Paludiculture

Potential in North East Germany

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Natural versus drained peatland

Mire = growing peatland

Drained peatland

Nabu 2012
Peatlands of Mecklenburg-Western Pomerania

- ca. 300,000 ha
- 13% of the total area
- 95% are drained
Peatland Drainage

- peat degradation
- subsidence
- increase of drainage costs
- management problems

25tons CO$_2$ eq ha$^{-1}$a$^{-1}$
Annual CO₂ emissions in Mecklenburg-Western Pomerania

Agricultural used peatlands show highest emissions

MLUV 2009

Emissions in 10⁶ t CO₂-equ per year

- Public energy and remote heating supply
- Industry
- Traffic
- Small customers
- Emissions from peatlands

Used For Forestry
Used For Agriculture
Semi-natural
Estimation of GHG-Emissions from peatlands

GHG-emissions
$\text{t CO}_2$-aq ha$^{-1}$ yr$^{-1}$

water table[cm]
Rewetting of peatlands

Loss of agricultural land
Use wet peatlands!

Paludiculture
Sustainable land use of peatlands

- Production of biomass
- Preservation of the peatbody
- Reduction of greenhouse gas emissions
- Maintain ecosystem services

"palus" – lat.: swamp, marsh

Paludiculture
Sustainable productive utilisation of rewetted peatlands

Peatland conservation by sustainable land use
Nature conservation vs. paludiculture

- Rewetting
- Frequency of harvesting
- Water management
- Planting
- Fertilisation

Intensity of land use

Nature conservation management vs. Paludiculture
Paludibiomass as a raw material

Photo: S. Wichmann

Photo: S. Wichmann

Photo: www.typhatechnik.com
Paludibiomass as a biofuel

Foto: W. Wichmann

Foto: S. Wichmann
Foto: L. Lachmann
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Paludiculture
Potential for Mecklenburg-Western Pomerania
Paludiculture Potential for Mecklenburg-Western Pomerania

GIS-analysis for Greifswald

- 30 km radius
- 37,000 ha (16%) peatlands
- expert guess: 7,000 ha for paludiculture
- 56,000 t biomass (8 t ha\(^{-1}\))

→ 19% suitable for paludiculture
Paludiculture - Potential for Mecklenburg-Western Pomerania

Reduction of GHG emissions

300,000 ha peatlands

→ 57,000 ha paludiculture

Rewetting
25 t CO₂ eq ha⁻¹a⁻¹
→ 10 t CO₂ eq ha⁻¹a⁻¹
→ 855,000 t CO₂ eq a⁻¹

Substitution of fossil fuel
456,000 t biomass (8 t ha⁻¹)
→ 188,000 t fuel oil
→ 570,000 t CO₂ eq a⁻¹

Reduction of ~ 1.4 Mio t a CO₂ eq a⁻¹
Conclusion

- Sustainable „wet“ peatland agriculture is needed
- Utilisation of biomass from wet peatland is possible
- Paludiculture on fen peat can provide large amount of biomass for different purposes
- Paludiculture can reduce greenhouse gas emissions from peatland