Investing in renewable energies at local level: successful example from the municipality of Bragança
**TERRITORIAL CONTEXT**

**Bragança** is surrounded in the North and in the eastern by the Natural Park of Montesinho.

**Bragança** is the capital of the district of Bragança (12 municipalities).

**Portugal** is the westernmost country of Europe.

**Bragança** is in the north-eastern of Portugal, near the border with Spain, covering 1174 km².

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**Bragança is a mountain city in the North-East of Portugal:** 700 m of altitude (438 m - 1486 m in the Natural Park of Montesinho).

**Resident population:** 35 341 inhabitants

**Low population density:** <30 inhab/km² (~115 in Portugal).

**Economic structure:** services 60%, secondary sector 16%, and primary sector 24%.

**Climate:** long, cold winters and short warm summers, large annual temperature range and low precipitation. Average temperature between 4.5 ºC (January) and 29.7 ºC (July).
The problem and starting point of the initiative

**Low attractiveness:**
- Bragança **lost population**, especially the youngest, **since the 60s** of the last century (as all the inland of Portugal)
- Lower competitiveness due to remoteness and sparsity of businesses

**Mismatch between high energy potential and low utilization**
- High hydropower, wind, solar and biomass energy potential
- Higher energy needs from mountain people (long and cold winters)
- In most mountain municipalities: extreme reliance on fossil fuels, little energy independence, little SEAP adoption and implementation

**The idea → counteract this tendency through two instruments:**
- the **Polytechnic Institute of Bragança** (last 30 years)
- an **attractive development strategy** by the Municipality, based on ‘eco-development’ (last 30 years)
The Bragança ecocity strategic plan

- **Objective**: promote and encourage policies of energy efficiency and use of renewable energy sources that contribute to the reduction of emissions in view of a sustainable development

  - July 2003: development of Local Agenda 21 and its Action Plan
  - January 2006: an signing of the letter of Aalborg

- **Flagship initiative** of the Municipality, including concepts of Eco-Tourism, Eco-Energy, Eco-Products and Eco-Construction: the concept of ECOCITY

- By August 2013 the “Bragança Eco-Energy Techno Park” will be finished aiming at regional business development, as well as the “Project of Creation of a Centre for Research, Innovation and Nesting Business and Study of Viability of a Business Location Area”

- In 2010 Bragança joined the Covenant of Mayors, as a way to progress further in its policy for sustainable development, and approved its “Sustainable Energy Action Plan” in 2012.
Examples of initiatives in the context of Bragnaça Ecocity:

• **Eco-Energy**
  - Solar thermal heating systems, heating of Municipal Swimming Pools (246m²)
  - Promotion of the energy efficiency in the municipality buildings and public illumination
  - Energy certification of several municipal buildings

• **Eco-Tourism** – development of tourist routes, promotion of initiatives, ...

• **Eco-Products** – promotion of fairs of endogenous products, ...

• **Eco-Constraction** – (re)construction in accordance with good environmental practices and energy efficiency (municipality buildings).
La vitalità delle montagne europee nella programmazione 2014-2020

Roma, 6-7 giugno 2013

ECOCITY STRATEGIC PLAN

Bragança Sustainable Energy Action Plan (SEAP)

Reference inventory of emissions for the reference year (2009)
- Energy profile of the Municipality
- Inventory of CO₂ emissions

Defining the SEAP
- Identification of actions
- Environmental and Economic Valorisation
- Analysis of financial resources

Plan of Monitoring, management, and follow-up
- Adaptation of the Municipal Structures
- Mobilization of civil society to the thematic

SEAP management structure

Follow-up commission

Civil society and business

Project management

Municipal bodies

Workgroups:
- Transports
- Buildings
- Renewable energies
- Behavioural changes

ECOCITY STRATEGIC PLAN

La vitalità delle montagne europee nella programmazione 2014-2020
SEAP targets for reducing emissions by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Included?</th>
<th>Emissions (tCO₂)</th>
<th>Weight (%)</th>
<th>Reduction target (tCO₂)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings and equipment</td>
<td>Yes</td>
<td>58974</td>
<td>54.5</td>
<td>10433</td>
<td>17.7</td>
</tr>
<tr>
<td>Public lighting</td>
<td>Yes</td>
<td>3447</td>
<td>3.2</td>
<td>1520</td>
<td>44.1</td>
</tr>
<tr>
<td>Industry</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transports</td>
<td>Yes</td>
<td>45871</td>
<td>42.4</td>
<td>9841</td>
<td>21.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>108292</td>
<td>100</td>
<td>21794</td>
<td>20.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Local Production of Electricity</th>
<th>Target (MWh)</th>
<th>Avoided emissions (tCO₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind farm</td>
<td>200943</td>
<td>74148</td>
</tr>
<tr>
<td>Micro-hydro power plants</td>
<td>77</td>
<td>29</td>
</tr>
</tbody>
</table>

It is estimated a reduction in the global emission of 88.6%, equivalent to 95,966 tCO₂.
Is it sustainable?

