

CATCHMENT MANAGEMENT USING PAYMENTS FOR ECOSYSTEM SERVICES TO RESTORE AND MAINTAIN UPLAND PEAT



There is growing interest in the potential for Payments for Ecosystem Services (PES) to fund conservation and sustainable land management, whilst providing tangible benefits for UK business. The majority of PES schemes to date in the UK have been in the water sector, and focused on upland catchments, often on peat soils, where much of our drinking water comes from. However, there has been little consideration of the role that such schemes might play in meeting the costs of holistic catchment management which will contribute towards implementing the EU Water Framework Directive (WFD).

- What **knowledge and practical experience can water companies share** with one another about the barriers and options for meeting WFD objectives in uplands and peatlands, and **how might PES schemes be able to help?**
- By bundling payments for clean water with payments for other ecosystem services and benefits, such as carbon and biodiversity, might it be possible to **bring new buyers into current PES schemes, and so spread the cost of implementing the WFD?**
- By combining payments for clean water with payments for other services, might it be possible for PES schemes currently focused on water to **deliver a wider range of societal benefits**, contributing to Corporate Social Responsibility agendas and helping meet other targets e.g. under the EU Habitats Directive?

WHY UPLANDS?

The UK uplands are recognised as vitally important for carbon sequestration and loss, are home to many protected species and habitats, and in the UK, around 70% of drinking water comes from upland catchments, many of which are peat dominated. Much of the UK upland landscape is covered by organic or organo-mineral soils. Of the blanket peat around 80% has been degraded, which in itself is costly to society through increased greenhouse gas emissions and poorer water which incurs additional treatment costs.

The Commission of Inquiry on Peatlands, carried out by the IUCN Peatland Programme, concluded in its report of October 2011 that 'Securing the benefits we derive from peatlands requires an **urgent step-change in action** to redress past damage. A speedy response to protect and restore our peatlands under a changing climate is challenging – but will cost us dear if we delay'.

PAYMENTS FOR ECOSYSTEM SERVICES

PES is a market-based instrument that connects providers with consumers of ecosystem services. The term is often used to describe schemes where the beneficiaries, or users, of ecosystem services provide payment to the stewards, or providers, of these services. PES schemes often involve a continuing series of payments to land or other natural resource managers in return for a guaranteed or anticipated flow of ecosystem services. The basic idea behind PES is that those who provide ecosystem services – like any service – should benefit from doing so. This can provide a mechanism to bring historically undervalued services into the economy.

The last 10 – 15 years have witnessed a rapid proliferation of PES schemes around the world. According to the OECD, there were already more than 300 PES or PES-like programmes in place by 2010 at national, regional and local levels. PES feature prominently in DEFRA's Natural Environment White Paper (2011), with a Best Practice Guide and Action Plan planned for 2012. DEFRA has also launched an Ecosystem Markets Taskforce to explore opportunities for PES and other ways of using natural capital. PES also features in the Scottish Government's Land Use Strategy and the Welsh Government's Living Wales Green Paper.

Based on DEFRA's forthcoming PES Best Practice Guide

RECOMMENDATIONS

COLLABORATION: Policy makers, land managers, farmers, researchers, citizens, local authorities and land users need to become better engaged with each other and the issues and facts around upland peat management to build trust and understanding. Local catchment management groups could facilitate this linked with river basin planning.

VALUES: We need to gain a better understanding of what and how ecosystem services are valued by society and how that can be translated into their protection. Public awareness of recent flood and drought issues means this is a good time to raise awareness of ecosystem services and the benefits provided by our uplands.

FUNDING: Creative and integrated thinking is required for sustained changes in practice, appropriate research will be required to inform decisions. The proposed reforms for the Common Agricultural Policy from 2014 and beyond include 'greening' the policy and balancing international food production and environmental protection. PES should form part of this challenge and facilitate holistic catchment management. Private funding may also offer PES schemes based on the provision of clean water and could be expanded to provide wider benefits through bundling services together.

EVIDENCE BASE: Longer term primary research is needed to underpin the evidence base to ensure sound decision making. Currently there are few monitoring sites in our peat uplands. It is likely that intact upland systems will provide resilient river systems downstream, more able to cope with more extreme events in the future.

GUIDANCE: Flexible rather than prescriptive guidance is needed for the UK to enable PES to be implemented fairly and consistently. High level support for PES will help with the development of specific 'codes' tailored for use by certain sectors or habitats e.g. a UK Peatland Carbon Code designed to provide guidance to peatland restoration projects to ensure long-term, additional climate and other benefits whilst avoiding tradeoffs with other ecosystem benefits.

THE WATER FRAMEWORK DIRECTIVE (WFD)

The WFD is a potential driver to bring about change in the way we manage our peat uplands. This is because under the umbrella of the WFD, we have to meet requirements under the Habitats Directive and many of our peat uplands are designated for internationally important species. Also, the WFD sets standards for certain metals in surface waters such as zinc and copper, which can leach out of peatlands along with suspended solids in runoff, particularly in eroded areas.

Under Article 7 of the WFD there is a requirement for the Environment Agency to work with companies and other stakeholders to take steps to protect water resources, and so avoid an increase in downstream degradation.

WATER COMPANY PLANS

Water companies play an important role in managing the catchments their raw water comes from, including peat uplands.

The Upland Hydrology Group, a large stakeholder network, supported the inclusion of increased upland catchment work in water company Asset Management Plans for 2015 – 2020 (AMP6). A long term view of around 30 years was seen to be essential to assess the effectiveness of such an approach. This approach should increase resilience and security of water supply in the face of climate change and other challenges that may emerge in future.

