GREEN
EUROPEAN
JOURNAL

Peatlands Matter for Climate and Biodiversity

Article by Clare Taylor, Joanne Potter
April 20, 2023

As a carbon sink with twice the capacity of forests, purifier of nitrogen-contaminated water, and home to endangered species, peatlands have an immense potential for conservation, climate action, and water preservation that remains largely untapped. Journalists Clare Taylor and Joanne Potter investigate why peatlands are both a depleted and overlooked resource.

As global and European policy gears up to meet the challenges of the climate and biodiversity crises, the importance of peatlands as vital ecosystems is rising to the fore. Covering a mere 3 to 4 per cent of the planet's land surface, peatlands store one-third of the world's soil carbon. Along with safeguarding this immense carbon storage, the advantages of healthy peatlands include climate control, water retention and supply, and biodiversity conservation.

Many endangered species are found in these biodiversity-rich ecosystems (also known as bogs, mosses, muskegs, mires, fens, and swamps). In Europe they are home to threatened umbrella species including the aquatic warbler, the fen orchid, the golden plover, and the wood sandpiper. Peatlands also play a critical role in the water cycle by storing and filtering water, slowing peak flows and acting as a buffer against floods.

About 12 per cent of the world's peatlands are found in Europe (including part of Russia), of which almost one-third are in Finland and over a quarter in Sweden. Large peatlands are also found in Belgium, Estonia, France, Germany, Ireland, Latvia, Lithuania, the Netherlands, Norway, Poland, and the United Kingdom. In February 2023, new research published by *Nature* described Europe as the worst affected area in terms of degraded peatlands, with Ireland having lost more than 90 per cent of its wetlands, Germany, Lithuania and Hungary more than 80 per cent and the UK, the Netherlands and Italy more than 75 per cent.

Historically, peatlands have been regarded as unproductive land, and drained. "Agriculture on peatlands is the main cause of peatland degradation in the European Union and worldwide," explains Hans Joosten, secretary-general of the International Mire Conservation Group and Professor of Peatland Studies and Palaeoecology at the University of Greifswald, Germany. "Agriculture accounts for half of peatland degradation, forestry for almost a third, peat extraction for 10 per cent and the remaining 10 per cent is due to other causes."

Damaged or drained peatlands release greenhouse gas emissions (mostly CO_2), largely through oxidation of the buried carbon and peat fires. Globally and Europe-wide, 5 per cent of all emissions come

from drained peatlands and these are reported in national inventories. However, the true picture is distorted by flawed estimates and reporting.

Franziska Tanneberger, co-director of the Greifswald Mire Centre in Germany, has analysed EU Member States' reporting of emissions from organic soils (which includes drained peatlands used for agriculture or forestry). She says, "Our analysis found that the total area of organic soils is often severely underestimated and that the wrong emission factors are often used, which leads to under-reporting. Another issue is that peatland emissions tend to be rather hidden in the reporting, as they are combined with data on greenhouse gas fluxes in forests and other land."

Raising the water table in drained and degraded peatlands, a practice known as rewetting, is the first step towards restoration. "Raising water levels immediately reduces greenhouse gas emissions and, in the long term, also helps to restore the peatlands' function of accumulating organic carbon," says Jörg-Andreas Krüger, president of Naturschutzbund Deutschland (NABU), Germany's largest nature conservation NGO with a significant history in wetlands preservation. "Protecting intact areas and restoring drained or degraded peatlands are key contributions to combating the climate and biodiversity crises."

The importance of peatlands as vital ecosystems is rising to the fore. Covering a mere 3 to 4 per cent of the planet's land surface, they store one-third of the world's soil carbon.

Additional benefits of wet peatlands include water purification through reducing the level of nitrates in run-off water and restoring the landscape water balance. More water in the landscape means more evaporation and local cooling. "There is potential for improving water management legislation to better integrate the role of peatlands in the landscape as buffers against flooding and water filters," notes Tanneberger.

