

Saving peatlands

For Global Climate, People and Biodiversity

Peatlands support millions of people around the world, store twice as much carbon as all forests worldwide, and are home to many threatened species of plants and animals. Peatland degradation has devastating economic and social consequences. Wetlands International promotes global and national land use practices and policies that counter peatland destruction and degradation, promote conservation incentives and support local communities.



What are peatlands?

Peatlands are waterlogged wetland areas with organic soils (peat), which result from the accumulation of dead plant material over thousands of years. Peatlands cover about 3% of the total global land surface (over 4 million km²), which makes up about half of the world's wetlands. Although 60% of the world's peatlands are in Russia, Canada, the USA and Indonesia, they occur in over 180 countries stretching from boreal and subarctic regions to tropical zones, including in high mountain areas.

High value ecosystems for climate, people and biodiversity

Peatlands provide a wide range of **goods and services**. Local rural communities, including many indigenous peoples, continue to depend on peatlands for agriculture, forestry, grazing and energy. Extracted peat is also used in growing media for horticulture, a major industry. Natural peatlands store huge amounts of water, protecting downstream areas against floods and regulating water supply throughout the year.

Being unique and complex ecosystems of global importance for **biodiversity**, peatlands are home to many endemic and specialised species:

- In tropical peatlands: a tremendous diversity of freshwater fish, and **endangered species** such as the Sumatran Tiger, Orangutan, Malayan Tapir, Hairy-nosed Otter, Storm's Stork, and White-winged Duck.
- In temperate and boreal peatlands: reindeer, black bear, moose, and caribou.
- Plants found in peatlands range from giant tropical trees such as Meranti, Ramin and Ironwood, to small but precious plants like cloudberry, an important dietary supplement for Arctic residents.

As carbon stores, peatlands play a key role in regulating the **global climate**, whereas tropical peat swamp forests also have an important role in regulating regional climate. The amount of carbon stored in peatlands is around 550 Gt; double the amount of carbon stored in the biomass of all the world's forests.



Worldwide peatland degradation

Peatlands are disappearing at an alarming rate

In Southeast Asia, the deforestation rate of tropical peat swamp forests is twice that of other forests. Over 90% of peat swamp forests in the region has been converted, drained or logged. The rapid expansion of oil palm and pulpwood plantations is accelerating this loss.

Peatland degradation and loss is not limited to the tropics. Many countries in Europe have lost their natural peatland heritage due to agriculture, forestry and peat mining. Peatlands in North and South America, China and Russia are affected too.

Climate impacts

Two billion tonnes of CO₂ are emitted annually as a result of peatland drainage and reclamation, mainly for forestry and agriculture. This is equivalent to **6% of the global anthropogenic CO₂ emissions**, and represents almost 25% of the total carbon emissions from the land use, land use change and forestry (LULUCF) sector. Half of these emissions come from a mere 13 million hectares of degrading tropical peatlands, mainly in Indonesia and Malaysia.

Unlike deforestation, which causes one-off and almost immediate emissions, the emissions from drained peatlands **continue for decades and even centuries** as long as the land remains drained and the peat keeps oxidising. Fertilisers for agriculture on peatlands lead to high emissions of nitrous oxide, while drainage channels result in emissions of methane; both very potent GHGs.

