Small Scale Waste-to-Energy – drivers and barriers

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WHY

- A report on small scale Waste-to-Energy?
HOW?
Case studies

Skövde värmeverk, Sweden
(Photograph: Thomas Harrysson)

Pontenx-les-Forges, France

Exeter Energy Recovery facility, UK
(Devon city council)
<table>
<thead>
<tr>
<th>Location of plant</th>
<th>Exeter, UK</th>
<th>Pontenx-les-Forges, France</th>
<th>Skövde, Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant size (tonnes/annum)</td>
<td>60,000</td>
<td>43,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Start of operation</td>
<td>2014</td>
<td>1997</td>
<td>2005</td>
</tr>
<tr>
<td>Owner</td>
<td>Private company: Viridor, the facility reverts back to Devon County Council upon expiry of the associated contract</td>
<td>Association of municipalities: SIVOM des cantons du Pays de Born Operated by Tiru</td>
<td>Public company: Skövde Värmeverk AB (100% owned by the municipality of Skövde)</td>
</tr>
<tr>
<td>Types of waste received</td>
<td>MSW (99%), C&amp;I (1%)</td>
<td>MSW, C&amp;I</td>
<td>MSW (50%), C&amp;I(47%), Haz. (3%)</td>
</tr>
<tr>
<td>Steam data (bar/°C)</td>
<td>40/390</td>
<td>34/355</td>
<td>16/215</td>
</tr>
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<td>Location of plant</td>
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<td>----------------------------</td>
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</tr>
<tr>
<td>Start of operation</td>
<td>2014</td>
<td>1997</td>
<td>2005</td>
</tr>
<tr>
<td>Exported electricity (GWh)</td>
<td>26.8</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Exported heat (GWh)</td>
<td>0</td>
<td>0</td>
<td>168</td>
</tr>
<tr>
<td>Investment cost</td>
<td>€63m</td>
<td>€16m</td>
<td>€34m</td>
</tr>
<tr>
<td>(in the year of commissioning)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidised</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Price electricity (€/MWh)</td>
<td>67.5</td>
<td>40</td>
<td>32.5</td>
</tr>
<tr>
<td>Price heat (€/MWh)</td>
<td>-</td>
<td>31</td>
<td>53*</td>
</tr>
<tr>
<td>Gate fee (range) (€/ tonne)</td>
<td>&gt;141</td>
<td>81-120</td>
<td>45-60</td>
</tr>
</tbody>
</table>

*Including distribution
Drivers for Devon County Council:

- To reduce waste being sent to landfill, thus driving the management of this residual waste up the waste hierarchy
- To meet Landfill Allowance Trading Scheme targets
- To recover energy from waste

The EfW facility was developed as an outcome of a Waste Management strategy:

- to ensure targets were met
- to provide certainty of future costs
Drivers Pontenx

- Replacement of old plant
- Ensure treatment capacity for the next 30 years
- Policy supporting WtE, landfill tax
- Positive public perception when only treating the regional waste
- Avoiding unnecessary transports in or out of the region

The plant was primarily developed as a replacement facility for an older and smaller plant.
Drivers Skövde

- carbon dioxide tax which was introduced in Sweden in 1991
- landfill tax, introduced in 2000
- a landfill ban for combustible wastes came into force in 2002
- Need for new heat production capacity for district heating

The municipality decided to build a small scale WtE plant, mainly because waste was the most economic fuel alternative for the district heating production.
Policy and legislation
Economy
Heat/Energy demand
Geography
Public perception
Decreased transports

Security of supply...
Conclusions

- **Policy** – Policies from international to local level are important. They will set the framework.
- **Costs** – Operational and capital costs are higher but there are often other drivers which take precedence over economics alone.
- **Incentives** – Are a driver on specific markets, specifically for technologies more common in small scale plants.
- **Geography** – can be a driving factor for small scale WtE, but in many cases there are additional drivers.
- **Public Acceptance** – treatment of waste close to the point of generation, the generation of jobs in the local community, and lower transport distances, all serve to increase the public acceptance of such facilities.
- **Technical issues** – are not deemed to be a specific barrier.
- **Security of supply** – are generally a driver when it comes to small scale plants.
Acknowledgements

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IEA Bioenergy Task 36
The report can be found at the IEA Bioenergy task 36 web

http://task36.ieabioenergy.com/publications/small-scale-energy-waste/
Thank you for your attention!

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