Wetlands International European Association's response to the EU Public consultation on Soil Health Law

24 October 2022

Appreciating the Soil Strategy 2030 approved in 2021 which mentions the EU's aim of *having all soils in healthy condition by 2050 and to make protection, sustainable use and restoration of soils the norm,* Wetlands International Europe welcomes the opportunity to provide input to the EU public consultation on ***Soil health – protecting, sustainably managing and restoring EU soils.***

As recognised in the call for evidence for an impact assessment accompanying this consultation, 60-70% of soil ecosystems in the EU are unhealthy and suffering from continuing degradation resulting in reduced provision of ecosystem services. It specifically mentions peatlands *in bad biological condition: "**Peatland drainage** across all land categories in the EU emits around 5% of total EU greenhouse gas emissions. Every year mineral soils under cropland are losing around 7.4 million tonnes of carbon. • In recent decades, soil biodiversity such as the species richness of earthworms, springtails and mites has been reduced. • The risk of desertification is increasing across the EU and already affecting agricultural production."*

It recognises as the main sectoral drivers of soil degradation in the EU:
- land-use change
- urban sprawl, excessive and uncompensated spatial development and construction
- climate change, drought, extreme weather
- unsustainable soil management and intensification of agricultural and forestry practices
- industrial activities and emissions, unsustainable waste management and energy production, accidents and spills
- improper water management, reuse and irrigation
- overexploitation, unmitigated and uncompensated consumption of natural resources.

Land-use change in Europe has resulted in the wide-scale loss of wetland and soil sponges. This applies particularly to natural wetlands, such as floodplains and organic soils such as peatlands. In the last 50 years in Europe **around 35% of wetlands have been lost**, a rate of loss three times faster than for forests (UN WCMC 2017). The European Environment Agency has reported that wetlands, including mires, bogs and fens, are among the most threatened ecosystems in Europe and that 70-90% of Europe's floodplain area is ecologically degraded (European Environment Agency 2020). At the same time, 60-70% of soils in the EU are not healthy (European Commission 2020). In addition, the ground water level has been lowered dramatically due to droughts in many parts of Europe (Boergens et al. 2020).

If these ecosystems are intact, they have great potential for climate and water regulation. One of the greatest benefits of nature-based solutions that improve soil health is their ability to simultaneously address multiple challenges and deliver multiple benefits, making them effective nature-based solutions for the most pressing environmental challenges facing the EU and the planet. Therefore, **restoring and conserving soil sponge functions offer low-cost and no-regret solutions to store carbon, improve resilience to costly floods and droughts, purify water and protect biodiversity.**

The upcoming legislative proposal on soil health to be effective and contribute to simultaneously address multiple challenges and deliver multiple solutions **should translate the following two main considerations into binding targets:**

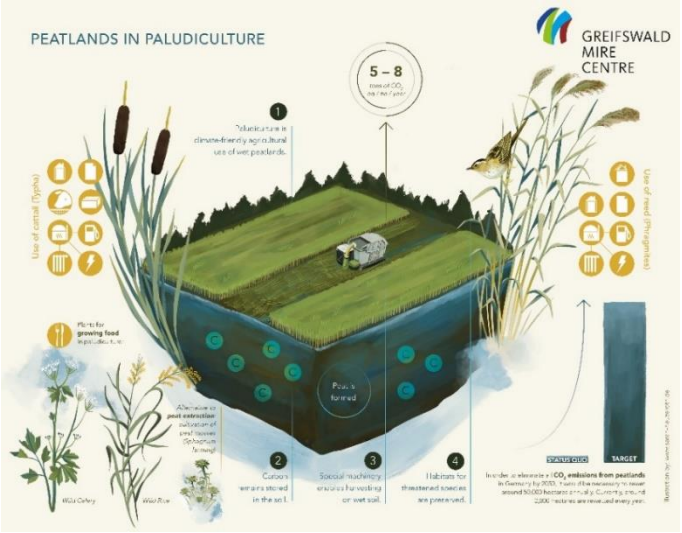
1) **Understand the environmental damage of drainage-based peatland utilisation to nature and climate;**
2) **Recognise and invest in the natural sponge functions of soils.**

Understanding the environmental damage of drainage-based peatland utilisation to nature and climate

Although covering only 3% of the earth's surface, peatlands contain twice as much carbon as all the world's forests. Peat organic matter is the planet's biggest terrestrial carbon store, permanently locking up carbon as long as it remains wet. If managed well they can continue to sequester equally large amounts from the atmosphere.

Peatlands are important water stores too. **Their sponge-like qualities** mean they release water gradually and so reduce the risks downstream of both floods and drought. Peatlands support specialised biodiversity from the insect-eating sundew plants in temperate regions to orangutans in the tropics.

Peatlands face numerous threats but **drainage is the greatest**. European peatlands cover approximately 350,000 km2, of which more than 50% are degraded by drainage and used for agriculture, forestry and peat extraction. Drainage of peatlands has at least three important consequences with major social and economic effects. **First**, when drained, the peat oxidizes and carbon is continuously released into the atmosphere as CO_2, contributing to climate change. **Second**, drained peatlands are extremely fire prone, and fires have repeatedly destroyed millions of hectares. Last year, peatland fires destroyed several million hectares, and the haze associated with these fires had devastating impact on the economy of SE Asia and on public health. **Lastly**, the loss of peat due to oxidation results in subsidence of the peatland which brings the land surface down to sea or river level and eventually leads to frequent or even permanent flooding.



