FACHAGENTUR NACHWACHSENDERE ROHSTOFFE E. V.
AGENCY FOR RENEWABLE RESOURCES

Diego Piedra-Garcia
11.03.2020
Rostock
### Facts

<table>
<thead>
<tr>
<th>Foundation:</th>
<th>October 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main office:</td>
<td>18276 Gülzow-Prüzen</td>
</tr>
<tr>
<td>Support:</td>
<td>Federal Ministry of Food and Agriculture (BMEL) and the State of Mecklenburg- Western Pomerania</td>
</tr>
<tr>
<td>Employees:</td>
<td>111</td>
</tr>
<tr>
<td>Legal status:</td>
<td>Registered association with 85 members (seven voting members)</td>
</tr>
</tbody>
</table>
| Tasks:      | • Promotion of research, development and demonstration (project management)  
              • Information & advice  
              • Public relations  
              • International and EU activities |
| Target groups: | Industry, SME, public and private research institutes, universities, government agencies |

*current state: 02.01.2020*
Tasks of the FNR

Promotion of research, development and demonstration (1)

- Obtainment of commodity crops from agriculture, forestry and aquatic biomass
- Attending to biogenic waste from agriculture and forestry, aquaculture, the processing industry, commerce and households
- The generation, handling, processing and use of renewable resources
- The resource-efficient and environmentally friendly production of bio-based products and bioenergy sources
- Coping with cross-cutting issues, including creating a dialogue with the civil society
Tasks of the FNR

Promotion of research, development and demonstration (2)

- Adapting forests to climate change
- Preserving and expanding the CO$_2$ reduction potential of forest and wood
Tasks of the FNR
Promotion of research, development and demonstration (3)

<table>
<thead>
<tr>
<th></th>
<th>Support since 1993</th>
<th>Support to ongoing projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>1,011.7 M €</td>
<td>221.4 M €</td>
</tr>
<tr>
<td>Projects</td>
<td>3,870</td>
<td>799</td>
</tr>
</tbody>
</table>

Source: FNR/Lulies

Source: FNR (February 2020)
Tasks of FNR

Information & advice, public relations

• several contests of Federal Ministry of Food and Agriculture
• [www.fnr.de](http://www.fnr.de) : 40 different websites
• media channels (Twitter- and Youtube)
• Active press work
• ca. 30 events p. a.
• ca. 30 trade fairs/exhibitions p. a.
• ca. 40 publications p. a.
• Expert information
  – Bioenergy
  – Biobased products and procurement (product database)
Tasks of the FNR

European & international activities

FNR remains as a competent partner in terms of renewable resources on both the European and international levels, and carries out all activities on behalf of the Federal Ministry of Food and Agriculture

- Analysis of political developments and framework conditions in the European Union
- Information and advice about European funding opportunities for German applicants
- Development of EU projects
- Coordinator/partner of around 15 ongoing EU projects
  - Networks related to bioenergy and bioproducts
  - ERA-NET projects (European research coordination, joint funding from EU and national programmes)

- Member of international and EU expert panels
  - EU-expert panels (e.g. bioeconomy, bioenergy): SCAR SWG/CWG, SET-Plan
  - IEA Technology Cooperation Programmes: IEA Bioenergy und IEA Advanced Motor Fuels (AMF)
  - Sustainability of bioenergy: Global Bioenergy Partnership (GBEP)
Unlocking the potential of Biobased value chains

Bioenergy business enterprises

Diego Piedra-Garcia, FNR
Workshop, Rostock

Rostock, 11 March 2020
Economic and social drivers for optimal bioenergy use

- **Status:**
- Do you know the EU28 target of renewable energy share by the end of 2020?

A. 10% of energy from renewable resources by the end of 2020
B. 20% of energy from renewable resources by the end of 2020
C. 30% of energy from renewable resources by the end of 2020

[www.slido.do code # Z317](http://www.slido.do)
Economic and social drivers for optimal bioenergy use

- Status:
  - Bioenergy is an important part of the energy mix

Source: Eurostat (nrg_ind_ren) last access 02.03.2020
https://ec.europa.eu/eurostat/documents/2995521/10335438/8-23012020-AP-EN.pdf/292cf2e5-8870-4525-7ad7-188864ba0c29
Economic and social drivers for optimal bioenergy use

- **Status:**
- Do you know the share of German renewable electricity production in 2018?

