Because of our education, we believe some people are foresters, other people are agronomists, other people are biologists, and other people are fisheries managers ... and then we all go in different directions. But when we talk about peatlands, we have to work together to understand each other. Because that's the only way to understand what peatlands are all about and how to manage them.

– Dennis del Castillo, Director, Forest Management and Environmental Service Program, Peruvian Amazon Research Institute (IIAP)

Hans Joosten

Ulet Ifansasti/Greenpeace // Kadir van Lohuizen/UN Environment

UN environment | GRID ARENDAL

SMOKE ON WATER

COUNTERING GLOBAL THREATS FROM PEATLAND LOSS AND DEGRADATION

A RAPID RESPONSE ASSESSMENT

SUMMARY

Peatlands: underappreciated but vital ecosystems

Peat is a substance that is largely composed of plant remains (vascular plants and mosses) which are only partly decomposed due to an absence of oxygen in a water-saturated environment.

Peatlands are among the world's most underappreciated natural treasures. Composed of thick layers of partly decomposed organic material that may have formed over thousands of years, peatlands are highly effective at storing carbon.

While covering only three percent of the Earth's land mass, they contain as much carbon as all terrestrial biomass combined, twice as much as all global forest biomass, and about the same as in the atmosphere.

Peatlands provide many ecosystem services such as flood control, water purification and habitats for unique and varied biodiversity. These ecosystems support a wide range of plants, birds and animals. They are also a home to a wide range of native foods, economically important trees and peat itself has been used as a fuel source.

Johannes Refisch

If we want to protect forests and life on land, safeguard our oceans, create massive economic opportunities, prevent even more massive losses and improve the health and well-being of the planet, we have one simple option staring us in the face: climate action.

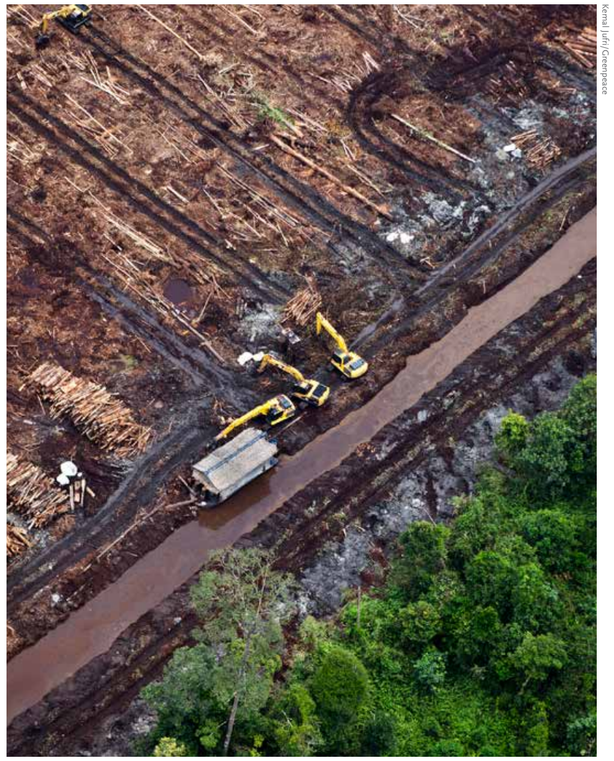
– UN Secretary-General, Antonio Guterres (31.05.17)

Drainage and degradation are global threats

Across the globe peatlands are under threat from drainage and burning for agricultural, forestry and development purposes. Fifteen percent of known reserves are understood to be either destroyed or degraded.

