# White Paper on the requirements for upscaled peatland restoration in upland England

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## Executive summary

Around 80% of all UK peatlands have been modified by past and present management resulting in significant degradation. This document provides evidence-based recommendations to unblock barriers to successful, fully upscaled, restoration of vital peatland carbon stores and ecosystems found in the English uplands.

The England Peat Action Plan recognises re-wetting peatland areas and returning them to their natural state could make a significant contribution to achieving the UK's legally binding target to meet net zero by 2050, while also having other benefits for water quality, nature and flood mitigation. It acknowledges the need to prevent further loss of peatland habitats and to restore peatland landscapes to their natural state and includes an initial commitment to restore over 35000 ha of peatland in England by March 2025. The Environment Improvement Plan includes an aim to restore approximately 280,000 hectares of peatland in England by 2050. However, there is compelling evidence for the benefits of accelerating peatland restoration and upscaling it to entire landscapes, taking a long-term, strategic, regional approach. The Nature for Climate Peatland Grant Scheme has set the foundations, but we now need to work more effectively at pace and across whole regions.

If we are serious about restoring the remaining degraded upland peatlands in England in the shortest timeframe possible, we need to acknowledge that we currently lack a long-term mechanism to achieve this and that Landscape Recovery, in its current form, cannot achieve the required scale of delivery. Peatland restoration is too important to only be a component option within wider agri-environment schemes such as Environmental Land Management (ELM), as it has the capacity to be both part of the solution to climate change and part of the problem. A bespoke peatland element of ELM is needed, that enables a blended approach to finance and accounts for the whole process required to successfully deliver upscaled peatland restoration.

This paper sets out a number of key recommendations needed to deliver fully upscaled peatland restoration, summarised as follows:

### Furthering the science that informs practical restoration

To ensure restoration delivers optimal outcomes there is a need to increase the use of evidence from the research community and to develop and utilise spatial modelling tools throughout the restoration planning stage.

- Ensure funding can enable innovation in peatland restoration practice and planning.
- Provide funding for the development of models that can be applied by practitioners to spatially design restoration interventions that maximise landscape-scale hydro-ecological functioning of peatlands and enable cost-effective restoration.
- Trial augmented dispersal of plants and animals to understand benefits and limitations for population resilience to environmental change.
- Develop bespoke restoration methods for peatlands owned by the Ministry of Defence's Training Estate.

### Data, evidence and monitoring

To better understand and report the multiple benefits delivered by peatland restoration more needs to be done to ensure restoration projects are robustly monitored and evaluated, and data is shared effectively.

- Establish a funded national platform for sharing knowledge, success and failures of peatland restoration techniques that ensures innovation is supported and shared, i.e. a neutral centre of excellence.
- Allocate funding for comprehensive multiyear monitoring of restoration works using standardised protocols which account for spatial variability and topography. This should include developing a pipeline of sites for restoration to enable effective pre monitoring.
- Co-design agreed data standards for peatland monitoring and establish a library of protocols to ensure data are comparable and reusable and fund an institution to develop and curate an open repository to store and interpret monitoring data.

### Peatland policy and finance

Robust financing and governance models are needed that include long-term funding agreements to accelerate restoration and allow multi-year phased restoration projects while also retaining and building capacity (both skills and supply chain). These need to work for all parties and account for the complexity

of gaining multiple landowner agreements, contract specification and management requirements and land manager collaborations.

- Building on natural processes, establish enabling policy and funding to allow restoration to be delivered in stages at any site (potentially over many years or decades).
- Develop a national strategic approach to peatland management and establish a National Peatland Task Force to lead the review, maintenance and expansion of the Peatland Action Plan.
- Ensure peat partnerships are heard as a strong voice to learn from past work and funding schemes, improve future schemes and support positive policy developments.
- Establish a process to stack benefits (evidenced by recent scientific literature), improve multi-agency oversight and support the delivery of co-benefits from peatland restoration.
- Acknowledge that Landscape Recovery in its current form is not capable of delivering the scale and pace of peatland restoration currently seen under the Peatland Grant Scheme, and that the Green Finance market is not currently mature enough to fill this gap. To address this there is a need to:
    - Develop a bespoke peatland element of Environment Land Management schemes (and any future agri-environmental schemes) that enables a blended approach which allows different sources of public funding to be combined to deliver multiple outcomes without compromising Treasury rules and risking double accounting.
    - Develop a process to allow regional delivery partnerships to act as umbrella delivery bodies across multiple Landscape Recovery projects, reducing the complexity of delivery across many organisations and ensuring efficient use of public money while delivering long-term consistent and quality restoration
    - Ensure the Government and private sector work together to create a coherent suite of legislative drivers, regulations, accreditation and guidance frameworks for a functional, environmental and socially positive role for green finance.
    - Address low uptake of the Peatland Code through consultation with delivery partnerships, landowners and managers, Defra, Natural England and the IUCN UK Peatland Programme.

- Develop strong regulation to identify, prevent and mitigate the risks of nature commodification.

### Engagement and communication

Community engagement should be seen as a key pillar of peatland restoration that is integral to the restoration process; local peatland partnerships play a critical role in this.

- Use regional-scale partnerships, such as the Great North Bog, to connect with each other and share knowledge and experience around engagement.
- Recognise that all aspects of the restoration process involve people and relationships and form the 'substance' of community engagement.
- Provide long-term support for relevant personnel and resource capacity; including culture change within organisations so all staff see themselves as integral to community engagement.
- Recognise that the values that people hold for nature are plural and extend beyond exchange values for ecosystem services, and that frameworks other than monetary valuation and cost-benefit analysis exist and can support decision-making.
- Acknowledge community engagement brings potential risks around stakeholder and community fatigue and be mindful of the power dynamics associated with peatlands and land management.
- Develop new strategies to generate emotional connections between the general public and peatlands.

## Contents

# 1 Physical state of England's upland peatlands

## 1.1 England's blanket bogs

Blanket bog is by far the dominant peatland type found in the English uplands, although there are also areas where some raised bogs and groundwater-fed flushes and small areas of fen peat can merge together with the blanket bog landscape. Blanket bog landscapes are:

- Formed on undulating slopes where conditions are cool and wet – this makes them very vulnerable to degradation when damaged, as erosion can quickly ensue on sloping terrain.
- Predominantly rain fed, requiring high annual net rainfall totals to persist[1].
- Wetland systems, so that in their natural state, these peatlands have shallow water tables, within a few centimetres of the ground surface for much of the year[2,3].
- Important for supporting a wide range of ecosystem services (Table 1).
    - Some services are directly provided by the peatlands and others by the wider countryside that includes the peatlands that are embedded within the landscape.
    - The delivery of these services is influenced by peatland management and use (e.g. forestry on peatlands, energy infrastructure, sporting and recreational pressures) and trade-offs need to be accounted for.

## 1.2 Peatland degradation

Around 80% of all UK peatlands have been modified by past and present management[4] resulting in significant degradation of upland peatlands.

- Drivers of degradation include atmospheric deposition linked to historical industrial activity, overgrazing, drainage, afforestation, fire and renewable energy infrastructure[5,6].
- Localised degradation has been associated with recreational use around footpaths, illegal vehicular access and peat extraction.
- The removal of vegetation and a deepening of water tables resulting from this degradation has numerous negative impacts including ecosystem service loss.
- Impacts include: biodiversity loss (plants, mammals, invertebrates and birds), gullying, bare peat and surface erosion, increased subsurface pipe erosion, flood peak increases, reduced resilience to drought, increased $CO_2$ release and associated net positive greenhouse gas climate forcing, increased aquatic carbon release, reduced water quality and aquatic ecosystem damage.
- Degraded peatlands are the UK's largest contributor to land-use based carbon emissions[7].
- Due to their remote nature, our peatlands have been, and continue to be, extensively used by the Ministry of Defence (MoD) for live firing and ordnance testing as part of the Defence Training Estate (in England: Otterburn, Leek and Upper Hulme, Dartmoor and Catterick in England). This has caused significant degradation locally and a legacy of pollution and unexploded ordnance that pose unique challenges.