A. 17.9% was produced in 2018  
B. 21.8% was produced in 2018  
C. 37.8% was produced in 2018
• **Status:**
• 37.8% of the total German electricity generation is renewable

![Gross electricity generation diagram](image-url)

### Gross electricity generation

- **Nuclear energy**: 11.8%
- **Gas**: 12.9%
- **Lignite**: 22.5%
- **Coal**: 12.9%
- **Renewable Energy**: 35.0%
  - PV: 7.1%
  - Hydropower: 2.6%
  - Bioenergy (incl. biogenic waste): 8.1%
  - Wind energy: 17.3%
  - Heating oil, pump storage, etc.: 4.9%

*Bruttostromverbrauch: 595.6 TWh; EE-Anteil: 37.8%, Stromausstauschsaldo: -51.2 TWh*

Quelle: FNR nach AGEB (März 2019)
Monthly electricity production from renewables (2019 – 2020)

1 TWh

Economic and social drivers for optimal bioenergy use

• Status:
  • Bioenergy is already an important part of the energy mix
  • Power production from biomass
    TWh
  • Total of renewable energy in TWh
Policy and administrative regulations for biomass production on MagL for bioenergy - selected value chains

(modified and adapted from BiomassPolicies.eu, C. Panoutsou, 2016)
Policies tariffs scheme

The Renewable Energy Source Act (EEG) - Tariff scheme from 2004 to 2017

*Source: FNR own collection*

Tariffs for Biowaste fermentation

<table>
<thead>
<tr>
<th>EEG 2004</th>
<th>EEG 2009</th>
<th>EEG 2012</th>
<th>EEG 2014</th>
<th>EEG 2017</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Bio-waste fermentation tariff 14,00 – 16,00 ct/kWh</td>
<td>Bio-waste fermentation tariff 13,38 – 15,26 ct/kWh</td>
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<td></td>
<td>EEG 2004</td>
<td>EEG 2009</td>
<td>EEG 2012</td>
<td>EEG 2014</td>
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<tr>
<td><strong>Basic tariff</strong></td>
<td>8,40 – 11,50 ct/kWh</td>
<td>7,79 – 11,67 – ct/kWh</td>
<td><strong>Basic tariff</strong></td>
<td><strong>Basic tariff</strong></td>
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<td></td>
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<td><strong>Special tariff for small</strong></td>
<td><strong>Special tariff for small</strong></td>
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<td></td>
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<td>slurry plants</td>
<td>slurry plants</td>
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<td></td>
<td></td>
<td></td>
<td>25,00 ct/kWh</td>
<td>23,73 ct/kWh</td>
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<tr>
<td><strong>Biomass bonus</strong></td>
<td></td>
<td>Cultivated biomass bonus</td>
<td><strong>Input substrate tariff</strong></td>
<td><strong>Input substrate tariff</strong></td>
</tr>
<tr>
<td>(crops a/o slurry)</td>
<td>4,00 – 6,00 ct /kWh</td>
<td>(energy crops) (energy crops)</td>
<td>- class I (energy crops)</td>
<td>- class I (energy crops)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4,00 – 7,00 ct/kWh</td>
<td>4,00 – 6,00 ct/kWh</td>
<td>4,00 – 6,00 ct/kWh</td>
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<td></td>
<td></td>
<td></td>
<td>Slurry bonus (min. 30% slurry or manure)</td>
<td>Slurry bonus (min. 30% slurry or manure)</td>
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<td></td>
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<td></td>
<td>1,00 – 4,00 ct/kWh</td>
<td>1,00 – 4,00 ct/kWh</td>
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<tr>
<td><strong>Landscape maintenance residues bonus</strong></td>
<td></td>
<td></td>
<td>Input substrate tariff - class II</td>
<td>Input substrate tariff - class II</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(ecological valuable substrates as slurry or landscape maintenance residues)</td>
<td>(ecological valuable substrates as slurry or landscape maintenance residues)</td>
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<td></td>
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<td></td>
<td>6,00 – 8,00 ct/kWh</td>
<td>6,00 – 8,00 ct/kWh</td>
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<tr>
<td><strong>CHP bonus</strong></td>
<td>2,00 ct/kWh</td>
<td>ChP bonus 3,00 ct/kWh</td>
<td><strong>Mandatory heat use</strong></td>
<td><strong>No obligation use of heat</strong></td>
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<tr>
<td><strong>Technology bonus</strong></td>
<td>2,00 ct/kWh</td>
<td>Technology bonus</td>
<td>Gas upgrading bonus</td>
<td>deleted</td>
</tr>
<tr>
<td>(e.g.: dry fermentation, gas upgrading)</td>
<td></td>
<td>(e.g.: gas upgrading, fuel cells)</td>
<td>1,00 – 3,00 ct/kWh</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,00 ct/kWh</td>
<td></td>
<td></td>
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<tr>
<td><strong>Emission reduction bonus</strong></td>
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<td>Emission reduction bonus</td>
<td>deleted</td>
<td>deleted</td>
</tr>
<tr>
<td>(formaldehyde emission)</td>
<td></td>
<td>1,00 ct/kWh</td>
<td></td>
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</table>
Economic and social drivers for optimal bioenergy use