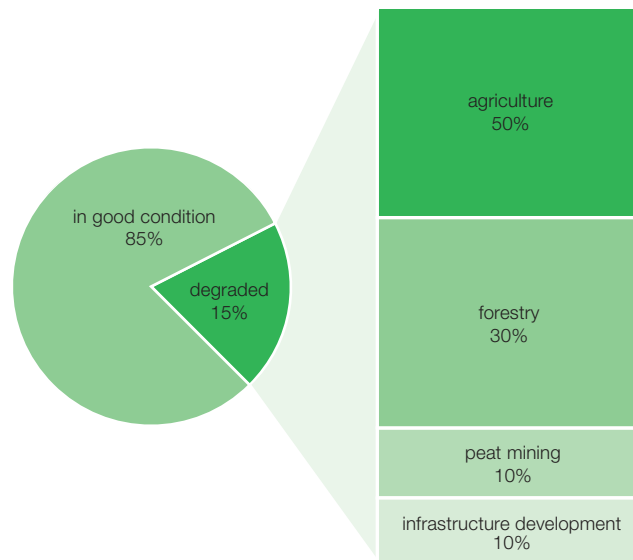
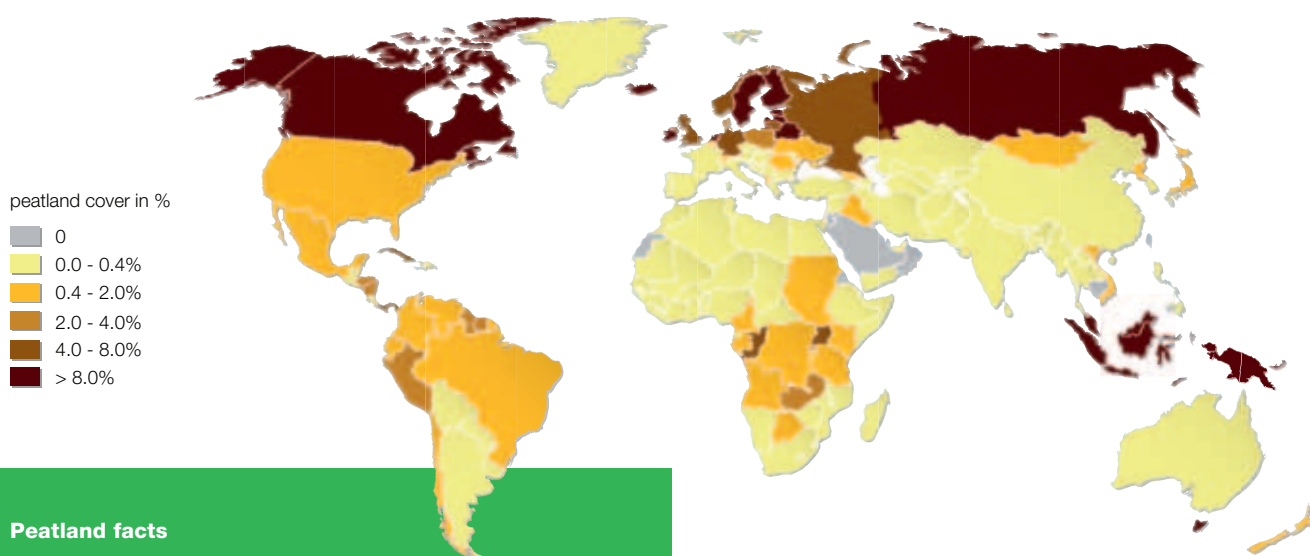


Figure 1. Drivers of peatland degradation.

The conservation and rehabilitation of peatlands is therefore critical for **climate change mitigation**.

Subsidence and land loss

Soil subsidence is a very serious issue. Sarawak, the largest state in Malaysia, may lose around 10 per cent of its land mass to flooding and salt water intrusion by the end of the century, if current land-use trends continue. This land loss will have an enormous economic impact and will put local communities under an increasingly high risk of flooding in the coming decades. This same fate threatens most of the peatland lowlands of western Indonesia and Malaysia.



Peatland facts

Peat carbon stocks: 466 - 591 Gt C¹

Tropical peatland carbon stock: 88.6 Gt (15-19%)²

Peatland emissions: ~2 Gt CO₂ = 6% of global CO₂ emissions.

Health, biodiversity and economic losses

Drainage of peatlands **not only destroys habitats and biodiversity**, but it also has severe health and economic consequences. Drained peatlands are fire-prone. Peat fires cause **major economic losses** in transport and tourism, and affect public health. The notorious frequent transboundary haze events in Southeast Asia have caused billions of dollars in losses. The total cost of Indonesia's peat fire episodes in 1997/1998 was estimated at around **US\$ 9.3 billion**, as a result of increased health costs, lost natural resources, lost production and lost tourism revenues.