### 1.3 Current state of our peatlands

The **England Peat Action plan**[8] acknowledges the need for a more up to date and detailed England peat map, which will provide a clear evidence base on peat resources. The England Peat Map project is currently working to address this need by providing a better estimate on the extent of peat stocks within England, reporting in 2025. Hence there are currently discrepancies in reports on peatland extent. One

estimate based on current Natural England data[9,10] suggests that across the uplands of northern England there are approximately 667,000 ha of peatland soils, with 290,000 ha of that area being blanket peat where the peat is deeper than 50 cm. As shown in Table 2, the north contains the large majority of England's upland peat, an area covered by restoration partnerships who have clustered around a joint vision and cooperative working across an area known as the Great North Bog. Additional upland peat in the southwest of England comprises an estimated 15,000 ha of blanket peat across Dartmoor and Exmoor, with additional areas of peat on Bodmin Moor.

### 1.4 Future trajectory

Future climate change means that urgent effort is required to ensure upland peatlands in England are resilient to dry periods and drought, increased temperatures and wildfire risk:

- Globally, blanket bog regions are at risk of progressive peat erosion and vegetation changes[11].
- In England, eastern regions (Northumberland and North York Moors) are most vulnerable. The North York Moors are most at risk from increased erosion resulting from precipitation changes as they already receive much lower rainfall than bogs further west[12].
- Increased temperatures are predicted to be the key driver of long-term change in blanket peat erosion and sediment yield in England, but impacts are likely to be lowest in areas with high precipitation and low temperatures[13].
- Wildfire risk will likely increase due to longer, more intense dry periods and drought, coupled with increasing recreational use of the uplands[14].
- Given their critical role in supplying drinking water, ensuring the resilience of our peatlands is vital in the face of predicted future changes to rainfall patterns and totals.

- Land management measures can mitigate the impacts of climate change on blanket peat erosion[15], and enhance resilience to dry periods and drought.

Table 1: Key ecosystem services related to upland peatlands and their wider landscapes in England[16]. It is to be noted that some of these ecosystem services are subject to trade-offs in peatland restoration

| Services | Ecosystem Service | Evidence |
|---|---|---|
| Provisioning | Water Supply | 73 % of the storage capacity in UK water-supply reservoirs is peat-fed[17]. In England these reservoirs are mainly in Northumbrian Water, Severn Trent, South West Water, United Utilities, and Yorkshire Water areas. |
| | Agriculture: Grazing | A 2013 estimate suggests 45% of breeding ewes (3 million) and 40% of beef cows in England were located in the uplands or upland fringes[18] |
| | Forestry timber | 24,000 ha of woodland occurs on blanket bog and upland valley peatlands in England; plantation accounts for 23,153 ha[19]. Plantations on peat are not compatible with net zero as they cause peatland decay. |
| | Renewable energy | 218 out of the 456 wind farms that have already been built in Scotland are on peat with 60% of the future 73 sites being peatland[20]. Applications for onshore wind are likely on peatlands in England since the de facto ban on onshore wind was removed in June 2024[21] |
| Regulating | Water Quality | Degraded peat increases fine sediment release and reduces stream biodiversity [22,23]. Dissolved organic carbon (DOC) from peatland waters is expensive for water companies to treat. There is a clear relationship between DOC concentration and water-table depth in bog systems globally with shallow water tables being best for low DOC[24]. |
| | Flood Control | Well vegetated peat, especially with *Sphagnum* cover, reduces downstream flood peaks, whereas degraded peat is associated with increased flood peaks[25,26,27,28] |

| | | |
|---|---|---|
| | Carbon storage and climate regulation | A 2019 estimate suggests peat and peatlands in England store ~ 580 million tonnes of carbon[29]. A mean annual water-table depth of ~10 cm will be optimum for carbon sequestration and delivering a net greenhouse gas cooling effect[30] |
| Cultural | Shooting | The Moorland Association report that grouse shooting in England supports 42,500 work days and >£15 million in associated spin offs per year[31] but there is lack of independently produced figures. |
| | Recreation | 50 million visitors annually across the broader National Parks that England's upland peatlands sit within (Dartmoor, Exmoor, Lake District, North York Moors, Northumberland, Peak District, Peak District, Yorkshire Dales)<br><br>In the North Pennines, some recreational services (walking and cycling) directly conflict with conservation values scenarios whereas others (angling and bird-watching) are more aligned[32]. |
| | Education and Science | Peatlands are a fantastic education resource, covering a broad range of subjects from arts to science. |
| | Archaeological heritage | The peat record preserves an archive of climate, plants, animals and human activity which can tell us about how peatlands developed and how humans have interacted with and exploited them through time. |
| | Sense of place, reflection, enrichment and creativity | Typically, peatlands which are in better physical condition also evoke a broader aesthetic and reflective environment, supporting spiritual enrichment and creativity[33]. |
| Supporting | Biodiversity | England's upland peatlands are a unique, but threatened, habitat that are home to many priority species, including amphibians, birds, butterflies, flowering plants, fungi, mammals., mosses, moths, reptiles and spiders[34]. They are an important habitat for some of the rarest and most threatened ground nesting birds including black and red grouse, snipe, dunlin, lapwing, curlew, golden plover and meadow pipit and raptors such as merlin and hen harriers |

Table 2: Structure of key delivery partnerships around upland peatland restoration in England.

| **Delivery Partnership** | | **Region** | **National Parks and Landscapes** | **Host Organisation(s)** | **Peatland area reported by partnership (ha)** | **Peatland Soil Area (ha)** | **Blanket Peat Area (ha)** |
|---|---|---|---|---|---|---|---|
| Great North Bog[35] | Cumbria Peat Partnership[36] | Northern England | Lake District National Park | Cumbria Wildlife Trust | 31,000 of blanket bog | 667,000 | 290,000 |
| | Lancashire Peat Partnership[37] | | Forest of Bowland National Landscape | Lancashire Wildlife Trust | | | |
| | Moors for The Future Partnership[38] | | Peak District National Park | Peak District National Park Authority | >21,000 of blanket bog in the Peak District | | |
| | North Pennines National Landscape Peatland Programme[39] | | North Pennines National Landscape | Durham County Council | >90,000 most of which is blanket bog | | |
| | Northumberland Peat Partnership[40] | | Northumberland National Park | Northumberland Wildlife Trust | 142,726 of peat bog | | |
| | Yorkshire Peat Partnership[41] | | Yorkshire Dales National Park, North York Moors National Park, Nidderdale National Landscape | Yorkshire Wildlife Trust | 94,220 of peatland across North Yorkshire | | |
| South West Peat Partnership[42] | | South West England | Dartmoor National Park, Exmoor National Park | South West Water, Dartmoor and Exmoor National Park Authorities, National Trust | | | 22,300[4344] |

## 2 Peatland restoration

Peatland restoration activity aims to restore the ecosystem functions of degraded peatlands. While restoring our degraded peatlands is rightly at the forefront of environmental policy it has only reached this position due to the hard work of peatland practitioners working across the current delivery partnerships, and their predecessors, over the past few decades. These partnerships have identified the need for, and made the case for, restoration, secured funding from a range of sources to deliver restoration and have demonstrated their ability to deliver large-scale peatland restoration.

