

Conserving, restoring and safeguarding wetlands to achieve climate goals

Wetlands comprise healthy inland lakes and river systems, marshes, swamps, peatlands (tropical, cold and upland), as well as coastal mangroves. Though they are the basis of millions of livelihoods, store untold amounts of carbon and water, provide flood protection and buffer storms, and are home to rich biodiversity, these are the most rapidly declining ecosystems in the world.

As the demand for water, land and food increases and climate change intensifies, they are coming under acute pressure, even from climate change adaptation and mitigation measures such as increasing energy supplies from hydropower and biofuels. This raises the need to ensure that climate policies promote positive and minimize negative impacts on wetlands. Below we set out four recommendations for including wetland management, conservation and restoration in climate pledges.

1 Include wetlands in revised NDCs to enhance climate ambition

Wetland-based approaches and solutions can be included in NDCs in the following ways:

- Climate change impacts on wetland systems
- Wetland ecosystem services that benefit livelihoods and on which local and national economies depend
- Wetlands' contribution to mitigation efforts through wise-use, sustainable management, restoration, and/or conservation
- The contributions of wetlands in reducing vulnerability to climate change, supporting adaptation
- Wetland synergies between adaptation, resilience and mitigation measures
- Wetland restoration, conservation or sustainable management targets as measurable, time-bound and based on science or local knowledge

2 Commit to conserving and restoring peatlands

Peat covers about 3% of the global land surface (4 million km²) and is considered the planet's largest store of natural ecosystems' carbon. Peatlands store about 30% of terrestrial organic carbon (400-700 Giga tons). Peatlands also act as water purifiers and reserves and support a unique biodiversity when in their natural state.

Some 15% of the world's peatlands have been drained or transformed for crop agriculture, forestry and grazing, which leads to oxidation and the release of the carbon stored in peat. Degrading peatlands contribute at least 5% to the total global anthropogenic emissions despite covering only 3% of the global land surface.

The world's stock of tropical peat is estimated to be as much as 350 billion tonnes, making a global total of more than 800 billion tonnes – equivalent to 20 years of carbon emissions from burning fossil fuels. The discovery of vast peat stores across the Amazon and Orinoco rivers, the Congo, Sudd and Inner Niger Delta – in other words, potential 'carbon time bombs'—provides important new

impetus for the protection of tropical wetlands against land use change and degradation. The tropical alpine peatlands are water towers for vast areas vulnerable to droughts.

Besides its disproportionately high contribution to climate change, peatland degradation has other important consequences with major social and economic effects. Drained peatlands are fire prone, and fires have repeatedly destroyed millions of hectares and impacted the health of people and the economy. Drained peatlands lose their capacity to accumulate and store water and consequently reduce flood and drought resistance of the large areas, ecosystems, communities and species. Loss of peat soil due to oxidation and fire results in subsidence of the peatland surface, which in coastal lowlands brings the land surface down to sea or river level and eventually leads to frequent or even permanent flooding and loss of productivity.

Local economy and livelihood approaches such as paludiculture (sustainable management of peatlands through wet agriculture), integrated mangrove-aquaculture and other agroecosystems provide sustainable alternatives that prevent severe wetland degradation.

Availability of first tier-level generic and globally available land classification data makes it easy to comply with reporting on national carbon-emission reductions following international climate agreements as defined under IPCC. The *IPCC 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*, provides a standardized methodology for reporting and accounting for peatland carbon emissions and removals and explains how to include them in National Inventories.

The Paris Agreement recognizes the importance of land in storing greenhouse gas emissions (Art. 4.1). It instructs Parties to elaborate on accounting and to 'include all categories of anthropogenic emissions or removals in their nationally determined contributions and, once a source, sink or activity is included, continue to include it...' (para. 31.c). In doing so, it instructs Parties to draw "from approaches established under the Convention and its related legal instruments as appropriate". This opens up the opportunity to report and account for 'Wetlands Drainage and Rewetting (WDR)', as included in 2013 as a new activity to Art. 3.4 for the second commitment period of the Kyoto Protocol.

The priority of peat-rich countries should be to fully protect and conserve their peatlands in as intact a state as possible to avoid greenhouse gas emissions resulting from peatland degradation and to offer a rich set of eco-system services. Peatlands that have been drained and degraded for economic purposes, should be restored to a functioning state. Rewetting, ecosystem restoration and phasing out drainage-based peatland use and practicing sustainable management is vital to reducing greenhouse gases emissions and preventing peat fires and floods.

