Tool for Mapping and Simulation of Biomass supply chains

Georgiana Birau, ROSENC Cluster

Supporting the development of bio-based economy partnerships in the Danube Region through a triple-helix approach

Budapest, 2016-07-20
Value chain integration

Value Chains Integration in the Local Economy

1. Value chains integration
   - HEAT
   - HOT WATER
   - INDUSTRIAL STEAM
   - ELECTRICITY
   - COOLING

2. Operating & manufacturing equipment

3. Development of bio-based industries
   - Growth of:
     - Rural economy
     - Quality of life in rural areas
     - Non-agricultural activities
     - Energy independence
     - Significant contribution to the objectives of Europe 2020 Strategy

4. How:
   - Encourage cooperation and association among actors in line with sustainable development principles (like fair trade)
   - Support the pooling of actors into integrated supply chains
   - Regional and trans-regional cooperation

Danube-INCO.NET
Advancing Research and Innovation in the Danube Region
Assessment of the existing biomass potential, in Western Region of Romania

<table>
<thead>
<tr>
<th>Type of biomass</th>
<th>Tons of residues produced yearly (t)</th>
<th>Theoretical Energetic Potential (MWh/t)</th>
<th>Technical Energetic Potential (MWh/t)</th>
<th>Achievable Energetic Potential_2020 (MWh/t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat straws</td>
<td>1,262,817</td>
<td>5,139,669</td>
<td>2,569,835</td>
<td>2,569,835</td>
</tr>
<tr>
<td>Maize residues</td>
<td>1,616,496</td>
<td>8,858,398</td>
<td>4,429,199</td>
<td>4,429,199</td>
</tr>
<tr>
<td>Barley straws</td>
<td>113,126</td>
<td>452,504</td>
<td>226,252</td>
<td>226,252</td>
</tr>
<tr>
<td>Sun flower</td>
<td>242,146</td>
<td>1,063,024</td>
<td>531,512</td>
<td>531,512</td>
</tr>
<tr>
<td>Sugar beet</td>
<td>23,396</td>
<td>21,005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood residues</td>
<td>1,400,000</td>
<td>6,020,000</td>
<td>3,010,000</td>
<td>3,010,000</td>
</tr>
<tr>
<td>Energetic willow</td>
<td>10,000</td>
<td>57</td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>Miscanthus</td>
<td>2,000</td>
<td>8.8</td>
<td>8.8</td>
<td>8.8</td>
</tr>
<tr>
<td><strong>Total Energy Potential (MWh)</strong></td>
<td><strong>21,661,874</strong></td>
<td><strong>10,830,937</strong></td>
<td><strong>10,830,937</strong></td>
<td></td>
</tr>
</tbody>
</table>

=> 11 TWh Achievable Energetic Potential of existing biomass

*Reference: Fraunhofer

Support in the development of a sustainable concept for harnessing renewable energies in Timis County
Assessment of potential of the unused lands, in Western Region of Romania

7% of Total Area is unused

Theoretical Energy Potential of unused lands: 10.5 TWh/ year

<table>
<thead>
<tr>
<th>Possible use</th>
<th>Arad</th>
<th>Caras-Severin</th>
<th>Hunedoara</th>
<th>Timis</th>
<th>Western Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture (MWh/year)</td>
<td>496.07</td>
<td>385.66</td>
<td>271.78</td>
<td>679.44</td>
<td>1,832.97</td>
</tr>
<tr>
<td>Energy crops (MWh/year)</td>
<td>1,689.26</td>
<td>3,283.81</td>
<td>2,919.45</td>
<td>867.49</td>
<td>8,760.01</td>
</tr>
<tr>
<td>Total theoretical potential (MWh/year)</td>
<td>2,185.33</td>
<td>3,669.47</td>
<td>3,191.24</td>
<td>1,546.94</td>
<td>10,592.98</td>
</tr>
</tbody>
</table>

*calculations made using the characteristic land use of every county*
Conclusion

- 21.5 TWh/Year wasted potential
- Drafting a business plan in biomass = a lot of guess work = NOT sustainable
- Hardly manageable risks when initiating biomass business plans

Our proposal:

GIS based tool for biomass supply chains mapping & Simulation of Possible Development Scenarios

"Methodology for determining the economic development of biomass value chains, for West Region of Romania"
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Thank you for your attention!