Although peatland restoration has been ongoing for several decades, and despite outstanding work by restoration agencies and partnerships[45], it has been at relatively slow pace due to numerous barriers. More recently, activity has accelerated as the agenda has been driven by the recognition that peatlands can contribute towards achieving net zero. By 2050 emissions from peatlands could be reduced by 5 MtCO2e through restoring at least 50% of upland peat and 25% of lowland peat.

The **England Peat Action Plan** highlights that peatland restoration is classified as "Very High" value for money, with carbon benefits from restoration of peatlands to near natural condition outweighing restoration costs by 5 to 10 times over 100 years (based on ONS 2019 values[46]). This shows the potential for peatland restoration to enhance social welfare and it should also be noted that peatland restoration provides further ecosystem service benefits beyond carbon. A recent UN water assessment also showed that the water use requirements for peatland restoration were very small and hence provided outstanding water use efficiency, per tonne of $CO_2$ equivalents saved, compared to other climate mitigation measures[47].

However, the degraded state of many peatlands means the recovery of ecosystem function takes time and typically requires multiple phases of restoration activity.

## 2.1 Delivering restoration

Upland peatland restoration in England is being delivered regionally through the delivery partnerships outlined in Table 1 who are funded through a mix of public and private finance. The maturity and governance structure of these partnerships varies significantly.

- Several partnerships have been operating for decades, others only formally for a few years, although these do typically have a longer history of undertaking restoration prior to being a formal restoration partnership.
- Moors for the Future is the oldest partnership, initially founded through a Heritage Lottery Fund project in 2003. It has gone on to successfully secure funding to deliver restoration from private landowners, local authorities, three water companies, the EU LIFE programme e.g. MoorLife 2020 and more recently the Nature for Climate programme.
- In contrast, South West Peat Partnership and Northumberland Peat Partnership were formed specifically around Nature for Climate funding.

The GNB coalition, which brings together the six delivery partnerships operating across Northern England, was formally launched in 2022, although several of the partnerships have a longer history of successfully working together to fund and deliver restoration.

- The teams and partnerships behind the Great North Bog have many years of valuable experience, and a diverse range of skills and expertise.

- Cross-partnership working has included EU LIFE projects and shared site visits to hone restoration techniques.
- More formal working across the GNB has developed during 2023 and 2024 thanks to funding from Esmée Fairbairn Foundation as well as support from the University of Leeds, via the EU WaterLANDS project.

Restoration work is achieved through a long chain of negotiation, data/evidence gathering, mapping, site assessment and scheme development, fundraising, contract writing and management, monitoring and reporting that generates positive outcomes for people, place and nature. The typical current model for delivering a restoration scheme is outlined in Figure 1. The delivery partnership is responsible for delivering all stages although the physical restoration work is usually delivered by an external contractor under supervision from the delivery partnership who may also use their own staff to deliver certain aspects of the restoration works. The **Nature for Climate Peatland Grant Scheme (NFC PGS)** programme explicitly splits restoration into two phases: Discovery Grants were used to prepare sites for restoration and Restoration Grants to carry out the physical restoration.

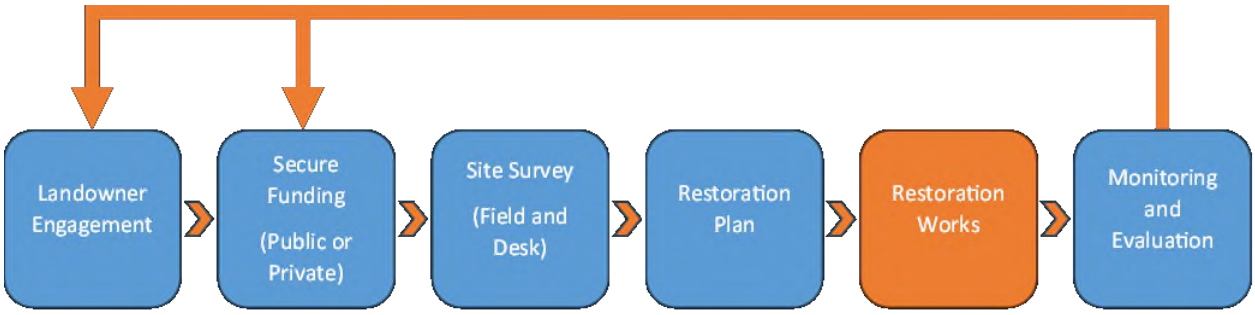


Figure 1: Typical current model for delivering a restoration scheme.

## 2.2 Maintenance of restored sites

In addition to the upfront capital and staffing costs of restoration it is vital to consider the long-term maintenance costs associated with restoration and the land use types that are compatible with a 'restored' landscape that has received either public or private funding. Maintenance costs include repairing interventions that have failed with time. Failure can occur at any stage although it may be the case that after a certain period of time the failure of an individual intervention has no material impact on the wider restoration and so may not require a 'fix'. Extreme events also pose a threat to restored peatlands, including fire and droughts. In addition to revisiting sites to undertake maintenance, sites often require staged interventions, several years apart and sites may need to be 'restored' several times where the outcomes from previous stages are built up as it takes time for a site to react to the previous stage. The present funding mechanisms do not allow for systematic maintenance, with publicly funded restoration typically having to spend all of the funding on delivery within the first year. The **Peatland Code** more explicitly addresses maintenance with a requirement that projects 'shall undertake remedial action should restoration activities not result in predicted condition category change by Year Five'.

The risk of 'wildfire' is ever present due to the accessibility of many sites, with fires linked to barbeques and fireworks being common, particularly across the Peak District, West Pennine Moors and parts of West Yorkshire. Peatland fires cause air quality issues[48] and also can destroy the peat mass, consuming the peat in the fire or rendering it subject to rapid erosion following the fire, resulting in large carbon losses. As the initial goal of most restoration projects is to rewet the bog by decreasing the water-table depth and via the promotion of mosses and plant species that prefer wetter conditions, restoration offers the potential to reduce fire risk or, at least, fire severity and its

impacts on the underlying peat. This rewetting and revegetation can also mitigate extreme weather conditions, reducing drought risk and also flood risk, with evidence indicating that shallower water tables can reduce flood risk[49] and increasing *Sphagnum* cover can increase roughness and reduce the speed of overland flow.

Where public and private money is being used to restore peatlands it is important that subsequent land management ensures that the benefits seen as a result of restoration are not lost through inappropriate management. For example, continued grazing and burning may not be compatible with land that has been restored.

### 2.3 Policy

The UK has a legally binding target to meet net zero by 2050, and has committed to reducing economy-wide greenhouse gas emissions by at least 68% by 2030 (compared to 1990 levels) as part of the Nationally Determined Contribution (NDC) [50] towards the **Paris Agreement**.

The **Kunming-Montreal Global Biodiversity Framework**[51] agreed at COP15 in 2022 has a vision that *"by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people"*. The mission of this Framework for the period to 2030 is *"To take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation"*. To achieve this there are 23 action-oriented global targets for urgent action - relevant targets for peatland restoration include:

- Target 1: Plan and manage all areas to reduce biodiversity loss
- Target 2: Restore 30% of all degraded ecosystems
- Target 3: Conserve 30% of land, waters and seas

- Target 8: Minimize the impacts of climate change on biodiversity and build resilience
- Target 11: Restore, maintain and enhance nature's contributions to people
- Target 14: Integrate biodiversity in decision-making at every level
- Target 19: Mobilize $200 billion per year for biodiversity from all sources, including $30 billion through international finance
- Target 20: Strengthen capacity-building, technology transfer, and scientific and technical cooperation for biodiversity
- Target 21: Ensure that knowledge is available and accessible to guide biodiversity action
- Target 22: Ensure participation in decision-making and access to justice and information related to biodiversity for all

The role of peatland restoration to help address these commitments in England is set out in several linked policies published by the UK government.