With these multiple attributes, peatlands in Europe are at the intersection of three EU policy areas: nature conservation and protection (the EU's coordinated network of protected areas Natura 2000 network includes 16 per cent of Europe's peatlands); water policy such as the Water Framework Directive; the common agricultural policy (CAP) which dominates rural land use; and climate policy. Resolving the policy conflicts at this nexus, is no easy task but necessary to scale up peatland rewetting and restoration.

The politics of land use

A case in point is the heated debate in Brussels around the EU's new nature restoration law, which proposes binding targets to restore degraded ecosystems, including peatlands, on at least 20 per cent of the Union's land and sea areas by 2030. It is the first proposal for a continent-wide legal obligation to restore nature, the first major piece of EU nature conservation legislation in over 30 years and, arguably, also the first to explicitly link nature restoration and climate action.

Environmental groups welcome the much-needed proposals and are also pushing for higher targets. "The peatlands target as proposed is not in line with climate targets," says Krüger. "By 2030, 30 per cent of EU peatlands should be rewetted. The targets must be in line with a pathway that leads to net-zero

emissions from peatlands by 2050."

Opposition is coming from the forestry and agricultural sectors, citing concerns about land use, food security, the lack of financial backing to carry out the proposals and private property rights.

"Availability of land is the biggest problem," says Jutta Paulus, a climate expert and German Green MEP closely involved in negotiations on the nature restoration law. Widespread agricultural practices present both a cultural and a political barrier. As Paulus points out, "Historic drainage and land reclamation is remembered as a heroic effort by whole generations. Undoing their work [through rewetting peatland] is a cultural obstacle. Farmers and foresters live from their land, and policy frameworks must evolve to provide them with predictable and stable revenues for ecosystem services."

With one-third (168.5 billion euros) of the EU budget in 2021 to 2027, the CAP is the primary policy instrument in play, as CAP payments represent a significant portion of farmers' and landowners' income. Recent CAP reforms include better alignment of environmental concerns with agriculture.

"Many types of paludiculture – farming on rewetted peatland – are now eligible for CAP payments," says Tanneberger. With 40 per cent of the current CAP earmarked for climate action, agri-environmental and climate payments are available for specific farming techniques with climate, environmental or biodiversity benefits. Nonetheless, perverse incentives remain.

"Some farmers can get even more money per hectare per year for farming on drained peatland than for more sustainable practices. This is the wrong signal for farmers," says Tanneberger. "We need more support for paludiculture and better incentives to change farming methods, along with provision of advice to farmers. The CAP should support, at an individual farm level, the development of an exit strategy for farming on drained peatlands and the development of alternative ways of farming on these lands."

Some pioneering approaches are showing encouraging results. Since 2021, with an initial budget of 20 million euros (12 million euros via the EU's LIFE programme), the LIFE project Wild Atlantic Nature has engaged Irish farmers in the restoration of blanket bog at 24 Natura 2000 sites. The majority of the targeted area is privately owned and under agricultural use.

Punching above its weight financially, the project directly links CAP agri-environment payments (in the range of 700 to 750 million euros) to best practice management of peatlands and provides technical advice to farmers in the scheme. The project has seen a take-up rate of 85 per cent in the first 2 years of operation, covering 65,000 hectares of peatland, and the scheme is widely accepted by farmers and agricultural associations. The intention is to use results from this pilot initiative to feed into wider policy governing the country's major agricultural sector, paving the way for implementation of the new nature restoration law and ensuring compliance with existing environmental legislation.

Given the scale of transition required to address the mounting urgency of the climate and biodiversity crises, and the indicative timelines of peatland restoration work to date, there is no time to lose.

