Managed organic soils: new data on GHG-exchange for national reporting and cost-efficient mitigation

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Contact:

Dr. Annette Freibauer
Max-Planck-Institute for Biogeochemistry (MPI-BGC)
Jena, Germany, www.bgc-jena.mpg.de
and
Institute of Agricultural Climate Research
Johann Heinrich von Thünen-Institute (vTI),
Federal Research Institute for Rural Areas, Forestry and Fisheries
Bundesallee 50, D-38116 Braunschweig, Germany
Phone: (+49) (0)531 596 2634
Fax: (+49) (0)531 596 2599
E-mail: annette.freibauer@vti.bund.de
http://www.vti.bund.de

Dr. Matthias Drösler
Chair of Vegetation Ecology
Department of Ecology and Ecosystem-Management
Technische Universitaet Muenchen
Am Hochanger 6, D-85350 Freising, Germany
Phone: +49 (0)8161 713715
Fax. +49 (0)8161 714143
http://www.wzw.tum.de/vegoek/personen/droesler/index.html

Main points of side event

GHG sinks and sources from managed organic soils
Natural peatlands are about climate-neutral. The CO_2 sink compensates CH_4 emissions. Intensively managed, drained peatlands emit up to 40 t CO_2-equiv ha^{-1} a^{-1}.

European peatlands
7% of Europe´s soils are peatlands, 60% of which are drained. Using GIS data of peat soils and land use and European emission factors derived from all available field measurements, our estimate is that European peatlands emit 117 (18-424) Tg CO_2-eq a^{-1}, which is almost entirely due to managed, drained peat soils.

Anthropogenic and natural drivers of peatland carbon and GHG balance
The main drivers of European emission gradient are: Water table, Air temperature, Radiation.

A closer look at Germany´s managed organic soils
5% of Germany´s soils are peatlands, 90% of which are drained. According to the German National Inventory Report 2009, managed peat soils emit 45 Tg CO_2-eq a^{-1}. This represents 4.5 % of the total GHG-emission of Germany in the year 2007.

Mitigation options and costs
Based on measurements of GHG fluxes in peat sites across Germany and an economic survey, mitigation costs in Germany were estimated as follows:

- fen-restoration mitigates up to 30 t CO_2-equiv ha^{-1} a^{-1};
  abatement-costs 25-50 (land acquisition) or 3-4 (land lease) € / t CO_2-equiv.
- bog-restoration mitigates up to 15 t CO_2-equiv ha^{-1} a^{-1};
  abatement-costs 15-40 (land acquisition) or 0-2 (land lease) € / t CO_2-equiv.
- Mitigation potential for Germany around 35 Tg CO_2-eq a^{-1}, but implies that productive agricultural land is lost for traditional farming. food/feed loss.

Outlook for "MRV"
Mitigation measures can be measured, reported and verified. The projects underlying this side event have shown that a combination of measurement and modelling is cost-effective. However, measurements and mitigation potentials need to be identified at the project level. Water table and land use intensity are good indicators for explaining net climate effect differences between managed peatland sites.

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Disclaimer
The side event was based on unpublished, preliminary data, which must not be further distributed without the consent of the authors.