### 2.3.1 England Peat Action Plan

The **England Peat Action Plan**[52] sets out the Government's vision to reverse the decline in England's peatlands. It aims to: "Prevent further loss of peatland habitats and to restore more peatland landscapes to their natural state. Re-wetting peatland areas and returning them to their natural state could make a significant contribution to achieving our targets on reducing carbon emissions, as well as having other benefits for water quality, nature and flood mitigation". It includes an initial commitment to restore over 35000 ha of peatland in England by March 2025 through the £50 million **Nature for Climate Peatland Grant Scheme (NFC PGS)**. It also outlines how the **England Peat Map** project will work to provide a better estimate on the extent of peat stocks within England.

A **Peatland Restoration Roadmap** is due to be developed by Defra in consultation with partners which will set out a detailed trajectory for restoration to 2050. Data from the **England Peat Map** will be used to capture the detailed actions required to achieve restoration targets, this will be released in 2025. The **Peatland Code** will be promoted as the vehicle for private investment to be used for peatland restoration, this has been expanded to cover lowland peat in v 2.0. Further carbon pricing opportunities will also be explored.

### 2.3.2 The Environmental Improvement Plan (EIP) 2023 for England

**The Environmental Improvement Plan (EIP) 2023 for England**[53] is the first revision of the **25 Year Environment Plan**[54] and sets out how the government will "drive this work forward with renewed ambition. It is a blueprint not just to halt the decline of nature in our country, but to reverse it – changing the trajectory that the country has been on ever since the industrial revolution". The EIP sets out how the government will deliver **30by30**[55] in England, with the government committing to protect 30% of the UK's land by 2030. Peatland restoration falls under Goal 7 'Mitigating and adapting to climate change'. The UK government has recently released their vision for delivering on the UK's 30by30 target on land in England and the criteria for land and inland water areas which can count towards this target. This will include protected landscapes as well as Other Effective area-based Conservation Measures (OECMs) which are areas outside of protected landscapes that are achieving long-term and effective in-situ biodiversity, the UK government is currently developing a mechanism to formally recognise OECM's in England. A pilot of the 30by30 assessment and reporting process is due to commence in late 2024 with the full 30by30 guidance due to be published in 2025.

The EIP includes an aim to restore approximately 280,000 hectares of peatland in England by 2050. **NFC PGS** has provided funding to restore

35,000 hectares by 2025. The EIP also sets out how Defra will further restore and protect peatlands after 2025, with peatland restoration to be delivered through new farming schemes: **Countryside Stewardship** (wetter modes of farming) and **Landscape Recovery** (large-scale peatland restoration projects).

The **Protected Landscapes Targets and Outcomes Framework**[56] sets out ambitious targets for National Parks and National Landscapes on how they are expected to achieve the EIP Goals 1 (Thriving plants and wildlife), 7 (Mitigating and adapting to climate change) and 10 (Enhancing beauty, heritage and engagement with the natural environment). This includes some targets that are highly relevant for upland peatlands: Target 2: Bring 80% of SSSIs within Protected Landscapes into favourable condition by 2042; Target 3: For 60% of SSSIs within Protected Landscapes assessed as having 'actions on track' to achieve favourable condition by 31 January 2028; Target 6: Reduce net greenhouse gas emissions in Protected Landscapes to net zero by 2050 relative to 1990 levels; Target 7: Restore approximately 130,000 hectares of peat in Protected Landscapes by 2050.

### 2.3.3 The UK Green Finance Strategy

The **UK Green Finance Strategy**[57] sets out in more detail how the government aims use private investment to deliver net zero, build climate resilience and support nature's recovery and highlights the importance of blended finance to attract private investment to deliver restoration . It is estimated that each year an additional £50-60 billion capital investment will be required through to the 2030's to deliver on the UK's net zero ambitions. This strategy document again highlights the important role that the government expects the Peatland Code to play in funding restoration. Working with the **Green Finance Institute** the government will explore how blended finance models might be used to more strategically mobilise private finance for restoration and

there is an aim to unlock voluntary markets for carbon and nature and support the growth of high integrity voluntary markets.

### 2.3.4 Biodiversity Net Gain (BNG)

Biodiversity Net Gain[58] (BNG) is mandatory for developments in England and aims to ensure "habitats for wildlife are left in a measurably better state than they were before the development". Developers are required to deliver a BNG of 10%. Where it is not possible to achieve this on-site, developers can make off-site gains, either on other land they own or by buying biodiversity credits off the market. Biodiversity credits for peatlands are yet to be established, with version 3.0 of the Peatland Code to be released in 2025 likely to include an MRV option for biodiversity credits[59].

### 2.3.5 Local Nature Recovery Strategies

Local Nature Recovery Strategies[60] are currently being developed for all regions of England. Each local nature recovery strategy will include a written statement on biodiversity priorities and are expected to include proposed actions including restoration of peatlands. These should be in place for the whole of England by March 2025.

### 2.3.6 Land Use Framework for England 2025

The 2020 National Food Strategy Independent Review[61] recommended that the government creates a Rural Land Use Framework that sets out which areas of land would be best suited to the different functions of the "three compartment model" (a mosaic of different landscapes including wild land, low intensity farmland and higher intensity farming). They recommended that the Framework should*: "be clear and explicit about what the Government is trying to achieve, which incentives, payments, and regulations it will use to achieve nature recovery, climate and food goals, and the metrics it will*

*use to monitor progress"*; *"inform the payments and regulations that are being designed to incentivise farmers across England to make the transition"*; and *"be used to connect and inform the many existing incentive schemes and land-based strategies in Defra that inform the way land is used"*.

Plans for a Land Use Framework for England were outlined by the previous government but were delayed due to the 2024 general election. A consultation on land use has been launched that will inform the publication of a Land Use Framework for England.

### 2.3.7 Working with natural processes to reduce flood risk

The Environment Agency's Working with **Natural Processes Evidence Directory**[62] for flood risk reduction includes evidence on how peatland restoration forms part of headwater drainage management, with a focus on vegetation management and grip and gully blocking.

## 2.4 Economics and Financing of Peatland Restoration

Based on ONS data the **England Peat Action Plan** identifies peatland restoration as "Very High" value for money and is currently funded through a combination of public and private finance, although the contribution from private finance is limited at present.

### 2.4.1 The benefits and plural values of peatland restoration

Peatland restoration produces benefits to society, including carbon capture, habitat provision, flood mitigation, regulation of water quality, and opportunities for recreation.

- These benefits can be monetised and compared to costs of peatland restoration:
    - e.g. restoring 20% of Scottish blanket bog peatlands for their capacity to deliver on water quality, carbon sequestration and

wildlife support, has been shown to lead to net economic benefits of between £79.6 and £287.6 million over a period of 15 years[63] when compared to the costs of restoration.