Subsidence occurs when peat soils compact, shrink and dissipate as a result of drainage and peat oxidation, literally disappearing into thin air as CO₂, and down the drain. In many places the drainage base will be reached before all the peat is gone, causing flooding and salt water intrusion along the coast.

Wetlands International is leading the battle to conserve and rehabilitate peatlands

Changing international and national policies that affect peatlands

We target national and international policy frameworks that deal with climate change mitigation to make sure they take peatland emissions into account and create incentives for more sustainable practices.

- We are the lead organisation in advocating incentives for peatland conservation, restoration and

Peatlands degraded by human use (drainage)

cover less than **0.5% of the global land surface** but cause **6% of all global CO₂ anthropogenic emissions** and **25% of all CO₂ emissions from the land use, land use change and forestry sector**.

responsible use under a global climate deal at the United Nations Framework Convention on Climate Change (UNFCCC) to enable countries to deliver emission reductions and to enhance benefits for people and biodiversity (see Box 1).

- We succeeded in excluding biofuels production on newly and extended drained peat soil from subsidies and support within the EU, through joint advocacy initiatives with like-minded partners.
- We provided technical expertise to the Indonesian government on the development of their national REDD+ strategy, and influenced bilateral REDD+ collaborations, including the bilateral agreements between Indonesia and Norway or Australia.

Working to reduce the impact of industry on peatlands degradation

We work with industry sectors to promote sustainable development through the development of sustainability criteria.



“Peatland conservation, restoration and improved management bring important benefits, create livelihoods through alternative activities and mitigate climate change.”

Marja-Liisa Tapio-Biström, Mitigation of Climate Change in Agriculture Programme, FAO



Community-led peatland rewetting and reforestation in Central Kalimantan, Indonesia. By Marcel Silvius & Yoyok Wibisono

- As an active member of the Roundtable on Sustainable Palm Oil (RSPO) we work to prevent further expansion of oil palm plantations on peat and to promote best practice management for existing plantations. On our initiative, the RSPO has set up working groups on greenhouse gases and peatlands, which review the sustainability criteria and have developed guidelines for best management practice for existing oil palm plantations on peat.
- We work to stop peat mining for energy, and help to create a responsible peat-based growing media industry. Peat extraction for horticulture should focus on heavily degraded peatlands, and require the rehabilitation of the area and its key ecosystem services.

Peatland rehabilitation and conservation in the field

We work with the private sector, government and local communities to demonstrate and create incentives and investment in large-scale peatland rehabilitation and long-term conservation and sustainable use.

- We implement and provide technical advice to large-scale peatland rehabilitation programmes in Russia (see Box 2) and in China's Ruoergai peatlands on the Tibetan Plateau.
- We use the 'Bio-rights' approach to stimulate and enable communities to manage their peatlands sustainably.
- We support the development of ecosystem restoration and carbon concessions in degraded peatlands, and encourage private investment for peatland conservation and rehabilitation.

- We work to improve the protection of peatlands worldwide. For example, we succeeded in having the Berbak National Park and Danau Sentarum area in Indonesia as well as the Patagonian peatlands in Argentina designated as Ramsar Sites.

'Bio-rights' are low-interest micro-credits for sustainable development, which help local communities to stop unsustainable practices and engage in the rehabilitation and conservation of their natural resources.

Knowledge building and sharing

We work with researchers to improve the scientific knowledge on GHG emissions from peatland drainage and peat fires, and help to translate this into policy and plans. We advocate practical solutions developed and tested in our pilot field projects in Indonesia, Malaysia, Brunei, Europe, Russia and China.

- We launched the Organic Soils and Peatlands Climate Change Mitigation Initiative with the United Nations Food and Agriculture Organisation (FAO). It facilitates the exchange of information among leading peat experts. We encourage replication and upscaling of our work by disseminating results and lessons learned.