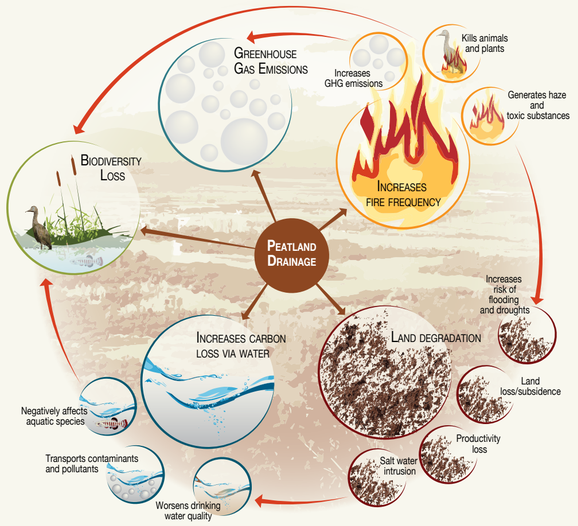
Degraded or drained peatlands release the carbon historically locked within layers of decomposed organic matter and are thought to contribute up to five percent of annual global CO_2 emissions. Half the world's peatland emissions come from Southeast Asia where high rates of deforestation, drainage and high temperatures speed up decomposition of the dry peat.

Drying out the surface of peatlands is often used to maximize agricultural use of the soil, but this leaves them vulnerable to fire which can significantly increase greenhouse gas emissions. Peatland fires can burn for a long time and the smoke carries particulate matter into the atmosphere which can adversely affect the health of communities. Dry peatlands are also susceptible to subsidence and are prone to flooding and erosion, creating further pollution problems. In coastal areas, this subsidence can lead to salt water intrusion leaving the land completely unproductive and potentially leading to the contamination of the water table.



Kemal Jufri/Greenpeace

Environmental and social impacts of peatland drainage



FAO-Mitigation of Climate Change in Agriculture (MICCA) Programme, 2014, Peatlands and Climate Change.

Lonz, 2017

Climate change will make things worse

Climate change is likely to increase pressure on peatland ecosystems, especially on those that are already degraded. Yet peatlands can play an important role in climate change mitigation by providing secure long-term storage of carbon and other greenhouse gases. However, to allow them to play this role requires putting an end to their drainage and restoring already degraded peatland areas.

What is to be done

The map overleaf complements the recently released Rapid Response Assessment called *Smoke on Water – Countering global threats from peatland loss and degradation*. That report issues a call to action on peatlands. Its main messages are:

1. Peatlands are important to human societies around the world. They contribute significantly to climate change mitigation and adaptation through carbon sequestration and storage, biodiversity conservation, water regime and quality regulation, and the provision of other ecosystem services that support livelihoods.

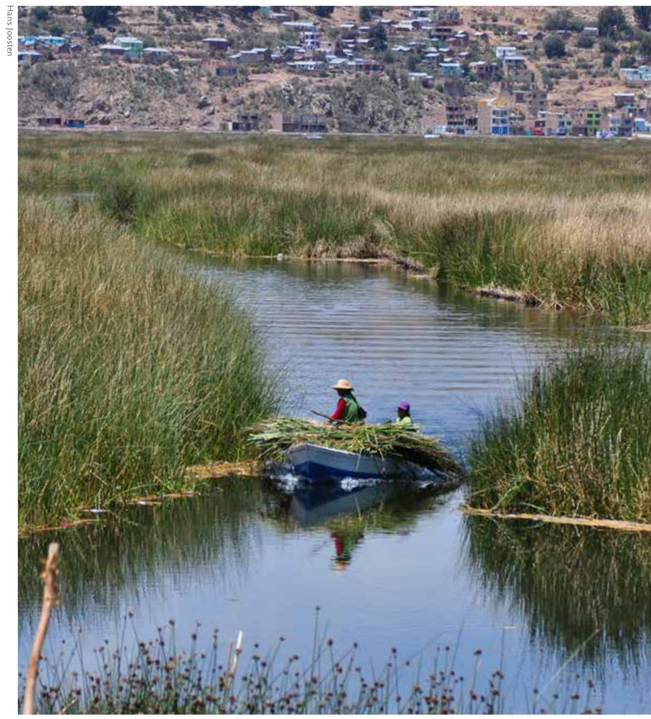
2. Immediate action is required to prevent further peatland degradation and the serious environmental, economic and social repercussions it entails. Existing options to tackle the issue vary, and for that reason implementation should be regionally adapted to local environmental, economic and social needs and characteristics.

3. A landscape approach is vital and good practices in peatland management and restoration must be shared and implemented across all peatland landscapes to save these threatened ecosystems and their services to people.

