td>
<td>0,4%</td>
</tr>
<tr>
<td>Electricity production</td>
<td>45,0%</td>
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<tr>
<td>TOTAL</td>
<td>64,37%</td>
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</table>
### ISEAP of Sifnos – Results

<table>
<thead>
<tr>
<th>SECTORS AND FIELDS OF ACTION</th>
<th>ACTIONS</th>
<th>RESPONSIBLE FOR IMPLEMENTATION</th>
<th>EXPECTED ENERGY SAVINGS [MWh/year]</th>
<th>EXPECTED RENEWABLE ENERGY PRODUCTION [MWh/year]</th>
<th>EXPECTED CO2 REDUCTION [ton/year]</th>
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<tbody>
<tr>
<td><strong>RESIDENTIAL SECTOR</strong></td>
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<tr>
<td>Hot water</td>
<td>Reduce the annual hot water energy demand growth rate by 10% by promoting everyday energy saving measures from the consumers</td>
<td>Municipality of Sifnos</td>
<td>14</td>
<td>3</td>
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<td></td>
<td>Increase to 50% the total hot water energy demand supplied from solar thermal by 2020</td>
<td>Municipality of Sifnos</td>
<td>101</td>
<td>83</td>
<td>49</td>
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<td><strong>SECONDARY ENERGY PRODUCTION AND ENERGY FLUXES</strong></td>
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<td>Wind</td>
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<td>719</td>
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<tr>
<td>Solar</td>
<td>Promotion of PV installation on the ground and on the roofs</td>
<td>Municipality of Sifnos</td>
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### ISEAP of Sifnos – Results

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>ENERGY SAVINGS TARGET IN 2020 [MWh/year]</th>
<th>RENEWABLE ENERGY PRODUCTION TARGET IN 2020 [MWh/year]</th>
<th>CO2 REDUCTION TARGET IN 2020 [ton/year]</th>
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<tr>
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<td>144</td>
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<td>PRIMARY</td>
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<td>TERTIARY</td>
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<td>TOTAL</td>
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Local Energy Planning – The perspectives

Having an ISEAP is very good

Having a very good ISEAP is a privilege

Next (baby?) steps
1. Renew the political support
2. Involve society and stakeholders
3. Update the vision
4. Communicate to the world
5. Update figures – Start monitoring
6. Pass from actions to actual projects (prefeasibility studies, maturing, financing, etc.)
7. Do not stop monitoring
Looking for local heroes to carry the message

Anyone interested?
• Establishment of 10 island clusters
• Identification of 233 trainees to attend capacity building activities
• Organisation of more than 15 local workshops to identify the priority areas and barriers.
• Identification of 61 projects to mature during the project life.
• Preliminary identification of 15 new islands to join the Pol.
• Identification of good practices to transfer and bad practices to avoid.
• Development of strategic guidelines to improve Multi-Level Governance.
THANK YOU

For more information please contact me at

ks.komninos@gmail.com
or
kostas@smilegov.eu

Visit the website of our new sustainable islands IEE project on multi-level governance

www.sustainableislands.eu