**Strengths**
- A clear vision defined (a flagship initiative at a higher level);
- A strategy with measurable and clear objectives/targets;
- A list of specific actions planned;
- A monitoring plan and structure (with reports and deadlines…);
- Stability and dynamism of some local leaders...

**Opportunities**
- A motivated technical staff;
- A dynamic context established;
- Distributed generation systems are a powerful instrument for employment.

**Weaknesses**
- The involvement of stakeholders should be greater;
- The know-how of companies must be improved.

**Threats**
- Additional fund is needed…
- The current crisis is a major threat…
Results & achievements

• **Level of energetic autonomy reached so far:**
  – The produced electricity is 43% of the electric consumption (2004-2012);
  – Considering also the contribution received by the use of local electric grid this ratio is 158.4%

• **Contribution of the energy strategy for the local development:**
  – Development of SMEs;
  – Increase of the sustainability;
  – Development of endogenous products business;
  – Improvement of specific tourism activities.

• **Improvement of the attractiveness:**
  – From 2001 to 2011 the population has increased about 1.7% (it has decreased in the region of North-Eastern of Portugal)
  – Student population of the Polytechnic Institute of Bragança is 6700 while the population of the city is < 24000 (>28%)!

• **Impact of the strategy on quality of life of mountain people:**
  – Water is not a problem anymore!

• **Impact on the energy bill of people or businesses:**
  – 1.5M€/year result from the electricity produced by 3 hydro electric power stations;
  – 10% of the Municipality budget is for energy.
Perspectives for programming 2014-2020

• How the Bragança strategy will continue to be financed in this area?
  – Municipal budget for the SEAP: 13.52M€ (buildings, transports, local production);
  – Leasing;
  – Energy Service Companies (ESCOs);
  – Public-private partnerships;
  – Revolving funds;
  – Regional and National and European funding.

• Can it contribute for rural development?
  – Distributed generation (e.g. solar, biomass) → development of SMEs at local level
  – A lot of families use firewood for heating
  – (New) activities related to agriculture and forest are developing (eco-products, production of biofuels and biomass, reduction of fires…)

• Can the Bragança strategy be replicable in neighbouring areas?
  – Yes, with adaptation to the local context…

• Can the Bragança strategy be improved?
  – Yes, with other experiences and continuous development…
Thank you for your attention
any questions?

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Percentage of energy consumption by sector of activity

<table>
<thead>
<tr>
<th>Activity Sector</th>
<th>Bragança</th>
<th>Portugal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>20%</td>
<td>19%</td>
</tr>
<tr>
<td>Services</td>
<td>27%</td>
<td>13%</td>
</tr>
<tr>
<td>Industry</td>
<td>11%</td>
<td>29%</td>
</tr>
<tr>
<td>Transports</td>
<td>42%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Energy and emissions profile of the Municipality

Distribution of emissions by sector of activity

- Industry
- Transports
- Services
- Residential

Disaggregation of the consumption by energy vector

- Electricity
- Petroleum derivatives
- Natural gas
## Municipal budget for the SEAP

<table>
<thead>
<tr>
<th>Sector</th>
<th>Subsector</th>
<th>Estimated cost (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings</td>
<td>Municipal buildings and equipment</td>
<td>9,314,973.19</td>
</tr>
<tr>
<td></td>
<td>Tertiary buildings and equipment</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Residential buildings</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Public lighting</td>
<td>3,752,063.20</td>
</tr>
<tr>
<td>Transports</td>
<td>Municipal fleet</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Public Transports</td>
<td>300,000.00</td>
</tr>
<tr>
<td></td>
<td>Commercial and private transports</td>
<td>0</td>
</tr>
<tr>
<td>Local production</td>
<td>Micro-hydro power plants</td>
<td>150,000.00</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>13,517,036.39</strong></td>
</tr>
</tbody>
</table>
Where did the funds come from?

- **Regional and National funding sources:**
  - Several specific programs for renewable energies and energy efficiency and sustainable development, co-financed by the European Regional Development Fund, European Social Fund and Cohesion Fund;
  - Specific programs for energy efficiency funded by national authorities.

- **European funding sources:**
  - Risk Sharing Finance Facility (RSFF);
  - European Local ENergy Assistance (ELENA);
  - Life +;
  - New Entrants Reserve – NER300;
  - Intelligent Energy Europe;
  - Joint European Support for Sustainable Investment in City Areas (Jessica);
  - ...