The Paris Agreement and emission reductions – are peatlands hotspots?

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The Paris Agreement established a clear long-term goal: to limit temperature increase to 1.5°C above pre-industrial levels. To achieve this goal, the Parties aim to reduce greenhouse gas (GHG) emissions as soon as possible. To reduce emissions, each signatory agrees to prepare a set of nationally determined contributions, to communicate them every five years to a public registry, and to assure that they provide progress towards the long-term goal.

Peatlands cover only about 3% of the terrestrial surface. But compared to other habitats, they contain extraordinary amounts of carbon, largely in their organic, waterlogged soils. This long-term carbon store in peat soils equals the amount of carbon stored in the short-term in all terrestrial biomass (550 gigatonnes), or twice as much as in all above-ground forest biomass. Living peatlands ("mires" - about 85% of all peatlands) accumulate carbon by annually sequestering up to 0.1 gigatonnes globally. Keeping this carbon safely stored in peat soils for the long term, by safeguarding these mire ecosystems, is the highest priority to achieve the goal of the Paris Agreement.

Draining peatland soil releases carbon dioxide into the atmosphere. Currently, drained peatlands cover less than 0.5% of the terrestrial surface, but contribute 5% to the anthropogenic GHG emissions, and this is about double the amount of carbon dioxide emissions created by aviation. Thus, degraded peatlands are global emission hotspots. Avoiding to trigger new emissions by draining additional mires is therefore a second priority.

Rewetting already drained peatlands can contribute to a substantial reduction of GHG emissions, because drained peatlands currently emit about 1.5 gigatonnes of GHG every year. Three quarters of these emissions originate from drained peatlands in Indonesia, the European Union, the Russian Federation, China and Mongolia. Emissions from drained peat soils correspond to 30% of all emissions from agricultural lands, including mineral soils, paddy fields, livestock and industrial fertilizers. Emission hotspots from drained peatlands can easily be identified and located. Changing dry land uses in these areas to land uses on rewetted soils ("paludiculture") can contribute substantially to national emission reduction programmes and should be considered as a priority. Emission reductions focused so far mainly on industrial emissions, but are increasingly also focusing on reductions obtained through land-use changes, e.g. by including wetlands in such LULUCF policies. The IPCC 2013 wetland supplement provides guidance how to account for emission reductions in rewetted peatlands.

Under the Ramsar Convention, Parties agree to conserve the existing mires for the multiple services they provide for carbon sequestration, biodiversity support, water retention and purification. Voluntary emission reduction programmes work best, if they respond also to these additional drivers. Parties are encouraged to include peatland restoration as part of their nationally determined contributions to reduce emissions under the Paris Agreement. Shifting from drainage-based peatland agriculture and forestry to sustainable cultures on rewetted soils will reduce GHG emissions. Further research and development is encouraged to elaborate sustainable ways of peatland resource use, including sphagnum farming and other novel restoration techniques.