FABbiogas
Situation in Austria

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Biogas in Austria

Green electricity regulation (amendment 2012):

- Up to 250 kW\textsubscript{el}: 19,50 cent/kWh\textsubscript{el}
- 250 kW\textsubscript{el} to 500 kW\textsubscript{el}: 16,93 cent/kWh\textsubscript{el}
- 500 kW\textsubscript{el} to 750 kW\textsubscript{el}: 13,34 cent/kWh\textsubscript{el}
- More than 750 kW\textsubscript{el}: 12,93 cent/kWh\textsubscript{el}
- 30% manure up to 250 kW\textsubscript{el}
- Reduction of 20% if not only agricultural substrates are used
- 2 cent/kWh CHP-Bonus

Possible number of new energy crop plants (Stürmer 2012):

- 21 cent/kWh\textsubscript{el}: 1 biogas plant (0,25 MW\textsubscript{el})
- 22 cent/kWh\textsubscript{el}: 35 biogas plants (7,33 MW\textsubscript{el})
- 23 cent/kWh\textsubscript{el}: 133 biogas plants (31,93 MW\textsubscript{el})
- 24 cent/kWh\textsubscript{el}: 406 biogas plants (121 MW\textsubscript{el})
- 25 cent/kWh\textsubscript{el}: 828 biogas plants (254 MW\textsubscript{el})
- 26 cent/kWh\textsubscript{el}: 1,331 biogas plants (401 MW\textsubscript{el})

0,95% of whole electricity production

(Lebensministerium, Klima:Aktiv 2013)
Future development of Biogas

Energy Strategy Austria (Ministry of Agriculture, Forestry and Environment + Ministry of Economics, 2010):
• Market launch of Bio-CNG fuel with minimum 20% biogas; more than 200.000 vehicles until 2020
• More electricity from biomass and biogas (CHP); until 2015 additional 100 MWe out of biomass
• Stable biogas-/biomethane market should be created:
  – Investment incentives
  – Stable framework and incentives for cultivation and supply of substrates
  – Use of biomethane/natural gas mixtures for room heating (housing subsidy)
  – Regulations for use of virtual biomethane from the natural gas grid (heat optimized)

Statements in the green electricity report (E-Control, 2014):
• Increase of biogas production depending on subsidies
• Decrease of installed capacity is more likely
• Market readiness (energy production without subsidies) will not be reached
• Market consolidation within the existing biogas plants should be the aim
• Lot of biogas plants were planned and build under wrong aspects
• Main critical aspect: no or insufficient use of heat
• In new biogas plants more or only residues should be used as substrate
FABbiogas
Biogas plants using organic residues

- All in all approx. 310 biogas plants in Austria
- Approx. 80 are using organic waste as substrate; probably 50 regularly use FAB industry waste
- Treat approx. 410,000 tons of organic waste per year
- 64 biogas plants identified
- 3 biogas plants exclusively use waste from FAB industry
Organic residues from slaughterhouses

- 47 slaughterhouses identified
- Cover > 90% of slaughterings in Austria
- Waste 180,000 t/year (adequate for biogas prod.):
  - Blood, stomach + colon content, grease separation mat., rumen content
- Methane potential: 11,000,000 m³/year
- 29% of all animal by-products (ABP) are processed in rendering plants
- Fertilizer (stomach-, colon and rumen content)
- Disposal costs between 30 €/t and 50 €/t
Austria
Potential – biogas plants at slaughterhouses

Slaughtering in Austria:
- 5,400,000 pigs
- 650,000 cattle
- 73,000,000 poultry
67% of pigs slaughtered in 7 slaughterhouses
71% of cattle slaughtered in 5 slaughterhouses
2 biggest companies – market share of 33%

Size of biogas plants:
< 50 kWel: 16 biogas plants
50 – 100 kWel: 8 biogas plants
100 – 200 kWel: 15 biogas plants
200 – 300 kWel: 3 biogas plants
300 – 500 kWel: 5 biogas plants

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Organic residues from breweries

- 41 breweries identified
- Cover > 95% of beer production in Austria
- Spent grains: 186,000 t/year
  - Methane potential: 14,000,000 m³/year
- Wastewater: 3,260,000 m³/year
  - Methane potential: 2,445,000 m³/year
  - AD for wastewater is state of art
- Protein rich cattle feed (price 15 €/t - 30 €/t)
- Feed demand/price fluctuates
- can not always be used as feed (location of brewery, stability problems of spent grains)
**Austria**

Potential – biogas plants at breweries

**Beer production in Austria:**
- 9.1 Mio. hl/year
- 70% produced in 8 breweries

**Size of biogas plants:**
- < 50 kWel: 20 biogas plants
- 50 – 100 kWel: 6 biogas plants
- 100 – 200 kWel: 5 biogas plants
- 200 – 300 kWel: 2 biogas plants
- 500 – 850 kWel: 8 biogas plants
# Methane production potential of residues