This same necessity plays a role in the Dutch nitrogen crisis. After decades of warnings from scientists and regulators, and a series of failed policy interventions to curb rising and dangerously polluting

nitrogen emissions, the Dutch government now intends to reduce the number of livestock by one-third over the next seven years. It's one of a set of measures aimed at halving nitrogen levels by 2030, triggering an angry backlash from farmers and a series of disruptive protests gaining international attention. It's also a salutary lesson in the financial and societal costs of delayed action, and the necessity of establishing viable transition pathways.

"Most degraded peatlands are in productive agricultural use," says Joosten. "Moving from drainage-based agriculture to wet agriculture will require new cultivation techniques, machinery, logistics, production lines and products."

The long view

Nature is not a quick fix for the climate and biodiversity crisis. Peatland restoration work is a long-term project. A 15 centimetres layer of peat already contains more carbon per hectare than the lower threshold of what is defined as a high carbon stock tropical rainforest. But peat forms – and therefore stores carbon – in a healthy peatland at the rate of about 1 centimetres of peat per decade.

Early peatland conservation projects co-financed by LIFE and the Royal Society for the Protection of Birds (RSPB) took place in Scotland's Flow Country, home to some of the best areas of blanket bog in the world. Some of these important peatlands were drained when conifer plantations were established in the 1970s and 1980s.

Forest to bog restoration began in the late 1990s when conifers were removed from some of the highest priority peatland areas. "In a nutshell, the aim was to restore blanket bog by undoing the damage caused by tax break-driven afforestation," says Nick Folkard, head of international funding at RSPB.

Almost 30 years on, these restoration works are resulting in quantifiable biodiversity and climate benefits. Sphagnum moss, the building block of a blanket bog peatland, is now establishing, and rare birds such as greenshank have already returned. In March 2023, the high biodiversity value of the restored peatland area was formally recognised with its proposed inclusion in the Flow Country's Special Area of Conservation (SAC).

"The SAC designation is exceptionally important for us – it's significant at the global level," says Folkard. "The restoration sites lie at the heart of one of the largest areas of blanket bog anywhere in the world, with a wide range of peatland vegetation, bog pools and a selection of rare and endangered bird and insect species. It's the best example of this globally rare habitat type (i.e. blanket bog) anywhere on Earth." The wider area has recently been nominated as a World Heritage Site.

Meanwhile, Kenna Chisholm, RSPB Area Manager, continues to monitor and study how the flow of carbon has changed at these restored peatlands. "Our findings are that the initial trial LIFE sites are taking around 20 years to flip from a carbon source to a carbon sink," she says. "Restoration techniques are constantly developing and measurements on more recent sites are suggesting that newer techniques are reducing this timeframe to around seven to eight years to flip from a [carbon] source to sink," she adds.

Along with research from other scientists, Chisholm's findings feed into the Peatland Code, one of a number of frameworks aimed at establishing business models for the sustainable use of peatlands.

For large-scale peatland rewetting and restoration, everything depends upon the extent to which financial flows, both public and private, can support the emerging policy frameworks. By incentivising

farmers and landowners to transition to carbon farming and agri-environmental production such as paludiculture, the overall aim is to ensure that public and common goods – “water to drink, fertile soils to grow food, clean air to breathe” says Paulus – provided by healthy ecosystems are actually economically viable. Given the scale of transition required to address the mounting urgency of the climate and biodiversity crises, and the indicative timelines of peatland restoration work to date, there is no time to lose.

For those who have spent their life’s work dedicated to researching and advocating for peatland preservation, there can be no compromises. Joosten says, “We must rewet all of the world’s peatlands. This is not easy, but we have the solutions. We will discuss the possibilities on 26 April in Berlin.”

«Moor muss nass!» is his slogan: “Peatlands must be wet!”

Clare Taylor is a moderator and journalist specialised in sustainable energy and environment.

Joanne Potter is a writer and editor specialised in biodiversity and climate issues.

Published April 20, 2023
Article in English
Published in the *Green European Journal*
Downloaded from https://www.greeneuropeanjournal.eu/peatlands-matter-for-climate-and-biodiversity/