Countries should recognize and quantify the wise use of peatland and peatland restoration in their NDCs. They should include a concrete action plan with targets, planning and legal processes including strengthening and enforcement of laws, policies and wetland action plans, knowledge and capacity needs, and key stakeholders including local communities, timeframes and costs, based on scientific evidence and local knowledge.





3 Restrict land-use change in permafrost areas to maintain vast carbon stores

Permafrost covers 25% of the terrestrial part of the globe concentrated in the *Arctic* and high mountains. A quarter of all the carbon stored in the world's wetlands, soils and forests is estimated to be found in the frozen peatlands of Western Siberia though the greatest quantities are in the southern areas most susceptible to thawing. Canada, Alaska and northern Scandinavia have significant permafrost reserves. Many countries do not recognize presence of permafrost within their borders.

Permafrost is distributed in high altitudes and high mountains and is closely connected to peatlands. Use of land where there is permafrost, such as drilling, mining, fragmentation through road and pipelines infrastructure and overgrazing destroy organic soil and peat layer cover protecting permafrost areas and causes its thawing. This is enhanced and accelerated by climate change.

The total store of carbon accumulated in permafrost peat is estimated at around 1700 billion tonnes, twice the amount in the atmosphere. If land use change and global warming together accelerate thawing, this carbon timebomb could bubble up -- as carbon dioxide if there is oxygen present, or as methane if not – and cause an unstoppable feedback loop of accelerated emissions and warming.

Permafrost thaw-induced GHG emissions are so far neglected by the climate change research community. The land use change is not considered as activity neither enhancing, nor reducing emissions from permafrost ecosystems. Permafrost thaw also results in losses of habitats of unique and globally significant ecosystems, species and genetic diversity, depriving indigenous communities of the basis of their livelihoods.

As permafrost thaws, non-desirable and potentially toxic substances, for example mercury, are released into water systems, both locally and globally. We encourage the scientific community, businesses operating in the Arctic and other permafrost areas, countries and international organizations to allocate resources to provide solid knowledge for the initiation of relevant decisions of the UNFCCC and other respectful multilateral environment agreements.

In collaboration with Wetlands International and funded by the Asian Development Bank, the Government of Mongolia developed a Strategic Plan (2016-17) for peatland restoration and sustainable management in Mongolia. Mongolia's peatlands preserve and depend on permafrost, and regulate water in riverine highland landscapes, which prevents desertification and supports livelihoods and biodiversity. They are also the most productive pastures and important carbon stores.

Peatlands and organic soils play a crucial role for permafrost maintenance and protection. Countries should include land-use change in permafrost areas in their National GHG Inventories and National Determined Contributions. Restriction regulations in Non-Annex 1 countries should be compensated and capacity for accounting developed.

4 Shift from grey to green infrastructure by 'building with nature'

While most NDCs include adaptation measures in the water sector, these are largely focused on grey infrastructure. Despite the potential gains from nature-based solutions, they currently attract less than 1% of total investments into water resource management.

While 65% of the NDCs stress the vulnerability of the water sector to climate change and almost 80% include adaptation measures in the water sector, a limited number of NDCs identify the need to protect and restore water ecosystems.

Building with Nature is a new way of planning, designing and realizing infrastructure for coastal, river and delta management by leveraging nature's protecting functions from increasing climate disasters. It is a way of design water infrastructure so that it works with nature rather than against it and is often more cost-effective and affordable than traditional hydraulic engineering approaches, delivering additional vital economic, environmental and social services.

'The Building with Nature Asia' initiative, spearheaded by Wetlands International and Indonesia, together with partners, explores possibilities for the implementation of Building with Nature in 15 landscapes in five countries by 2030, boosting the resilience of 30 million people. It is part of the Global Commission on Adaptation's Action Tracks to Accelerate Adaptation.

Include political commitments and plans to encourage investments in multi-functional green infrastructure solutions in NDCs. Reduce over-reliance on engineered infrastructure solutions. Instead, green infrastructure can substitute, augment or work in parallel with grey infrastructure in a cost-effective and sustainable way to rebalance the water cycle. Avoid investments in projects that disrupt natural floodplains or hydrological cycles, alter natural water flows or redistribute water resources unevenly between up and downstream communities. For urban planning, avoid encroachment on wetlands and rehabilitate wetlands in cities and their surrounding landscapes to reduce water risks.