<table>
<thead>
<tr>
<th>FAB industry</th>
<th>Number of locations/companies</th>
<th>residue/waste stream [t/year]</th>
<th>Methane production potential [m³/year]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slaughterhouses</td>
<td>47</td>
<td>182,337</td>
<td>10,940,000</td>
</tr>
<tr>
<td>Brewing Industry</td>
<td>41</td>
<td>186,273</td>
<td>13,970,490</td>
</tr>
<tr>
<td>Dairy Industry</td>
<td>6</td>
<td>419,500</td>
<td>6.670,050</td>
</tr>
<tr>
<td>Milling Industry</td>
<td>10</td>
<td>61,740</td>
<td>14,508,953</td>
</tr>
<tr>
<td>Wine Industry</td>
<td>5</td>
<td>6,051</td>
<td>1.064,972</td>
</tr>
<tr>
<td>Sugar Industry</td>
<td>2</td>
<td>240,000</td>
<td>28,666,413</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>111</strong></td>
<td><strong>1,095,901</strong></td>
<td><strong>75,820,878</strong></td>
</tr>
</tbody>
</table>

- Gas consumption of 71,000 households (1,100 m³/household)
- Electricity consumption of 71,000 households (4,200 kWhel./household)
- Additional 36 MWel. installed power of biogas plants (Austria 107 MWel.) + 33%
- Approximately 0.33% of Austrian electricity production
### Barriers for realising biogas plants in FAB industry

<table>
<thead>
<tr>
<th>Country</th>
<th>Most frequent barriers for biogas plant operators</th>
<th>Most frequent barriers for food and beverage manufacturers</th>
</tr>
</thead>
</table>
| Austria | • barriers in the approval phase of the biogas plant; bureaucracy  
• financial barriers  
• barriers/problems during plant operation  
• lack of competence of bank employees for waste biogas plants | • low disposal costs  
• high price for feed  
• low energy prices (heat, electricity)  
• too small amounts of waste  
• not economically feasible with current legal conditions  
• Fear of bad odor emissions  
• not stable material |
Cascade for the recycling of residues of the food & beverage industry

FOOD

FEED

FIBER

FUEL

Corresponds to waste framework directive (RL 2008/98/EG)

Source: LEBENSMINISTERIUM (2008)
Wastewater treatment plant Zirl, Tyrol

- Optimize the use of digester volume
- Sewage sludge + organic waste as co-substrate (3,000 t/year)
- Co-substrates: faulty batches, expired bread, grease separation material and coffee grounds (Nespresso capsules)
- Cover whole energy demand with biogas
- High disposal costs for dewatered sludge:
  - Biogas production doubled
  - Only + 10% - 15% sludge
Biogas plant Grossfurtner – slaughterhouse

- Largest slaughterhouse in Austria
- Used substrates (10,000 t/year):
  - Blood
  - Rumen/stomach content, colon content
  - Grease separation material
- Energy production/utilisation:
  - 3,600 MWh electricity is fed into the grid
  - 3,600 MWh heat used in the slaughterhouse
- Cover 75% of heat demand, electricity corresponds to 33% of demand
- Heat, electricity, waste, minus 63%
- Reduction of greenhouse gases 79%

08/09/15
Situation in Austria
.. from ECOPLUS’ point of view

FABbiogas

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www.fabbiogas.eu
Cluster Partner from Food and Beverage Industry in Lower Austria
D4.1 Awareness Rising Events

- National Seminar at the Biogas Austria Conference (46)
  in St. Pölten dated 4th of December 2013

- National Info Day & Study Tour at the BiogasScience 2014
  in Vienna dated 29th of October 2014

- 1st Workshop „FABbiogas“
  in St. Pölten dated 1st of July 2015

- Upcoming: 2nd Workshop „FABbiogas“
  in St. Pölten dated 23rd of September 2015
D5.1 National Contact Point

- 26 consulting of FaB companies in Lower Austria
- Clusterpartner meetings
- Advisory Board Meetings, conferences, workshops
- Prospective resource efficient activities

Team of the Food Cluster in Lower Austria

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Katharina Wörndl
Projectmanager
(on maternity leave)
D8 Dissemination

- D8.1 Project website in German (IFA)
- D8.2 Flyer and info material (IFA)
- D8.3 Digital newsletters with statistics (11)
- D8.4 Press release (7)
- D8.5 Articles in national (4) and international (1) newspapers
- D8.6 Presentations at national (8) and international events (3)
- D8.7 Promotion film (IFA)
- D8.8 Response from participants (IFA)
Food Cluster of Lower Austria

Speaker: Martina Zederbauer | Date: 2. September 2015, at Final FABbiogas Meeting in Brussels