4. Local communities should receive support to sustainably manage their peatlands by preserving traditional non-destructive uses and introducing innovative management alternatives.

5. A comprehensive mapping of peatlands worldwide is essential to better understanding their extent and status, and to enable us to safeguard them. Research and monitoring should be improved to provide better maps and tools for rapid assessment and transparent use of them to underpin action and multi-stakeholder engagement.

Hans Joosten



Next step – a Global Peatlands Assessment

Smoke on Water is the first joint report from the Global Peatlands Initiative (GPI), an international partnership formed in 2016 to save peatlands as the world's largest terrestrial organic carbon stock. The Initiative partners are working to improve the conservation, restoration and sustainable management of peatlands to protect this critical ecosystem and to prevent the carbon it stores from being released into the atmosphere. Drawing attention to peatland issues and helping countries and partners to understand and make evidence-based decisions about their management will contribute to several Sustainable Development Goals by reducing greenhouse gas emissions, maintaining ecosystem services and securing lives and livelihoods by improving people's ability to adapt to change.

Peatlands: global distribution and emissions

With the warming climate, permafrost peatlands in Canada are under threat.

Soil subsidence of drained peatlands has had severe economic consequences all over the world. In Florida, peatland heights are close to sea level and subsiding peat areas are prone to flooding, spoiling the area for agriculture.

While Peru's Amazon peatlands are mostly intact, they face threats from illegal logging and palm oil plantation expansion. These peatlands are home to plant and animal species on which local populations depend.

South America could be the most peatland-rich region in the southern hemisphere, but more studies are needed.

In the United Kingdom, the best-preserved ancient human remains were found in peat.

Commercial forestry, which is prevalent across Scandinavia, is the second greatest cause of peatland land-use change.

Peatlands in the Congo Basin hold approximately 30 billion tonnes of carbon – equal to about 15 years of carbon dioxide emissions of the United States.

On the Yamal Peninsula in Siberia many plants and fish species are only found in peatlands ecosystems.

In Mongolia, half of the peatlands are covered in sedge fens which provide highly productive pastures.

In China, peatland drainage for agricultural expansion started around 200 years ago and almost all peatlands have been degraded by crop production or grazing.

In tropical and subtropical regions, peat is also found in mangrove swamps. These important coastal ecosystems are rich in biodiversity.

In Brunei, one of the last-surviving pristine peat swamp forests in the region is threatened by the development of an oil pipeline and its service roads.

In Indonesia, peat fires in 2015 released more CO_2 than the total emissions of Japan for that year. New policies prohibit activities damaging peatlands.

The Tasmanian Wilderness World Heritage Area contains a special type of peatland, referred to as blanket bogs, home to many native animal and plant species.

Peatlands emissions:
Mt CO_{2e} / yr

- < 1
- > 1 - 5
- > 5 - 10
- > 10 - 40
- > 40 - 100
- > 100

Known peatland locations

Sources: (**Peatland emissions****) Joosten H. "The Global Peatland CO2 Picture: Peatland status and emissions in all countries of the world" Wetlands International, 2009. (**Peatland location**) Yu, Zicheng, et al. "Global Peatland Dynamics since the Last Glacial Maximum" Geophysical Research Letters, vol. 37, no. 13, 2010.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/99 and the ICJ Opinion on the Kosovo Declaration of Independence.

**The calculated emissions only concern emissions from biological oxidation of peat. Emissions from fire are not included.

Peatlands are important to human societies around the world. They contribute significantly to climate change mitigation and adaptation through carbon sequestration and storage, biodiversity conservation, water regime and quality regulation, and the provision of other ecosystem services that support livelihoods.

This map shows the known locations of peatlands and emissions from them, by country. The challenges in locating and defining peatlands means this map can not reflect either their true global extend or their total emissions.

The additional information in the boxes on this map comes from the accompanying Smoke on Water Rapid Response Assessment. They highlight the importance of peatlands, the threats they face and the solutions to their loss and degradation.

Map by Levi Westerveld / GRID-Arendal (2017)