- Monetised benefits only represent part of the values that people hold for peatlands (so called *exchange values*).
- Different groups hold different values for different ecosystem services provided by peatlands,
    - e.g. a study in the North Pennines has shown how recreationists show higher appreciation for semi-natural habitats vs. pristine or restored peatland, while walkers and cyclists are more sensitive to changes in recreational facilities than environmental quality, and anglers and birdwatchers' preferences are more aligned with values promoted by conservation[64].
- People's perceptions and relationships with peatlands are shaped by their *plural values*, including their worldviews (how people relate to the world), their broad values (moral values and principles that guide decision-making) and specific or assigned values (e.g. benefits from the ecosystem services) [65].
- These plural values result in complex and multi-faceted relationship between people and peatlands; restoration approaches need to develop ways to deal with and navigate this complexity[66].
- New frameworks extending beyond monetary valuation and cost-benefit analysis offer opportunities for assessing plural values as a basis for navigating value conflicts and challenges that may emerge through peatland restoration[67].

### 2.4.2 Blended Finance for Peatland Restoration

Blended finance offers the opportunity to use a mix of public and private finance to deliver restoration while lowering the risk profile and attracting private capital. This approach can be used where either public or private finance are insufficient to deliver a restoration

programme on their own. In addition to a mix of public and private finance a blended approach offers the ability to use a combination of different sources of public funding to deliver restoration e.g. agri-environment and flood funding, although current treasury rules mean that not all schemes are compatible with each other preventing them being used to restore the same site. Anecdotal evidence has highlighted that not all landowners are happy to agree to blended schemes where the match funding is coming from a corporate.

### 2.4.3 Public Finance

As part of the **England Peat Action Plan** the UK government has committed an initial £50 million through the **Nature for Climate Peatland Grant Scheme**[68] to restore over 35000 ha of peatland in England by March 2025. Beyond 2025 the governments intention is to support peatland restoration in England through **Environmental Land Management (ELM)**.

#### Nature for Climate Peatland Grant Scheme (NFC PGS)

**NFC PGS** has proven highly successful in enabling accelerated peatland restoration and boosting capacity within the partnerships delivering upland peatland restoration across England and has been generally well received by the delivery partnerships. All partnerships secured funding through the Discovery phase and the majority have then gone on to secure funding through the Restoration phase. The requirement for at least 25% of the total project costs to be covered by funding from non-exchequer sources (not from the UK government or HM Treasury) has meant that in some instances the Restoration Grant phase was unattractive, this in part reflects the maturity of some of the Great North Bog partnerships. This has implications for future funding where it is expected that private finance will make a major contribution.

Despite its success, schemes that pay in arrears can result in significant cash flow problems for delivery organisations delivering multi-million pound restoration schemes annually. This was further exacerbated by significant payment delays in 2023 when restoration activity had to be underwritten by host organisations resulting in significant financial pressures for these organisations. This must be addressed in any future funding schemes.

### Environmental Land Management

At the end of **NFC PGS** the UK government expect that public funding of peatland restoration in England will come through **Landscape Recovery** (LR) [69] and **Countryside stewardship** (CS) [70]. A recent paper submitted by the GNB to Defra highlights that Landscape Recovery *" is not a proven mechanism for replacing NfC, for such an important element in our nature-based efforts to reach net zero"* and it will not be able to maintain the pace and scale of delivery that has been achieved under Nature for Climate.

### Landscape Recovery

**Landscape Recovery** funds a smaller number of longer-term, larger-scale (500 to 5000 ha), bespoke projects to enhance the natural environment and deliver significant benefits. It offers a long-term solution to restoration. The initial project development phase supports detailed planning over around a 2-year period including:

- engaging and securing private investment
- deciding on the structure of private and public funds
- negotiating terms of a long-term project public funding agreement
- risk assessment, allocation, and mitigation planning

At the end of the development phase if the project meets Defra's requirements a long-term implementation agreement would be awarded allowing restoration to start. Implementation agreements

are expected to be long term > 20 years and projects will include long-term safeguards to protect them into the future.

There is no funding to deliver restoration during the LR project development phase which may result in a funding gap to undertake large-scale peatland restoration. It should be noted that LRs currently in the development phase cover only a very small area of the total peatland area in need of restoration and the expectation is that these projects last at least 20 years although delivery of restoration is likely to be shorter. The initial phase one pilot LR schemes are expected to deliver 20,000 ha of 'wilder landscapes, habitats, rewetted peat and afforestation at a landscape scale' over their lifetime. The 32 round two projects aim to restore 35,000 ha of peatland in total (both upland and lowland). While this is significant, and GNB partners are involved in 12 LRs, NFC PGS has enabled the GNB partners to restore close to 20,000 ha in 2023-24 alone, although there is still work to do on standardising how the area restored is measured and reported.

### Countryside Stewardship

Countryside Stewardship (CS) 'pays you for the environmental work you carry out alongside sustainable food production'. CS currently pays for a range of options on moorland and upland areas. A number of actions to assess the condition of moorland are also available through the SFI moorland standard. Defra plan to extend the current offer including payments for several new actions focussed on peatland restoration.

### Environment Agency Funding

As a result of the flood reduction potential of peatland restoration the Environment Agency has funded peatland restoration through a range of programmes. While the Environment Agency's £25 million NFM programme launched in 2023 included headwater drainage management as an option, the requirement that 'NFM measures need

to be sited within 5km of a place at flood risk to provide a benefit' meant it was unattractive to many remote upland peatland catchments where the benefits may be seen further downstream[71].

### 2.4.4 Private Finance

Private finance has the potential to be a force for good, accelerating the restoration of peatland, wildlife populations and delivering carbon benefits. A major part of the national strategy for restoring peatlands seeks to enhance private investment in restoration through the use of the **Peatland Code**. It is clear that the green finance markets are not yet functional or mature enough to deliver an investment programme as important and urgent as peatland restoration.

Institutional investment can potentially unlock very significant sums of money for nature restoration over the long term. For example, in 2022 Defra appointed fund managers and provided £30 million seed-funding to develop the 'Big Nature Impact Fund', a new public-private impact fund to invest in restoring nature. This fund, now known as the UK Nature Impact Fund, and managed by Finance Earth (after Federated Hermes pulled out), aims to support peatland restoration via high-quality verified carbon credits, biodiversity units and other ecosystem service markets. It remains unclear when this fund will launch.

Individuals, charities and corporations can also provide long-term investment into peatland restoration through philanthropic donations and Social Corporate Responsibility (CSR) funding. While CSR is not a legal requirement within the UK, many companies take part in CSR voluntarily and there are a numerous examples where such funding has supported peatland restoration within England although to date this investment has not been tied to carbon credits.

### Carbon Credits

Carbon credits are a mechanism that allows companies, organisations and people to compensate greenhouse gas emissions or support action on climate and allow investment into nature recovery.

The IUCN UK Peatland Programme's **Peatland Code**[72] is a "voluntary certification standard for UK peatland projects wishing to market the climate benefits of peatland restoration and provides assurances to voluntary carbon market buyers that the climate benefits being sold are real, quantifiable, additional and permanent". It is promoted by the EIP as the vehicle for private investment to be used for peatland restoration and has expanded to cover lowland peat in v 2.0. Using the Peatland Code restoration can be funded entirely by private finance or a blended approach.

To date there has been limited uptake of Peatland Code in England. The GNB are close to delivering a scheme using the Peatland Code but have no live projects currently.

### Biodiversity Credits

The IUCN UK Peatland Programme are currently developing a procedure for biodiversity crediting alongside the Peatland Code and Woodland Carbon Code programmes although this is not expected until Q2 2025.

### Private green finance and the risks of nature commodification

- Besides contributing to 'greenwashing', Green Finance and market-based instruments for peatland restoration such as the sale of carbon credits, carry the risk of being conducive to the commodification of nature, i.e. the continuous expansion of ecosystem services traded as commodities.

- An analysis of England's Green Finance policy space shows an alarming lack of consideration of the risks of nature commodification associated with the introduction of private investments into peatland restoration.

