Strategies for the acceleration of fermentable and wooden biomass towards energy
With a special focus on Germany

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Bioenergy – the holistic approach

Bioenergy is a part of Bioeconomy!

National Policy - Guiding Principle
- Priority of food security over production of raw materials for industry and energy
- Preference for paths of use with higher value creation
- Strengthening of cascading and coupled use
- Support for key technologies
- Compliance with social, environmental, nature and animal protection standards
- A competitive bioeconomy requires well-trained and well-informed specialists


Recent biogas strategy in Germany?

Yearly increase of RE until 2020
- Photovoltaic 2,5 GW
- Wind onshore 2,5 GW
- Wind offshore 6,5 GW
- Biomass 0,1 GW

Recently in EEG : Biomass = Biogas

Recent Measurement within the bioeconomy strategy:
- EEG subsidies for biowaste installations and small biogas installations
- Fostering the research towards a sustainable and improved energy crop cultivation
- Promotion of the climate adaption of agriculture systems
- Enhancing innovative proceedings towards cascading and couple use
- Improvement and establishment of international sustainable standards

A further extension and transformation of the biogas sector in Germany is feasible and necessary!

Basic rules in biogas usage

1. Biogas and biomethan in CHP – facilities
2. Biogas fuel for mobility only second choice
3. Biomethan instead of decentralized biogas only by a local heat valuation under 50 %
4. Biogas facilities fulfill the technical requirements for electrical system services

Possible biogas strategy in Germany – Results of the project “Biomethan”

Possible biogas strategy – potential for flexibility

Additional costs: 2 – 5 ct / kWh
Possible Biogas strategy in Germany – Results of the project “Biomethan”

Biogas potential until 2020 in the biomethan - project

- Biogas potential’s definition: Sustainable, additional, feasible from legal, technical and macroeconomical point of view
- Further requested agricultural area: 0,8 – 1,3 Mio ha
- Yearly expansion of capacity: 300 MW/a

<table>
<thead>
<tr>
<th>source of fermentable biomass</th>
<th>Potential 2020 (Min-Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>industrial organic residues</td>
<td>0,5 TWhHHV/a</td>
</tr>
<tr>
<td>Landscaping materials</td>
<td>0,5 TWhHHV/a</td>
</tr>
<tr>
<td>Residues from municipilities</td>
<td>1,5 – 3,7 TWhHHV/a</td>
</tr>
<tr>
<td>Waste water and depony gas</td>
<td>1,0 TWhHHV/a</td>
</tr>
<tr>
<td>Liquid manure</td>
<td>10,0 TWhHHV/a</td>
</tr>
<tr>
<td>Energy plants</td>
<td>22,9 – 45,8 TWhHHV/a</td>
</tr>
<tr>
<td>overall</td>
<td>36,4 – 61,5 TWhHHV/a</td>
</tr>
</tbody>
</table>

Possible wood energy strategy – result of „Regional Energy strategy in DE“

Yearly Increase of RE until 2020

- Photovoltaic 2,5 GW
- Wind onshore 2,5 GW
- Wind offshore 6,5 GW
- Biomass 0,1 GW

Recently in EEG: Biomass = Biogas

Recent Measurement within and beside the bioeconomy strategy:
- No EEG subsidies
- Subsidies for heating facilities (MAP and Bafa)
- Enhancing innovative proceedings towards cascading and couple use
- Increase of international sustainable standards
- Fostering Short Rotation Coppice

**Excursus**

**Understanding of wood cascade**

Using wood in cascades means the long-lasting utilisation of wood in the economy based on a good ecological assessment and the highest possible added value of the rare material wood.

**Potential effects:**
- Resource conversation
- Climate protection through cascade usage
- Increase of regional added values (e.g. employment rate)

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**Possible wood energy strategy – result of „Regional Energy strategy in DE“**

**Cascading use of wood – really a holistic solution?**

<table>
<thead>
<tr>
<th>Source</th>
<th>Additional potential</th>
<th>Material</th>
<th>Ready for material use?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>20,00 Mio t</td>
<td>Crown material</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private forest</td>
<td>++</td>
</tr>
<tr>
<td>Landscape</td>
<td>0,25 Mio t</td>
<td>Mainly Bushes</td>
<td>- (+)</td>
</tr>
<tr>
<td>Greenery waste</td>
<td>1,30 Mio t</td>
<td>Wooden greeneries</td>
<td>- (+)</td>
</tr>
<tr>
<td>Waste wood</td>
<td>4,00 Mio t</td>
<td>A I/II</td>
<td>++</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A III / IV</td>
<td>-</td>
</tr>
<tr>
<td>SRC</td>
<td>8,00 Mio t</td>
<td>Material with bark</td>
<td>- (+)</td>
</tr>
<tr>
<td>Overall</td>
<td>33,55 Mio. t</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Some more data for DE: Recently, 30,2 Mio t are used energetically. 50 % in households without EEG. Only 30 % are subsidised via EEG.
Guiding principles

Wood as a fuel exhausts the regional potentials taking into account the competition of use concerning the three forestal functions (usage, protection and recreation) on the base of efficient biomass using concepts.

Field of actions
- Efficient land / soil use
- Efficient use of the resource wood
- Sustainable extension of the raw material pool

Approaches to Measurements

A regional approach is obvious for mobilizing the potentials!

- Definition of regional barriers: Concerning resources, technics, economy, administration, social requirements, supply related issues
- Stakeholder based analysis to overcome the barriers
- Set up of measures together with stakeholder

National ordinances are important to frame the regional context (e.g. improvements of separation the waste wood)!

In the German federal state of Saarland: 40% of the existing wood resources used in presence should be mobilized additionally until 2020.
Conclusions

- Organic residues are important for the “German Energiewende”, but they are overestimated in terms of the real potentials.
- Wood is the quantitative most important potential.
- Biomass is mostly regionally available. The strategies have to be set up in the regions.
- German’s recent framing policy is deter by the food versus fuel debate. Therefore, a further increase of bioenergy is not expected.
- The material applicability determine the cascading use.
- The set of national and internation certifications or sustainability standards is overloaded. There is a need for one regulation framework across the whole value chain.

Thank you for your attention

Contact:
Bernhard Wern
IZES gGmbH
Altenkesseler Strasse 17
D-66115 Saarbrücken/Saarland

Tel.: +49 (0) 681 9762 -174
FAX: +49 (0) 681 9762 -175
e-mail: wern@izes.de
Homepage: www.izes.de