The UK Water Industry research project 'Quantifying the Benefits of Water Quality Catchment Management Initiatives' has developed a framework for evaluating catchment schemes which may make justification for upland management work easier in the future.

Some water companies have developed different approaches to delivering improvements in upland management practices which in turn deliver downstream water treatment benefits. The overall consensus is that holistic catchment management in the uplands can deliver improved raw water and other benefits downstream.

According to OFWAT, catchment management represents a "low cost, sustainable solution for water companies" to provide clean drinking water. OFWAT has supported £52M worth of catchment management work to date (approximately half of this has been specifically for peatland restoration). In the Pennines, 12,000 ha (out of 17,000 ha) blanket bog Sites of Special Scientific Interest owned by United Utilities has been brought into favourable condition as a result of one such catchment management project, SCaMP. According to a recent Cost-Benefit Analysis of the project cost of ScAMP was £7,414M compared to benefits of £13,328M from water quality, biodiversity (non-use), recreation & climate regulation.

MONITORING FACTS:

- 82% of GB river length lies within catchments of less than 10km²
- Of the upland river length, 97% lies in catchments < 10 km²
- Very few EA monitoring sites above 300m altitude
- There are fewer than 10 long-term water quality monitoring sites in the UK which drain predominantly peatland catchments.

**The UK Upland Waters Monitoring Network plans to improve this situation and needs long term support for this.*



WHAT WE KNOW ABOUT PEAT AND WATER:

- Peat degradation leads to poor water quality
- The role of peat as a carbon sink is essential in our carbon cycle
- Atmospheric deposition of nitrogen and sulphur compounds affect peatlands, these affects can be reduced through positive management practices. In England it has been estimated that 98 – 100% of peatlands are subject to damaging levels of nitrogen deposition.
- Peatlands in good condition can store large amounts of pollutants such as sulphur, nitrogen and heavy metals. This protects rivers downstream BUT these pollutants are vulnerable to release in areas subject to drainage or erosion.
- There is strong evidence that re-vegetation and gully blocking lead to significant reductions in sediment (and associated heavy metal) export from degraded peatlands catchments in the uplands, which can lead to improved stream biodiversity.
- There is also increasing evidence that gully blocking reduces the amount of brown discolouration in stream-water (dissolved organic carbon or DOC) over the long-term, despite an initial spike in colour immediately after restoration.
- Climate change is likely to exacerbate peatland degradation and pollutants downstream, but peat restoration makes peatlands more resilient to climate change

WHAT IS UNCLEAR:

- There are uncertainties around the impact of managed burning on peatlands carbon stocks and the emerging correlation between burning and colour production. Improved understanding of this important issue is urgently required
- Monitoring in upland headwaters is limited; it is unknown how far peatlands impact downstream water body quality
- Existing research has been initiated for different reasons making interrogation of the data a complex process
- Using upland peat management as a flood risk management tool is less well understood
- Cultural/spiritual services of PES schemes are often overlooked and less well understood than other ecosystem services.

GOOD MANAGEMENT PRACTICES:

Specific techniques can be used to improve and restore out peatlands including:

- Return heather monocultures into mosaics with more natural blanket bog vegetation
- re-vegetation of gullies, rills and bare peat
- blocking grips
- taking a flexible approach to grazing and burning

POLICY NEEDS:

- Water quality cannot be detached from wider business, land use and other regulatory considerations e.g. CAP and wider water management.
- Long term and strategic monitoring is needed in our uplands.
- Land owners and user groups associated with the uplands need to be actively involved in shaping PES schemes and policy
- A technical broker and accounting authority is necessary to gain trust for PES systems to work
- Blanket bogs are not defined as water bodies under the WFD, which limits regulatory input to managing these environments.
- Guidelines for PES should be unified across the UK and linked to planning and regulatory frameworks
- Taking action now across our uplands, and using specific restoration techniques that we know work, will help to create more resilient and economically viable uplands for a wide range of beneficiaries.



ORIGINS OF THIS NOTE

This note was written following discussion at a joint event held by the Valuing Nature Network and water@leeds on May 9th 2012. It was supported and further discussed at the Joint British Ecological Society and IUCN UK Peatland Programme symposium 'Investing in Peatlands: Demonstrating Success' on 26-28th June 2012. For further information please contact Viki Hirst at v.hirst@leeds.ac.uk.

CONTRIBUTORS

Main author; Viki Hirst

Main contributors; Clifton Bain, Aletta Bonn, Chris Evans, Klaus Glenk, Viki Hirst, Joseph Holden, Julia Martin-Ortega, Mark Reed.

ORGANISATIONS INVOLVED WITH DEVELOPING THIS NOTE

Centre for Ecology and Hydrology	University of Reading
Country Land and Business Association	Royal Haskoning
DEFRA	RSPB
Dinsdale Moorland Services	Rural Impact
Dwr Cymru Welsh Water	Scottish Agricultural College
Environment Agency (England)	SEPA
Environment Agency (Wales)	Severn Rivers Trust
Forestry Commission	South West Water
Heather Trust	The Heather Trust
Institute for European Environmental Policy	The James Hutton Institute
International Union for the Conservation of Nature (IUCN) UK Peatland Programme	University College London
James Hutton Institute	University of Aberdeen
Montgomeryshire Wildlife Trust	University of East Anglia
National Trust	University of Leeds
Natural England	University of Manchester
National Farmers Union	University of York
Northumberland National Park	University of St Andrews
Nottingham Trent University	United Utilities
OFWAT	Upland Hydrology Group
Peak District National Park Authority	water@leeds
Pennine Prospects	Water Research Centre
Penny Anderson Associates	Yorkshire Peat Partnership
	Yorkshire Water