Risks of nature commodification include (but are not restricted to) [73]:

- inequities of access to land
- enhancement of wealth inequalities
- conservation crowding-out
- disruption of the mitigation hierarchy (i.e. off-setting being prioritised over damage avoidance)
- and more generally endangering the public good nature of peatland ecosystems and the ecosystem services they provide.

### Cost-effectiveness of peatland restoration actions

Evidence on the costs of peatland restoration is limited and highly fragmented[74] in part due to lack of research funding to operate at scale, the decentralised way in which restoration is delivered without sufficient funding for monitoring and a lack of an agreed national monitoring framework for peatlands. This is limiting:

- Accurate assessment of cost-effectiveness of restoration actions and 'value for money' of investment decisions.
- Understanding of potential for economies of scale as restoration efforts increase.

Information on peatland restoration costs are held by multiple organizations and institutions and are not open to science and public for analysis and scrutiny:

- There is no systematic approach for collecting data on costs and details of the restoration implemented.

- There are unknown, as well as 'hidden', costs and barriers to restoration, from other actors such as contractors of restoration works.

Key knowledge gaps include costs associated with:

- maintaining a restored site in favourable condition
- income forgone by implementing restoration.

Some attempts have been made to systematically collect and analyse the costs of restoration action.

- e.g. Through the NatureScot administered Peatland Action projects in Scotland[75], a database of costs is being collated
- No comparable database exists for England.

## 3 The case for upscaled peatland restoration

Because of its capacity to be both part of the solution to climate change and part of the problem, peatland restoration requires sustainable funding to ensure success and accommodate the reality of delivering upscaled approaches across multiple land holdings over many years and understand the capital and revenue investment needed over long time periods. Upscaled peatland restoration is defined here as restoration efforts that go beyond individual catchments and across entire landscapes and beyond, taking a long-term strategic regional approach to peatland restoration that delivers at scale and pace across multiple sites over many years. Peatland restoration is too important to only be a component option within the wider ELM programme. A bespoke peatland element of ELM is required, that enables a blended approach to finance (both public-private and public-public) which takes in to account the individual needs of a peatland and its ability to attract green finance. Many sites will be attractive to investors and can potentially be restored using solely green finance. In contrast, some sites may be unattractive to investors due to their ownership, location and condition. In these

circumstances, public funding may be the only option or may be needed to attract green finance. Equally, some sites may require more than one source of public funding to ensure success and provide multiple outcomes.

This blended approach needs to account for the whole process required to successfully deliver super-landscape-scale peatland restoration, which includes:

- Furthering the science that informs the work and approaches to practical restoration
- Data, evidence and monitoring
- Influencing peatland policy
- Development of financing and governance models that include multi-year funding agreements and which work for all parties and take into account the complexity of gaining multiple landowner agreements, contract specification and management requirements and land manager collaborations
- Capacity building across the whole sector
- Engagement and communication.

Given the land ownership structure of the English uplands, for peatland restoration to be a success then landowners need to be part of the solution.

### 3.1 The science of restoration

Restoration of our upland peatlands has:

- Focused on rewetting the peat by raising the water table as the initial step: this is achieved by damming up artificial drainage ditches and 'natural' erosion gullies and reprofiling haggs. The focus then shifts to revegetating bare and eroded peat to establish vegetation cover and prevent further losses, which ultimately improves terrestrial biodiversity[76].

- Typically employed a standard suite of interventions, targeting key degradation factors.
- Traditionally been metric driven[77] with inconsistencies on how total areas restored are reported. This has resulted in a focus on maximising number of ditches and gullies blocked, bare areas treated and haggs reprofiled, rather than a broader consideration of upscaled optimal restoration that designs the system based on science and modelling to maximise outcomes.
- Created hundreds of thousands of peatland pools that are often of a very similar small size whereas natural systems have a much broader range of pool areas and shapes that can enhance biodiversity, and enable the peatland to stay wetter for longer in dry periods.

The need for some restoration projects to be carried out in stages is not always well understood among funding agencies. For example, a first stage of restoration typically involves stabilisation of the peat and initial gully or ditch blocking; disturbance of the peatland by machinery can be kept to a minimum by ensuring as much of the hydrological restoration is complete in this first stage. However, new actions may be required in subsequent years to encourage peat forming vegetation and to further raise the water table where gully and ditch dams have infilled or become revegetated, allowing dam heights to be safely raised. Having pools/ponds of different ages at a restoration site will enhance aquatic biodiversity likely leading to benefits for bird populations[78]. Carrying out restoration over multiple years also allows practitioners to reflect on success and failures and what actions might still be required. Therefore, flexible funding metrics are required that allow for staged restoration over many years or even decades so that sites can be revisited.

A move away from metric-driven restoration towards landscape-scale optimal restoration has the potential to improve outcomes. Such an

approach would involve modelling and careful design of restoration schemes that takes a more holistic view of the landscape and designs the 'right intervention in the right place'. This includes looking at the local impacts, how to spatially optimise interventions, but also factors into account how interventions interact with other interventions upslope and downstream to deliver multiple ecosystem service benefits. Such an approach is particularly important from a hydrological perspective given the important role that raising water tables and reducing runoff has locally and downstream[7980].

Spatial targeting of restoration to improve outcomes and improve the cost effectiveness of restoration requires more attention and flexible funding mechanisms. Importantly, consideration of ways to achieve a shallow water table across a large area of the peatland is needed as ditch and gully blocking methods often only influence water tables in localised zones. Additionally, trying to achieve the same outcomes at all sites does not take account of natural variability, topography and climatic differences – a greater appreciation of previous historic variation is required. Funding schemes are needed that have flexible metrics that account for spatial variability in restoration targets and designs between sites and regions.

Recent research has demonstrated that by making relatively simple changes to restoration practices it is possible to improve the ecological and hydrological outcomes of restoration that go beyond the physical recovery of the peatland. While revegetation including plug planting and *Sphagnum* inoculation is common practice, augmented dispersal of plants and animals needs to be trialled more broadly to understand benefits and limitation for population resilience to environmental change, particularly for rare peatland species. For example, adding small quantities of water from natural pools or from long-term restoration pools to new pools has been found to aid dispersal of zooplankton communities and alters the long-term species

composition of the pools, efficiently generating heightened biodiversity and avoiding domination by a single species[81]. Research from natural pool systems suggests that modifying restoration processes to ensure a more diverse range of pool shapes and sizes across restored sites could potentially ensure better outcomes. The concentration, form and cycling of carbon in natural pool systems has been found to be linked most strongly to pool water level and size whereas the smaller pools created through ditch blocking experience higher DOC concentrations than natural pools[82].

### 3.1.1 Recommendations

- There should be increased use of science and modelling at the planning stage to ensure optimal outcomes. As the first stage of peatland restoration typically focusses on improving hydrology this should include:
  - Encouraging restoration actions that support upscaled water-table recovery across landscapes to achieve net zero. This would mean moving beyond simple metrics of metres of ditch or gully blocked.
  - Spatial targeting of restoration actions for ecosystem service benefits should be encouraged – for example there are zones within the landscape where *Sphagnum* planting is likely to have a larger impact on downstream flood reduction (e.g. bottom of hillslopes that flow into nearby streams, ditches, gullies and other watercourses, and areas of peatland on gently sloping parts of the catchment).
  - Using hydrological modelling to inform optimum spacing and total number of dams required for restoration of ditches and gullies so that it is specific to the site and most cost effective to get maximum water-table recovery. This would require changes

to Countryside Stewardship rules as they currently stipulate a minimum distance between dams.

  - Pool creation on the main body of peat should be encouraged/enabled with a wide variety of pool sizes and shapes (this could be trialled at a number of sites in the first instance to hone techniques).

