Experience of implementing Sustainable Energy Action Plans

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Covenant of Mayors in the Province of Chieti

The Province of Chieti, supported by the local energy agency A.L.E.S.A., carried out 104 Sustainable Energy Action Plans for its municipalities (104/104 municipalities joined to the CoM). In this way, a very strong methodology able to deal with different local conditions has been developed.
Covenant going East: DACO

The aim of the project is to support local authorities in the Central Asia and ENP-East Areas to assess and reduce their energy consumption and CO₂ emission, by means of a common methodology. This general objective will be reached by joining the Covenant of Mayors’ principles, rules and goals.

The experience of the Province of Chieti will be replicated in the following Municipalities according to their specific characteristics and needs:

- Kazakhstan
- Tajikstan
- Azerbaijan
- Belarus
- Taraz
- Somoniyon
- Sumgayit
- Novogrudok
DACO - Status update

- Kick-off meeting;
- Selection of local experts;
- Training course;
- Establishment of Local Working Groups;
- Stakeholder meetings;
- Data collection;
- Software for SEAPs development;
- BEIs;
- Sustainable Action Plans;
- Signature of the Covenant of Mayors in 3 Municipalities;
- Start-up and implementation of 2 pilot projects;
- Identification and involvement of donors in 2 municipalities.
The Sustainable Energy Action Plan (SEAP) is a key document that shows how the Covenant signatory will reach its commitment by 2020. It uses the results of the Baseline Emission Inventory (BEI) to identify the best fields of action and opportunities for reaching the local authority’s CO2 reduction target. It defines concrete reduction measures, together with time frames and assigned responsibilities, which translate the long-term strategy into action.
The Sustainable Energy Action Plan (2)

According to the European Commission’s instructions, the CO2 emission inventories must include at least 3 of the following sectors:

Municipal Buildings, Equipment/Facilities;
Tertiary Buildings, Equipment/Facilities;
Residential Buildings;
Local Transport.

Which normally are the ones with higher impact over the whole municipal production.

The minimum criteria currently applied for SEAP acceptation is that at least are foreseen actions for the municipal sectors and one of the other key sectors.
Space heating and cooling are responsible for almost 70% of the total final energy consumption in European buildings. Therefore effective key actions intended for reducing gains and losses will have a significant influence on the reduction of CO2 emissions. The losses of energy through the envelope may be reduced through the implementation of the following measures:

Building Shape and Orientation
Glazing
Frames
Thermal transmittance of walls
Shading Devices
Avoid Air infiltration
## BUILDINGS: Action examples

<table>
<thead>
<tr>
<th>TECHNOLOGY</th>
<th>FINAL ENERGY KWH</th>
<th>PERFORMANCE RATIO</th>
<th>COP</th>
<th>PRIMARY ENERGY FACTOR</th>
<th>PRIMARY ENERGY (kWh)</th>
<th>PRIMARY ENERGY SAVED (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Boiler (natural gas)</td>
<td>1</td>
<td>92 %</td>
<td>-</td>
<td>1</td>
<td>1.08</td>
<td>-</td>
</tr>
<tr>
<td>Condensing Boiler (natural gas)</td>
<td>1</td>
<td>108 %</td>
<td>-</td>
<td>1</td>
<td>0.92</td>
<td>-14.8 %</td>
</tr>
<tr>
<td>Heat Pump (electricity)</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>0.25 – 0.5</td>
<td>1.32 – 0.66</td>
<td>+22 % to -38.8 %</td>
</tr>
<tr>
<td>Ground Heat Exchanger Heat Pump (electricity)</td>
<td>1</td>
<td>-</td>
<td>5</td>
<td>0.25 – 0.5</td>
<td>0.8 – 0.4</td>
<td>-25.9 % to -62.9 %</td>
</tr>
</tbody>
</table>
PUBLIC LIGHTING: Action examples

Direct substitution

<table>
<thead>
<tr>
<th>INITIAL LAMP</th>
<th>LUMINOUS EFFICIENCY</th>
<th>RECOMMENDED LAMP</th>
<th>LUMINOUS EFFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>High pressure mercury lamps</td>
<td>32-60 lm/W</td>
<td>Standard high pressure sodium lamp</td>
<td>65-150 lm/W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Metal Halide Lamp</td>
<td>62-120 lm/W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LED</td>
<td>65-100 lm/W</td>
</tr>
</tbody>
</table>

New Lighting Installation

<table>
<thead>
<tr>
<th>CRI REQUIRED</th>
<th>RECOMMENDED LAMP</th>
<th>LUMINOUS EFFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 60</td>
<td>Low pressure sodium lamp</td>
<td>100-200 lm/W</td>
</tr>
<tr>
<td></td>
<td>Standard high pressure sodium</td>
<td>65-150 lm/W</td>
</tr>
<tr>
<td>More than 60</td>
<td>LED</td>
<td>65-100 lm/W</td>
</tr>
</tbody>
</table>
Energy production: Action examples

**COGENERATION PLANT**

- 100 units fuel
- 11 units loss
- 34 units for Power
- 55 units for Heat

**SEPARATE HEAT AND POWER PRODUCTION**

- 131 units fuel
- 70 units for Power
- 6 units loss
- 61 units for Heat
- Total loss: 42 units
- 33 units loss
- 3 units loss
- 34 units
- 6 units loss
- 55 units
Pilot Project in Somoniyon - Tajikistan

- Replacement of the heating system and fixtures;
- Installation of high efficiency radiators;
- Improvement of the floor insulation;
- Installation of solar panels for water heating;
- Energy saving lamps;
- Programmable real time automatic on/off electrical switch.
Pilot Project in Novogrudok - Belarus

- Installation of solar panels for water heating to cover the needs of the pool.
- The unit should function all year round at a temperature of environment from -25 to 40 °C.
- The capacity of the unit should as much as possible meet the needs of the pool with warm water in the summer and should be a source of additional heat energy in the rest of the period.
- The unit should function jointly with the heat supply system of kindergarten.
ESCo: Energy Service Company

An efficient way to enable private and public entities to support these kinds of actions when they cannot fund these initiatives on their own, is to plan for implementation through the so called Energy Services Companies:
THANK YOU FOR YOUR ATTENTION