

Condition, restoration and sustainable use of peatlands in Europe what do they & what do we need?

Franziska Tanneberger

'Bring back bogs' Webinar, 27.10.2021



What is a peatland?

- A peatland is an area with a naturally accumulated layer of peat at the surface
- Peat is sedentarily accumulated material consisting of ≥30% dead organic material; peat formation is carbon sequestration
- The peat layer is preserved under wet conditions but oxidises to CO₂ under drained conditions
- A mire is a peatland with a vegetation that forms peat (= undrained peatland).
- Organic soils (IPCC 2014) are soils with a high concentration of organic matter and used in UNFCCC reporting → most organic soils=,peatlands'
- Bogs are only fed by precipitation whereas fens are also fed by surface/groundwater



Global distribution of peatland





→ new Global Peatland Map, will be launched on 9.11.2021 at COP26

https://www.greifswaldmoor.de/global-peatland-database-en.html

Hans Joosten, Franziska Tanneberger & Asbjørn Moen (eds.)

Mires and peatlands of Europe

Status, distribution and conservation

Started in 1991 Published in 2017 ^(C)

→ 49 'country' chapters → 134 national authors



Schweizerbart Science Publishers GREIFSWALD MIRE CENTRE

NTNU University Museum

https://www.schweizerbart.de/publications/detail/isbn/9783510653836/Joosten_Tanneberger_Moen_Mires_and_peat

The peatland map of Europe

→ incl. ,shallow-peat lands' of European Russia: c. 1,000,000 km²

The peatland map of Europe

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Tanneberger et al. (2017) Mires and Peat

Only 16% of the peatland area is located in protected areas → often this does not equal ,protection'





Annual GHG flux from anthropogenic peat loss and peat formation in 1850-2100



- → In 1960 the global peatland biome turned from a net sink into a net source of soil-derived GHGs due to drainage and peat oxidation
- → Annual backconversion of most of the drained area would render peatlands GHG neutral, whereas emissions from peatland may comprise 12–41% of the GHG emission budget for keeping global warming below +1.5 to +2 °C without restoration
 Leifeld et al. (2019) Nature Climate Change

Peatland GHG emission hotspots: SE Asia, Europe





Prompt rewetting of drained peatlands reduces climate warming despite methane emissions



Günther et al. (2020) Nature Comms

This implies a fundamental change of agriculture on peatlands

Conventional agriculture on organic soils

Sneaking loss of the peat layer ~30-40 t CO2e ha -1 yr -1 (IPCC 2014)

Little/no mire-typical biodiversity

Paludiculture

Preservation of the peat layer 0-8 t CO2e ha -1 yr -1 (GMC own figures)

Mire-typical biodiversity



New value chains from paludiculture

- Construction and insulation material
- Fibre for paper and moldings
- Bioenergy
- Biorefinery
- Potting soil and substrates

Products are 3 (4) fold climate protective:

- a) Reduction of soil-borne emissions
- b) Replacement of fossil ressources
- c) Carbon sequestration in long-life products
- d) Carbon sequestration through new peat formation







Wet peatlands help achieving the SDGs





Thank your for your attention. #peatlandsmatter

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