- Restoration targets should be site specific and, where possible, take account of past vegetation history from the palaeoecological record (e.g. to understand whether *Sphagnum* was ever present/widespread at the site in the past).
- Restoration at some sites should be considered in stages, facilitating additional interventions as the ecosystem recovers and develops. This staged approach, potentially over many years or decades, requires associated enabling policy and funding.
- Augmented dispersal of plants and animals should be trialled to understand benefits and limitations for population resilience to environmental change, particularly for rare peatland species. For example, adding water from natural pools or from long-term restoration pools to new pools should be undertaken as part of restoration actions.
- Funding and permissions should be sought to monitor and carry out alternative, innovative and science driven approaches to restoration and management capable of delivering multiple ecosystem service benefits while also making best use of available resources.
- Restoration methods should be developed for peatlands owned by the MoD's Training Estate that are suitable for tackling the specific degradation issues associated with ordnance use.

### 3.2 Data, evidence and monitoring

Data and evidence on where restoration has taken place and the impacts of interventions remains fragmented and inaccessible. There is currently no single database to show where restoration has taken place, and additionally how the area restored is reported varies between partnerships. Defra is currently working to establish the England Peatland Register and the Peat Delivery Working Group is working towards developing a single approach to reporting area restored.

- There is limited understanding of the efficacy of many interventions routinely employed for a broad range of ecosystem service outcomes and how these impacts alter with space and time.
- There is a need to better understand the multiple ecosystem service benefits that restoration can provide and that would be derived from a broader landscape-scale approach.
- Monitoring is often reactive, with little time allocated to monitoring sites prior to restoration preventing true BACI (before-after, control-impact) monitoring.

  Long-term datasets are lacking due to scarcity of appropriate funding mechanisms and agreed standards and protocols. Although **NFC PGS** includes funding for monitoring lead times remain short, limiting the ability to capture sufficient data prior to restoration works starting.
- The IUCN UK Peatland Programme **Eyes on the Bog** (EoTB) initiative[83] provides scientifically robust, repeatable, affordable and long-term peatland monitoring. Version 2 was recently released and is being routinely used by practitioners and volunteers across the GNB. Data from EoTB is being shared across the peatland community using **PeatDataHub**[84] which includes a specific module EoTB data that uses FAIR data principles (findability, accessibility, interoperability and reusability). However, there is in inadequate

funding for PeatDataHub which is being operated voluntarily by the University of Leeds. Such a facility needs properly resourcing.

### 3.2.1 Recommendations

- Monitoring designs and evaluation of hydrological responses to restoration need to take account of the spatial variability and the topography of the peat, especially around gully and ditch networks.
- A funded national platform for sharing knowledge, success and failures of peatland restoration techniques should be established, while ensuring innovation is supported and shared. This could be in the form a neutral centre of excellence which could also support training programmes to help upskill and create capacity.
- Funding should be allocated for comprehensive multiyear monitoring of restoration works using standardised protocols. This should include developing a pipeline of sites for restoration that can enable effective pre monitoring of sites to be undertaken prior to any restoration.
- The Peat Delivery Working Group method for measuring area restored should be adopted and data from all restoration projects should be added to the England Peatland Register once live.
- A process to co-design agreed data standards for peatland monitoring and a library of protocols to ensure data are comparable and reusable in the future is required. Thought should be given to funding an institution to develop and curate an open repository to store and interpret monitoring data.

## 3.3 Influencing Peatland Policy

Together, the delivery partnerships operating across England have a wealth of knowledge and understanding of peatlands and peatland restoration. By working together they can have a stronger voice and

can help shape policy. The vast amount of data these organisations hold can also be used to demonstrate the focus of any future policy.

Restoration activity is consented by Natural England using national guidance however the regional delivery of this means that there are regional differences in what is permitted. The techniques used to carry out restoration have largely developed through a process of learning by doing and have evolved through time and although common approaches are used, regional differences in the peatlands, the regional delivery model and past experience means that the specific methods employed vary between the partnerships.

### 3.3.1 Recommendations

- Our peatlands are a national strategic asset and should be treated as such, with a national strategic approach to their management. This could include a requirement of landowners to restore degraded peatlands similar to the legal requirements for listed buildings.
- A National Peatland Task Force should be established, initially trialled in the north in collaboration with the Great North Bog. This could mirror the Government commitment to forestry, delivering a shared commitment to deliver and fully fund restoration and ensure sustainable future management of our upland and lowland peatlands.
- The proposed National Peatland Task Force should lead the review, maintenance and expansion of the Peatland Action Plan
- Peat partnerships should work collectively to act as stronger voice to influence policy and ensure learnings from past work and funding schemes improve any future schemes.
- Develop a process to stack benefits that have been evidenced by recent scientific literature and improve multi-agency oversight and support to ensure co-benefits from peatland restoration actions are

realised – for example revegetation and gully blocking have been shown to reduce flood peaks downstream (natural flood management) and should also enhance resilience to wildfire.

- Work is required to ensure there is no confusion/overlap between tree planting schemes and the need to protect and restore peatlands where tree planting is not compatible.
- There is a need for more consistent approvals from Natural England to avoid regional differences in what interventions are permitted.

### 3.4 Financing peatland restoration

NFC PGS has demonstrated how it is possible to effectively use public money to increase organisational capacity and speed up the delivery of large-scale peatland restoration and deliver on the UK's Net Zero ambitions. Landscape Recovery offers an exciting opportunity to co-develop long-term sustainably funded peatland restoration. However, Landscape Recovery does not fit with the current delivery model of regional partnerships delivering a rolling series of restoration projects at multiple sites each year. The length of time taken to develop an LR scheme runs the risk of slowing down the rate of peatland restoration just as we need it to accelerate. Equally, private finance has the potential to invest large sums of money to deliver restoration and management of our peatlands going forward, replacing some of the contribution from public funds. The GNB has demonstrated this potential and will soon start delivering restoration using the Peatland Code.

However, a number of challenges still remain before such financing schemes can be rolled out more widely. Furthermore, involvement of corporate actors in green finance carries risks associated with the commodification on nature[85], which are currently not being sufficiently addressed[86].

Regardless of the source of funding, attention should be paid to the cost-effectiveness of restoration to ensure good outcomes and acknowledge that some sites will be more challenging to restore and therefore more expensive. We also need to recognise the multiple benefits that peatland restoration can achieve and not just focus on carbon and biodiversity where credits are either currently available or will be soon. The case for any financing of peatland restoration is founded in the value that peatlands and their services have for society. These values are plural, diverse and more complex than simply 'exchange values' measured in monetary terms.

### 3.4.1 Recommendations:

#### Public Finance

- A bespoke peatland element of Environment Land Management schemes (and any future agro-environmental schemes) is required that enables a blended approach (public/private) to finance which takes into account the individual needs of peatlands and accommodates the reality of delivering super-landscape-scale approaches across multiple holdings over many years.
- This blended approach should allow different sources of public funding to be combined to deliver multiple outcomes without compromising Treasury rules and risking double accounting.
- Short-term funding schemes should be avoided in favour of longer-term funding that can retain and build capacity (both skills and supply chain), accelerate restoration and allow multi-year phased restoration projects.
- There should be a move toward a less metric driven funding mechanism that enables landscape-scale restoration and allows innovative approaches to be employed.

- There is an urgent requirement to ensure there is sufficient trained resource in Natural England and Defra to input into funding applications/offers and to pay finance claims in a timely manner.

