

Peatlands

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- We still don't have a unified definition of 'peat' across the UK, so areas that are 'peat' in England abruptly cease to be 'peat' in Scotland simply because of differing depth thresholds for the definition of 'peat'. This matters because (a) it dramatically changes the figures for extent of peat - potentially doubling the area of peat in Scotland if thinner peat soils are included, which then changes the overall context of current progress and ambition, while (b) areas not defined as peat are not being assessed for peatland condition yet are more likely to be damaged as many such areas lie at the interface between agricultural ground and un-enclosed blanket mire. Given that shallow peat is so widespread in Scotland, it is important to appreciate that a peat-soil just 30 cm deep (and thus not 'peat' according to the current Scottish definition) can contain as much carbon in a hectare of ground as is contained in a hectare of some types of tropical rainforest.
- Those areas which are currently defined as peat in Scotland but which lie outside designated sites remain largely in unknown condition because current resources mean that it is proving challenging even to map the condition of designated sites.
- Peatland represents the most extensive semi-natural habitat in the UK, but particularly so in Scotland, meaning that restoration and sustainable management needs to be undertaken at an integrated landscape scale - i.e. integrating restoration and management of bog, fen, temperate rainforest, upland heath and freshwater systems. Such integrated landscape-scale approaches generate emergent properties that enhance or are additional to the ecosystem benefits arising from the individual habitat components. Thus temperate rainforest on hill slopes provides stability to currently dry eroding bog margins, encouraging development of a more natural bog edge while also enhancing water quality, flood prevention and wildfire resilience.
- As peatlands are so extensive they have been recognised as a key part of national security in a recent UK Government review because of their carbon store, their role in water management and, in the lowlands, their significance for, but unsustainable use by, agricultural food production. Upland peat in Scotland dominates catchments providing much of Scotland's drinking water, meaning that poor-quality peat, or even catastrophic peat-slope failures, has significant implications for the quality of this drinking water. In lowland England it is recognised that ['business as usual' is no longer an option](#) for much of conventional agriculture on lowland peat soils, even though much is Grade 1 agricultural land. This has significant implications for food security, in part because of the carbon emissions from such activities cannot be allowed to continue but also because these soils are subsiding as a result of drainage and thus becoming increasingly prone to riverine or marine flooding to the point where it becomes economically unsustainable to prevent such flooding.

Scotland also has substantial areas of agriculture on lowland peat soils. It will become increasingly necessary to consider how much of that land can continue under an agricultural regime of 'business as usual'.

- Perhaps the most important key to long-term sustainable management of Scotland's peatlands is the need to develop a means of providing an income from peatlands when they are in good condition. Currently, and traditionally, the main way of obtaining significant income from a peatland has involved exploiting peat in ways that are generally damaging. In recent years, a new peatland-related income-stream has emerged geared to restoration intervention. However, the person who owns or manages a peatland in good condition reaps no such economic benefit even though the wider community reaps considerable benefits from ecosystem services provided by such a peatland. Thus damaging a peatland can bring economic benefit, restoring a damaged peatland can bring economic benefit, but currently a peatland achieving, or being maintained in, good condition has no obvious way of bringing significant economic benefit to the owner/manager of the land.
- Peatlands in Scotland continue to be damaged by, or lost to, renewables and forestry. While re-establishment of temperate rainforest on hill slopes can be of considerable benefit to the peat-draped gentler slopes and plateaux, conversely plantation conifer forest, particularly on thinner peats (which, as noted above, can contain as much carbon as tropical rainforest), represents an ongoing and well-understood source of peatland habitat loss. Meanwhile renewables, specifically wind energy, are impacting increasingly greater areas of core peatland habitat. Yet turbine construction on peat, and specifically service-road construction, is a relatively recent phenomenon, the long-term impacts of which are largely unknown. There are already well-documented cases where road construction has caused catastrophic peat failures, with in once case the Irish Government being found guilty in the [European Court of Justice](#) for granting planning consent without due diligence. The less dramatic but more long-term impacts of such construction are as yet unknown. What is clear, however, is that the industry anticipates re-turbining with ever-larger turbines, which will require upgraded roads, upgraded drainage, upgraded cabling and other infrastructure. The impacts will thus only increase over time.
- It is worth highlighting the fact that biennial greenhouse-gas reporting by UK Government under the UNFCCC Paris Agreement largely relies, for land-use emissions (LULUCF), on the network of monitoring sites run by UKCEH. The key instruments on these sites are eddy covariance greenhouse-gas-flux towers ('flux towers'). However, the current number of such flux towers situated on peatland habitat is very small. In England there are actually no flux towers currently being monitored on peatland habitat. In Wales there is a single site, while Northern Ireland has four active stations. Scotland has six in the Flow Country, one each in Shetland, the Grampians, the Forth Valley, and just south of Edinburgh. There are no flux towers in the west of Scotland even though the most extensive tracts of peat occur in the west - and may represent areas of significant carbon capture. Establishing and running even a single flux tower is not a trivial undertaking - it demands a considerable level

of resourcing and ongoing commitment, but if the UK is to have a clear picture of its current pattern of peatland-related carbon emissions and capture, there would seem to be a compelling argument for an increase in the number of flux towers across UK peatlands more broadly, including establishment of flux towers in western Scotland.

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