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Paludiculture, the productive land use of wet and rewetted peatlands, could make a significant impact on the achievement of the EU Green Deal's climate and biodiversity goals while providing income for farmers who have previously practised drainage-based agriculture.

Paludiculture has a high potential for upscaling in Europe, but more efforts are needed to attract funding to this practice and mainstream it in key environmental and climate-related legislation.

The increased interest by governments in peatland restoration as a nature-based solution to reverse land degradation, reduce drought and flood risks and greenhouse gas emissions is key to scaling up action. By leveraging the voluntary and mandatory carbon markets, countries can include peatlands in their climate commitments and open up large-scale finance for restoration and conservation. Companies are increasingly interested in adopting voluntary standards for products grown in wet peatland agriculture.

We agree that the soil health law should be complementary to the EU Nature Restoration Law which Wetlands International Europe positively welcomed[1]. But we expect EU Member States, above all peatland-rich ones, to take clear responsibility and commitment to restore (i.e. fully rewet) and safeguard peatlands. EU Member States, landowners, and land-users in the EU should be encouraged and incentivised to maintain and re-establish high water levels in peatlands to maximise carbon storage, minimise GHG emissions, and support biodiversity.

[1] https://europe.wetlands.org/news/proposed-eu-nature-restoration-law-a-historic-step-for-wetlands-restoration/

We call[2] on EU decision-makers to amend the proposed targets in line with a pathway that leads to net-zero CO2 emissions from peatlands by 2050: A higher ambition for drained peatland targets is therefore needed for consistency across policies and to prevent drained peatland from remaining a huge source of carbon losses in the AFOLU (agriculture, forestry and land use) sector.

Recognising and investing in the natural sponge functions of soils

For more than a decade, we have been researching the functioning of areas with high natural sponge potential around Europe. For example, in the upstream valleys of the German Middle Mountains of the Rhine River Basin, which were the epicentre of the floods in 2021 that killed more than 220 people. More year later it's clear that land use played a significant role in the severity and investing upstream in nature-based solutions that improve soil health can help defend against future floods.

This region of the German Middle Mountains normally receives relatively large amounts of precipitation, making it important for water retention. But changes in land use have destroyed the natural water retention features of the landscape. We found that drainage channels, hard surfaces and bare soils that moved water quickly downstream were major contributors to the floods. Solutions therefore need to focus on restoring the absorptive capacity of these upstream sponges to store more water and slow down the release. The following are key lessons learned from data analysis and site visits:

Upstream drainage contributed disproportionately to the peak floodwaters sent downstream. Due to large scale drainage for agriculture on the sloping hills and upstream valleys in the upper reaches of the river Kyll in the Eifel mountains, water flows off the land faster than ever, rather than being absorbed in soils and slowly released, causing higher flood peaks.

Natural sponge potential of soils is high in this region and it is unlikely they were saturated. The extent to which water is retained in a landscape is strongly determined by the character of the subsoil and soil. The absorptive potential appears to be very high in large parts of this catchment area. This means that the sponge effect of most soils was sufficiently large and that there would still have been capacity for water that did run off superficially (from paved surfaces and maize fields) to locally infiltrate if given the chance. The real challenge is to store the water as long as possible in the soil and to not speed it up by intercepting sub surface water with drainage channels or roads.

Paved surfaces became the main rivers for channelling floodwaters downstream. Paved surfaces (roads, built-up areas, etc.) are likely to have supplied a large part of the flood wave. As long as it continued to rain intensively, the share from paved surfaces remained very large.

Bare soils were a major contributor to floodwaters. Fields with crops that germinate late such as maize are vulnerable to forming an impermeable crust and lacked enough vegetation to slow down the water, or only partially did so. In these areas, as the rain intensity increased, an increasing part of it flowed over bare soils and joined up with streams. When water is slowed down by vegetation it can more readily infiltrate into the soil.

Flood prevention should focus on upstream measures, in particular nature-based solutions that improve the absorptive capacity of soils:

- Optimise upstream natural water retention measures that slow down the journey of a raindrop downstream;
- Keep water in soils and wetlands for as long as possible before it enters a stream. When water can infiltrate the soil it will take much longer to run off;
- Allow water that is running off of paved surfaces, fields and slopes the opportunity to re-infiltrate underground before entering streams;

[2] https://europe.wetlands.org/publications/higher-ambition-for-peatlands-in-the-eu-nature-restoration-law-proposal/

- Block drainage channels that speed up surface water and emerging subsurface flows to allow water flowing from areas with poor soil permeability to re-infiltrate in areas with better absorptive capacity.

The benefits include peak flow reduction of up to 35% at local scale, 10-30% higher baseflow in dry periods, retention of nitrogen and CO2 storage of 20-tonne per acre per year (https://europe.wetlands.org/publications/wetland-restoration-impact-on-streamflow-rhine-basin). These measures could have a beneficial impact in over 125,000 km2 in Germany, France, Belgium and Luxembourg – before rain enters rivers and becomes floodwaters – making people and property safer from the threat of future floods.

Restoring and conserving soil sponge functions offer low-cost and no-regret solutions to store carbon, improve resilience to costly floods and droughts, purify water and protect biodiversity.

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