Opening Statement for the public session of the Joint Committee on Climate Action on the subject of **'Peatlands Restoration & Rehabilitation'.**

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Introduction

Peatlands are unique ecosystems in the context of the global carbon cycle. This is because in addition to being home to rare biodiversity, peatlands are the largest and most concentrated global store of carbon of all terrestrial ecosystems, containing twice the carbon of the forest biomass[1,2]. The accumulation of vast quantities of carbon occurred over many thousands of years thanks to the permanently waterlogged conditions that prevent the complete decomposition of organic matter. In Ireland, peat soils are our largest carbon store containing an estimated 1.5 billion tonnes of carbon[3].

Total carbon dioxide (CO_2) emissions from degraded peatlands globally currently amount to a third of the total emissions from the Land Use, Land Use Change and Forestry (LULUCF) sector and is equivalent to 5 % of the total global anthropogenic CO_2 emissions. In Ireland, peatland drainage for either domestic turf cutting (*c.* 600,000 ha), energy and horticulture (*c.* 100,000 ha), agriculture (*c.* 300,000 ha) and forestry (*c.* 300,000 ha), releases carbon that under normal conditions would have remained in storage within the peatland[4].

Burning peat is a source of air pollution and drained cut bogs no longer function as a refuge for rare species nor as a repository for historical artefacts. Drainage-based peatland utilisation causes peat decomposition, release of aquatic organic carbon, nitrates and ammonium, loss of flood control and water storage capacity, increased risk of fires and high greenhouse gas emissions.

Peatlands and climate

Natural peatlands have acted, and continue to act, as carbon sinks (sequestering CO_2 from the atmosphere and storing it as carbon in the peat). However, drained peatlands and related activities account for emissions of *c.* 11 million tonnes of CO_2 per year[4] - equating to total emissions from the energy sector in 2018 (11.7 million tonnes CO_2 per year)[5]. The total emissions from the 1.4 million hectares of Irish peatlands (1/5 of the country) are from three sources:

1) The balance between the emissions from drained peat soils minus the sinks from natural and rewetted peat soils (5.4 million tonnes CO_2/year).
2) Burning peat (in power stations and domestic turf) (3.7 million tonnes CO_2/year).
3) Horticultural peat (2 million tonnes CO_2/year).

A key figure to keep in mind is that one hectare of drained bog, cutover or cutaway, emits 6 tonnes of CO_2 per year for each year that it remains dry[6].

Tool kits associated with Irish peatlands to fight against global warming and biodiversity loss

Our natural heritage is being decimated

Less than 50,000 ha of the original 310,000 ha (16 %) of raised bog remains uncut[7]. More critically, only 1% (1,639 ha across both designated and non-designated sites) is in an 'Active' condition, that means it is sequestering carbon. There are more green parks in Dublin City than active, peat forming raised bogs in the country.

The targets set in National Raised Bog SAC Management Plan to keep this 1% of 'living bogs', will require a paradigm shift as hydrological conditions caused by peat cutting, drainage, afforestation, grazing, water abstraction from groundwater and burning are all still severely threatening the survival of this habitat in most protected areas.

The same threats have also decimated the original 774,000 ha of blanket bog, with now less than 28% likely to be in conservation value, barely holding on to their carbon store[8]. The proportion of active areas is still unknown but likely to be critically low and decreasing each year as a national management plan for the network of blanket bogs SACs has not yet been established, despite the National Peatland Strategy indicating otherwise.

Legal requirement

The protection, restoration and rewetting (management of water table) of peatlands is in line with national and EU obligations. Undrained and uncut bogs are amongst those that are accorded priority habitat status in recognition of the extent of historical destruction of such habitats across Europe. It is a legal requirement to preserve all the peatlands that are still mostly uncut and undrained and aim to restore the high bog in all types of bogs to return their valuable ecosystem services. The network of 53 SAC raised bogs is only the tip of the iceberg when it comes to the carbon store. The proper restoration of this network of uncut and undrained 'high' bog (c. 16,000 ha) will lock in 28 million tonnes of carbon. High bog within the NHA network also requires action. And what about the blanket bogs? Recall that the area of blanket bog is three times greater than the area of raised bog. Ireland could lock in 10 times more carbon in the designated blanket bog network if only the management plan required by law under the Habitats Directive could be implemented for these rare ecosystems.