“Indonesia is seriously developing forest schemes to reduce greenhouse gases emanating from terrestrial sources; such as from forests and peatlands.”

Susilo Bambang Yudhoyono, President of Indonesia

Key examples of Wetlands International at work

Box 1

Peatlands in global climate policies

Wetlands International has put peatlands on the international climate change agenda effectively. Through our efforts, measures to reduce peatland degradation have been included in the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. Outcomes of the Durban Conference (2011):

- **Incentives for emission reductions by rehabilitating drained peatlands in developed countries**
From 2013, developed countries can choose to achieve their emission reduction targets by rehabilitating drained peatlands and account for it under the Kyoto Protocol. This is cost effective because, although degrading peatlands account for less than 0.5% of the land surface of developed countries, their emissions are similar to those from forests. In the European Union, emissions from peatland degradation account for 77% of all cropland emissions.
- **Inclusion of organic soil emissions in REDD+ reporting**
Under the guidelines for submissions of information on reference levels for REDD+ (Annex of Decision 12/CP.17), participating countries are required to provide information including all significant pools, gases and activities - thus also organic soil emissions - in their forest reference emission levels. These reference levels will be used to assess their respective emission reductions. This clause creates incentives for bilateral and multilateral investments in peatland conservation, restoration and sustainable use in countries with significant peatlands.



Box 2

Restoring peatlands in Russia

In European Russia we work with a partnership of Russian and German expert agencies to provide scientific and technical advice for the restoration and rewetting of 40,000 ha of degraded peatlands in former agricultural and peat mining areas. This work, implemented in close cooperation with federal and provincial governments, prevents peat fires (such as the ones that occurred in 2010) and reduces GHG emissions. This five-year programme integrates peatland rehabilitation with paludiculture and biodiversity conservation.



Box 3

Peatland rehabilitation and conservation in Indonesia

In response to major peat fires causing international smog events, we piloted the partial rewetting of 60,000 ha of drained and degraded peatlands in the Ex-Mega Rice Project area in Central Kalimantan (Borneo), Indonesia. We avoided annual peat decomposition emissions of about 2.5 million tonnes of CO₂. We decreased the emissions from 250,000 ha by reducing the fire risk and improving the fire-fighting operations in 25 villages. We also improved access to health facilities in 17 villages, and increased awareness of peatland issues in Indonesia as a whole.

For the upscaling of these successes, we work with the private sector on investments in long-term Ecosystem Restoration and Carbon Concessions in degraded peatlands. Additionally, we have supported and provided input to the Government of Indonesia in the development of their REDD+ Strategy and other climate and land-use related policies, such as the moratorium on deforestation and peatland conversion.



Mission:

To sustain and restore wetlands, their resources and biodiversity

Join our efforts

All that we have achieved to date has been made possible by the involvement of our numerous corporate, academic, NGO, government and community partners. We invite you to join us to support our on-going initiatives to conserve and restore the world's peatlands, as fellow advocates for sound peat management, helping us carry out research and community based conservation and restoration, and funding our leading role as a champion for peatlands.

For example, join us in our advocacy at the UNFCCC, learn and share knowledge in our '*Organic Soils and Peatlands Climate Change Mitigation Initiative*' with the FAO, join our research on peatland emissions, or support our work which has helped hundreds of communities around the world come up with practical solutions to improve their livelihoods in a sustainable way. Help us to save and restore the world's peatlands for people, climate and biodiversity!

Our main partners and donors

International Climate Initiative, Germany (ICI); German Development Bank (KfW); Federal Environment Ministry, Germany (BMU); Ministry of Foreign Affairs, Netherlands (DGIS); International Peatland Society (IPS); RHP, Netherlands; Food and Agricultural Organization (FAO); Greifswald University; International Mire Conservation Group (IMCG); Ecosystems Climate Alliance; Deltares; Michael Succow Foundation (MFS); Institute of Forest Science (IFS) of the Russian Academy of Sciences (RAS); Permian Global; IUCN-Netherlands Committee.

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