### Private finance

- The Government and private sector need to work together to create a coherent suite of legislative drivers, regulations, accreditation & guidance frameworks for a functional, environmental and socially positive role for green finance.
- There is a need to address low uptake of the Peatland Code through consultation with delivery partnerships, landowners and managers, Defra, Natural England and the IUCN UK Peatland Programme.
- Strong regulation is required to identify, prevent and mitigate the risks of nature commodification derived from the involvement of corporate actors in the financing of peatland restoration.

### Cost effectiveness

- Develop protocols for standardised collection and sharing of data of peatland restoration efforts and associated costs, to be implemented by peatland restoration practitioners, so that 'value for money' investments can be identified, and spatial prioritization of restoration can be informed by economic efficiency.

### Plural values

- Peatland restoration needs to acknowledge that people's values are plural, diverse and more complex than simply 'exchange values' measured in monetary terms. New frameworks provide ways of operationalising such plural values in ways that can be used to inform decision-making beyond just cost-benefit analysis, helping identify social challenges from restoration action so that they can be mitigated.

## 3.5 Governance

The Great North Bog consortium has demonstrated how different organisations can come together to deliver restoration at a speed and scale that would not be possible individually. This is not without its challenges particularly where delivering restoration at the consortium level through blended and private finance is concerned as this requires a formal 'vehicle' to be in place to receive the finance. Currently the delivery partnerships delivering peatland restoration across England have a number of different structures in place, with host organisations including wildlife trusts, local authorities, charities, national parks and water companies. Some partnerships are also not legal entities in their own right.

As part of LR there is a requirement for each project to put in place suitable governance arrangements and to agree funding arrangements (both public and private). To achieve this each LR is likely to require a special purpose vehicles (SPV). As there are 54 round one and two LRs in development this will potentially result in a high number of SPV's which in turn has the potential to create increased complexity and expenditure on administration of new bodies. Regional delivery partnerships offer a partial solution to this offering the ability to act as umbrella organisations to deliver peatland restoration, ensuring consistency and quality of delivery while at the same time improving efficiency with public money and allowing long term deliverability.

### 3.5.1 Capacity building across the sector

Regardless of the source, most funding for peatland restoration has typically been short term, with partnerships securing funding for delivery on an annual basis. The lack of long-term secure funding has:

- Limited what is possible to achieve at sites and has prevented reflection and local learning.

- Prevented the partnerships, contractors and those involved in the wider supply chain from increasing capacity as it limits their ability to employ people on long-term contracts and invest in machinery, equipment and facilities.
- Increased staff turnover due to the use of fixed-term contracts meaning knowledge is regularly lost from organisations.

**NFC PGS** has played a major role in helping the peatland partnerships gear up to deliver more for people, nature and climate. Sustaining the model and level of investment will maintain momentum, and enable longer-term planning to deliver on national targets around the climate and nature crisis. Letting this fall away now would undermine the investment of public money already made through NFC and the potential for its future accelerated impact.

- Maintaining current staffing levels would significantly reduce the time taken to restore our peatlands.
- It remains unclear whether it will be possible to maintain this increase in staffing beyond the end of the scheme.
- Economic analysis has demonstrated how delaying restoration of peatland would lead to substantial loss of economic benefits to society (e.g. a study in Scotland showed an opportunity cost of £191 million annually to the country if restoration was delayed from 2027 to 2039-2050)[87].

Building contractor capacity is also vitally important to achieve upscaled restoration. While **NFC PGS** has allowed partnerships to build capacity, contractors are still typically operating on annual contracts. The lack of long-term contracts prevents contractors from building capacity in people and machinery.

### 3.5.2 Training

Several training programmes currently exist to boost skills and capacity within peatland restoration:

- The YPP LANTRA accredited **Peatland Restoration Practitioner** training programme is designed for people looking to:
  - develop skills in project managing peatland restoration, from survey to construction,
  - gain accreditation to support professionalisation of skills,
  - gain understanding to enter the peatland restoration sector.
- The SRUC **Peatland Assessment and Restoration** training course in Scotland.
- The Crichton Carbon Centre **Peatland ACTION restoration training** programme in Scotland.

### 3.5.3 Recommendations

- There is a need for strategic and practical support for the peatland partnerships and their teams.
- There should be exploration of how regional delivery partnerships can act as umbrella delivery bodies across multiple LR projects, reducing the complexity of delivery across many organisations and ensuring public money is used efficiently while at the same time delivering long-term consistent and quality restoration.

## 3.6 Engagement and communication

A significant evidence base shows that stakeholder and community involvement are vital elements in developing better, more sustainable restoration measures[88,89,90,91,92]. This refers both to engagement of wider affected publics and those directly involved in managing land to be restored. This is recognised in peatland policy documents. For example, the **UK Peatland Strategy**[93] points to the importance of community involvement, ideally as early as possible, in restoration processes. It includes contributions from GNB delivery partnerships, who between them have decades of practical experience confirming

the importance of working sensitively and consistently with people affecting and affected by peatlands.

Social sciences have been increasingly brought into the restoration realm to provide tools to support community engagement. However, community engagement has been traditionally, and to an extent still is, thought of as pertaining to a domain and or 'work package' separate from the (physical/technical) restoration works, rather than as an integral part of them.

By engaging with communities as part of its core, restoration can become more than the physical rearrangement of plants, soils and water on their land. It can also 're-arrange' the relationship between people and nature and their role in nature protection and land management e.g. land managers might see themselves not only as food producers but also as stewards of an environmental legacy.

The concept of 'community', however, is not un-ambiguous and can be misused in policy and other arenas e.g.:

- It can simplify, homogenize and localize what are often complex, contested, geographically distributed and dynamic realities.
- It risks vocal actors becoming understood to be 'the community', obscuring those who are less vocal but who have quite different perspectives and potentials to benefit or not from peatland restoration.

It is vital to be aware of **plural values** at play and how these might influence how people respond to different aspects of engagement processes. For example, the value people ascribe to what they view as a 'traditional' landscape vs. a restored landscape.

Social science methodologies can offer important insights into how and why values might differ. Crucially, these often reflect cultural, economic and political realities and the sometimes-competing interests that these are linked to. In such contexts, social sciences have

developed various tools, such as collective deliberation and visioning that may help identify common ground and ways to move forward together toward restoration.

There are also practical barriers to meaningful engagement of communities in restoration. For example, short-term and part-time contracts can negatively affect engagement strategies which require the delicate, ongoing work of relationship building.

### 3.6.1 Recommendations

- Community engagement should be seen as a key pillar of peatland restoration and be integral to the restoration process and works, for which the role of local peatland partnerships is critical. Regional-scale partnerships can play a key role in connecting with each other to share knowledge and experience regarding engagement
- Engagement should not solely focus on holding public events or consultations before or after restoration takes place. It should instead recognise that all aspects of the restoration process involve people and relationships that form the 'substance' of community engagement.
- Making engagement a key pillar of peatland restoration means it needs to be supported with the relevant personnel and resource capacity (i.e. not only engagement officers, but all restoration staff), over the long term. This might include culture changes within organisations by which all staff see themselves as integral to community engagement.
- Those involved in community engagement must be aware of the risks it can potentially bring, including stakeholder and community fatigue, as well as be mindful of the dynamics of power (ability to affect change) associated with peatlands and land management.
- Engagement efforts should try to work with the concepts and concerns people themselves draw on to understand environments

as they are and as they may be in the future, e.g. working collaboratively with land managers' sense of ecological balance, sense of self, identity, and place and views of what is just.

- New strategies need to be developed to generate emotional connections between the general public and peatlands, similar to what is seen with, for example, tropical forests, that enable a better understanding of the value of peatlands and they role they play 'at home'.

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