

Sustainable biomass mobilisation - Risks and opportunities

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1 Risks

1.1 Competition of use in forestry

- Industrial use of wood versus increasing energetic use (in some Nordic countries)
- Material use versus energetic use: log timber is used for co-firing with coal (in some CE countries)

Competition of use in forestry

- Competition of wood use in four different markets:
- Material use
- Heat production
- Electricity generation
- In near future very probable: production of second generation fuels for transport

• **Threats to biodiversity in forests**

- Total removal of trees including tops, branches, foliage, stumps, roots, leads to nutrient depletion
- Standing and lying dead trees provide good living conditions for some species of fungi and beetles
 - A certain amount should be left for rejuvenation of woods, for living space for insects and small animals



Bioenergy Promotion

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The Federal Ministry
for the Environment,
Nature Conservation
and Nuclear Safety

4 biomass

Threats to biodiversity

Harvesting with big machines

- destroys wide areas
- causes soil compaction
- no fast recovery



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1.2 Risks - Competition of use in agriculture

- In Germany a considerable increase of maize, rye and rape seed for transport biofuels occurred within a few years, due to promotional measures
- This has led to competition with food and fodder
 - therefore biofuels quota have been reduced

Competition of use in agriculture

Maize, rye and rape seed are also used for biogas
Expansion of area in State Brandenburg in ha:

	<u>2004</u>	<u>2007</u>
Maize	54	20.700
Rye	17.000	65.000
Rape seed	33.000	65.000

2000-2008: 151 new biogas plants for heat and electricity

Threats to biodiversity in agriculture

- Monocultures of plants for transport fuels or biogas
 - Great amounts of pesticides and fertilisers used which affect soil and water quality negatively
 - Loss of fertile mould through wind blowing over large areas
 - Loss of species in flora and fauna
 - Monotonous landscapes

Threats to biodiversity in agriculture

Industrialisation of agriculture

- Deployment of big machinery
 - threat to animals
- Few employees needed
 - socially negative impact in rural areas

2 Opportunities

2.1 Sustainable Forest Management

- Cascading use of wood
 - material use primarily, residues like dry wood, dead wood, thinnings, scrubs, for energy use
- Sustainable, i.e. adjusted thinning and felling practices preserve the ground ecosystem and contribute to regeneration and biodiversity

2.2 Sustainable Agricultural Production

- **Silvoarable and silvopastoral agroforest systems with environmental benefits, e.g.:**
 - **Avoid washing out of nutritive substances and erosion,**
 - **improve micro-climate and riparian forest buffers,**
 - **wind guard plantations avoid loss of mould and preserve living space for birds and other small animals**
- **Integrated silviculture and horticulture**
- **Extensive energy plantations like short rotation coppice (to be removed from Forest Law and treated as agricultural land)**

- **Example:**
- **Short Rotation Coppice**

(Poplar, willow, acacia, miscanthus)

- Only minor interventions in soil
- Continually enrichment of humus
- Minor nutritive requirements
- No or low deployment of pesticides
- Mobilisation of nutrients from deeper soil layers
- Particularly applicable for moist sites
- Maintenance efforts only in the first two years
- Nearly undisturbed living space for wild animals
- Low amount of work



- **Regional Land Use Strategies - Multi-use concept realised on one area**
- **Extensive cultivation systems with perennial plants**
- **Short rotation coppice**
- **Biofarming, biogas plant**
- **Pellet production**
- **Local heat grid**
- **Regional value creation**
- **Nature protected area**
- **Recreation area for inhabitants and tourists**
(Project ELKE, IfaS, Umweltcampus Birkenfeld, FH Trier)

- **Example for a multi-use concept on one area**

Sustain. Farming at
Scheyern, Bavaria

Small-scale
agroforest system
poplar, willow, etc.
planted between
existing crop
rotation

Control area with
conventional farming



2.3 Waste to Energy

- Residues from forests, agriculture and landscape management
- Organic waste from households, sewage sludge
- Landfill gas treated and fed into the natural gas grid will capture methane and carbon dioxide, and thus contribute to emissions reduction

Local/regional material flows must be organised and canalised, synergies identified and used

2.4 Mobilisation of New Biomass Resources from Degraded or Abandoned Land

Areas left from former surface mining of brown coal can be re-used for growing energy plants in larger dimensions

- this leads to recultivation of soils and flora and fauna



- **But**
- Areas formerly used for military training are in most cases contaminated with old munition – these should be left totally to nature to enable the recovery of biodiversity
- **(In Brandenburg wolves have come back to former military land, also certain plants which had disappeared decades ago)**

Basic political instruments

- National sustainability strategy, or goals formulated
- National biodiversity strategy (all BSR countries and AT, CZ, DE, HU, IT, SI), PL, SK formulated goals
- National Biomass Action Plan (AT, CZ, DE, EE, SK)
- EU suggestions for voluntary national sustainability standards 02/10

Thank you
for your attention!