• **Status:**
  • Is bioenergy important?

A. It is not important
B. It can be compensated through wind power systems
C. It can be compensate through PV
D. It is important for the baseload
Economic and social drivers for optimal bioenergy use

- **Status:**
  - Bioenergy is already an important part of the energy mix

- **Power production from biomass in TWh**
  - Jan: 4.0, Feb: 3.9, Mrz: 3.7, Apr: 3.9, Mai: 3.8, Jun: 3.8, Jul: 3.5, Aug: 3.5, Sep: 3.5, Okt: 3.5, Nov: 3.8, Dez: 4.0

- **Total of renewable energy in TWh**
  - Jan: 25.5, Feb: 22.3, Mrz: 23.1
Economic and social drivers for optimal bioenergy use

Share of renewable energies in final energy consumption

- Electricity
- Heating/Cooling
- Transportation

Quelle: BMWi, AGEE-Stat (Februar 2019)

www.slido.do code # C436
“Filling the Gap” of future domestic biomass demand

Energy scenario for Germany 2050 not feasible only with biobased residual and waste materials

- **National Renewable Energy Action Plans** (EU-MS 2010; Ukraine 2014)
  Clean Energy Proposal (11/2016)
- **National renewable laws | regulations**
- **Tax exemptions**
- **Common Agricultural Policy (since 1962)**
- **Nitrates Directive**
- **National incentive programmes**

Source: FNR, 2016 based on and modified after AGEB 2015, BMWi (forecast) 2014
Economic and social drivers for optimal bioenergy use

• Status:
Who are you?

A. Household  
B. Firm / Enterprise  
C. Government / Public authority
Economic and social drivers for optimal bioenergy use

• **Group household:**
  1) Cost in term of capital investment and energy
  2) Security and comfort related to supply of bioenergy
  3) Local bioenergy supply: employment, welfare and local tax income

**Future:**
choose criteria how to use scarce resources to facilitate outcomes that are in the best interest of society/households

Economic and social drivers for optimal bioenergy use

• Group Firm / Enterprise:
  A. Technically feasible
  B. Economically feasible
  C. Socially feasible

Primary biomass demand in 2020 and biomass potential in EU Member States (MS)

What is an innovation ecosystem in the bioenergy sector?

Criteria
  • GHG mitigation and carbon sequestration
  • Creation of new jobs in rural areas
  • Increase of biodiversity
  • Avoidance/minimization of conflicts in the ‘food vs. fuel’ debate

Economic and social drivers for optimal bioenergy use

- Group Government / Public authority:
  
  I. Economically feasible
  II. Socially feasible
  III. Harmonizing policies
  IV. Land use demand for energy & food?

Criteria
- GHG mitigation and carbon sequestration
- Creation of new jobs in rural areas
- Increase of biodiversity
- Avoidance/minimization of conflicts in the ‘food vs. fuel’ debate
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