Restoring and rewetting

When re-wetted, degraded peatlands stop emitting and instead lock in their carbon store. When restored, peatlands can even return to acting as a natural carbon capture system. To clarify, even if peat cutting were to cease and where no efforts were made to block the drains, peat will continue to decompose and continue to release carbon to the atmosphere. The minimum intervention is therefore to rewet.

Before I go further, I would like to clarify a few terms: Restoration, Rewetting and Rehabilitation. The following are from the Inter-Governmental Panel on Climate Change Wetlands Supplement (2014)[9].

Peatland **Restoration** aims to permanently re-establish the ecosystem that existed before disturbance or land use change (including the hydrological and biogeochemical processes typical of water saturated soils, as well as the vegetation cover that pre-dated the disturbance). The restoration of drained peats almost always requires rewetting.

Rewetting is the deliberate action of raising the water table on drained soils to re-establish water saturated conditions, e.g. by blocking drainage ditches or disabling pumping facilities and managing the water table so that it remains close to the surface. Rewetting can have several objectives, such as wetland restoration or allowing other management practices on saturated peat soils such as paludiculture (i.e. wet agriculture).

Rehabilitation can involve a large variety of practices which may or may not include rewetting (for example, the re-establishment of vegetation on a drained site without rewetting is a form of site rehabilitation).

Restoration of our protected peatlands and rewetting of drained bogs are considered by the UN as 'low hanging fruit, and among the most cost-effective options for mitigating climate change'. In both restoration and rewetting, the water table must be managed.

Abandoning or re-flooding drained peat soils under the heading 'rehabilitation' is not a climate friendly action as both approaches release huge amounts of greenhouse gases. The feasibility of peatland restoration has been demonstrated in a number of countries, including Ireland. Formerly drained-only bogs can be fully restored to return their carbon sequestration and storage function, as well as their unique biodiversity[10].

In Canada, scientists and the Canadian peat industry have worked together to licence peat extraction but it has come hand-in-hand with a commitment to fully restore the site after the short period of extraction has ceased[11]. The Irish industry must be regulated and look to such international standard. Industrial cutaways have been drained and have emitted CO_2 for as much as 70 years (*c.* 420 million tonnes of CO_2 over that period), and cutover bogs have done the same for centuries. Restoration should be supported where conditions are adequate and, where no possible, the minimum required intervention should be 'Rewetting' (i.e. manage the water table).

Peatlands and future climate change

Drained peatlands are extremely vulnerable to even modest climate change impacts[12] and are projected to become even greater hotspots of greenhouse gases as the peat dries out, cracks or burns.

Rewetting has been shown to be a climate-proof, effective mitigation strategy, provided that extreme drying events like summer drought do not become a more frequent occurrence.

Importantly, the longer that a rewetted bog is established, the more resilient it will be to climate change[12].

Recommendations:

-The restoration of 'active' bog habitats within all raised and blanket bogs SACs must be implemented rapidly in order to be climate-resilient.

-Rewetting is a 'low-hanging fruit' mitigation measure that must be applied to all publicly owned peatlands wherever feasible. It is not sufficient to stop peat extraction or ban unsustainable uses of peatlands.

-Such mitigation measures should also be included in the range of government climate adaptation tool kits to help landowners to '*farm carbon'*. This action is critical to safeguard the future of the massive amount of carbon locked in all peat soils and which will bring associated ecosystem services: water quality and regulation, preservation of in-situ archaeological heritage.

- Regulatory frameworks and legislation across governmental agencies need to be in place to ensure the sustainable management of peatlands and to support voluntary mechanisms (for example, funds, certification, payments for ecosystem services) that complement these.

- Local communities should be supported by adequate funding to help them participate in the rewetting and restoration of their local bogs which are part of our social fabric and cultural heritage.

- The rewetting of industrial cutaway and large cutover bogs is a low-cost intervention approach that would support immediate and effective climate change mitigation measures. Such mitigation measures should be integrated as requirements in association with other sustainable after-use options to avoid exacerbating global warming.

Conclusion

Our wet living bogs (including cutovers and cutaways) are crucial weapons in our efforts to avoid climate catastrophe.

References

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