Review of public funding of peatland management and restoration in the UK

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May 2011

Photo: Moors for the Future

Keenleyside, C. and Moxey, A. (2011) *Public funding of peatland management and restoration in the UK – a review.* Report to IUCN UK Peatland Programme, Edinburgh. http://www.iucn-uk-peatlandprogramme.org/

This review was commissioned by the IUCN UK Peatland Programme's Commission of Inquiry on Peatlands. The IUCN UK Peatland Programme is not responsible for the content of this review and does not necessarily endorse the views contained within.

Contents

List of Tables and Figures

Summary

Public funding for day-to-day peatland management in the UK is mainly delivered through agri-environment management agreements, which offer land managers annual payments per hectare over a period of 5 to10 years in return for site-specific, targeted actions. Agri-environment payment schemes are the responsibility of the four national administrations as part of their 2007-13 Rural Development Programmes, and are heavily dependent on co-financing from the European Agricultural Fund for Rural Development (Pillar 2 of the CAP). Habitat-specific analysis of agri-environment payments is incomplete, particularly for upland mosaic habitats and for older agreements, but it is estimated that about £6 million a year is spent across the UK on agri-environment management which benefits peatland. SSSI management agreements on peatland and peaty soils probably account for about £3 million a year, but many of these nationally funded agreements are being transferred to EU co-financed agri-environment schemes. Uptake of agri-environment management agreements has generally been higher for upland peat than for lowland habitats, where peatland restoration competes with intensive agriculture. Evaluation of the environmental impact of agri-environment payments is limited by the lack of habitat specific data, but the detailed management requirements are evidence-based and draw on practical experience of Natura 2000 restoration.

It should be noted that the expenditure each year on all types of agri-environment and SSSI management payments is equivalent to only a fraction of the total of £2.6 billion annual income support payments received by UK farmers from Pillar 1 of the CAP. Furthermore, there is no guarantee that the UK's allocation of CAP Pillar 2 funding, on which the domestic agri-environment budgets depend, will remain at the current level after the 2014 CAP reform.

Intensive peatland habitat restoration projects on key Natura 2000 sites, each taking around five years, are co-financed by LIFE which is the EU's financial instrument supporting environmental and nature conservation projects. LIFE funds are awarded competitively and there are currently three active peatland projects in England and Wales with a combined annual expenditure of between £2 million and £3 million.

In contrast to these public funds, a proportion of the £105 million that water companies plan to invest over the next five years in catchment planning in England, Scotland and Wales may be targeted at peatland, and up to £15 million has been allocated specifically to upland peatlands in England.

1. Introduction

This review examines, for each of the four countries, the main sources of public funding currently available to land managers in the UK to support peatland management and restoration. These include both national funds and EU co-financing.

The most widely available targeted environmental management payments for peatland are provided by the four national **agri-environment schemes** under the 2007-13 Rural Development Programmes (RDPs). These offer land managers annual payments per hectare for specified, contractual management over a period of five years or longer. Annual agri-environment payments may be supplemented by one-off capital investment payments, for example for drain blocking, or fencing stock out. Agri-environment payments are EU co-financed by the European Agricultural Fund for Rural Development, the 'second pillar' of the Common Agricultural Policy (CAP).

Almost all UK farmers receive income support from the first pillar of the CAP, through the Single Payment Scheme (SPS) or Single Farm Payment scheme (SFP), and upland farmers in Scotland and Northern Ireland are also eligible for Less Favoured Area (LFA) support. Although LFA and SPS/SFP income payments are conditional on compliance with baseline environmental standards, their main role in the context of this peatland policy review is as a supplement to farm income, which may help to retain uneconomic farming as a land use on some peatlands (for example on farms where public subsidies represent more than 100% of farm income). SPS/SFP and LFA payments are not considered further here, except to note the high proportion of CAP funding allocated to SPS/SFP and LFA payments compared to the environmentally targeted agri-environment payments (Table 1).

Table 1 *Public payments to farmers[a] in 2008 by UK country (£ million)*

	England	Scotland	Wales	N Ireland	UK
Single (Farm) Payment Schemes	1,630	443	251	255	**2,580**
LFA schemes[b]	27	59	30	22	**140**
Agri-environment schemes	361	52	31	27	**471**
SSSI and ASSI	9	3	2	-	**14**

Notes:
a. Shows payments after deduction for modulation where appropriate, and excludes remaining coupled payments and animal disease compensation.
b. LFA schemes in England and Wales were in the process of being phased out in 2008.
Source: Defra (2010)

The use of nationally funded **SSSI/ASSI management agreements is** generally being phased out in favour of the higher level tiers of agri-environment schemes. Some SSSIs and ASSIs will be managed directly by public landowners (for example National Nature Reserves in public ownership, and peatlands within forests managed by the Forestry Commission on behalf of the government).The EU provides the major share of funding for a limited number of highly targeted peatland restoration schemes under its **LIFE or LIFE+ programmes**, each typically lasting for about 5 years. These one-off projects are restricted to important Natura 2000 sites, and funding is awarded competitively.

Finally, although not strictly a public source of funding, the review concludes with a discussion of the role of **water companies** in funding peatland restoration and management.

2. England

2.1 Introduction

Public funding for private management of peatland in England probably amounts to between £4 million and £5 million per year, mainly through higher-level agri-environment payments, but a significant amount is LIFE funding for one-off restoration projects.

A high proportion of upland peatland habitats in England are in private ownership and now under some level of agri-environment management, but it has proved much more difficult to bring lowland peatland into these schemes, in part because payment rates are perceived by the owners as inadequate.

2.2 Agri-environment payments to land managers in England

The majority of the environmental land management expenditure under Axis 2 of the England RDP is now on the two-tier agri-environment scheme Environmental Stewardship

(ES). The remaining LFA payments were phased out in England in 2010, with the introduction of a new upland strand of Entry Level Stewardship (ELS).

The Higher Level Stewardship Scheme (HLS) has a range of options for the management, restoration and creation of peatland habitats. In the financial year 2008-09 the "live" HLS agreements specifically targeted at identified peatland habitats had a value of more than £0.26 million[1], including:

- 11 agreements for a total of 150 ha of lowland raised bog, with a value of £43,390;
- 130 agreements for a total of 777 ha of reedbed, with a value of £63,816;
- 121 agreements for fen, with a value of £103,799;
- 166 agreements applying a wetland cutting or grazing supplement to a total of 1,179 ha (of fen reedbed or lowland raised bog), with a value of £25,824;
- 33 agreements with re-wetting payments on a total of 2,839 ha of moorland and a value of £23,943;

It is not possible to identify agreements covering the management and restoration of upland blanket bogs so precisely, but a significant area of upland peat will be included in the £3.28 million annual expenditure on:

- 71 moorland management HLS agreements on 33,047 ha with a value £0.86 million; and the
- 238 moorland restoration HLS agreements on 85,126 ha with an annual value of £2.42 million.

A recent review of the effectiveness of 20 years of agri-environment schemes (Natural England, 2009) showed mixed results, and drew attention to significant problems for conservation of lowland peatlands. In terms of fen and reedbed conservation the Broads ESA fen tier has been by far the most significant, but there is little evidence from other studies that agri-environment schemes have benefitted fens and reedbeds. There are still many fens, including SSSIs and SACs, where a change in the management of the surrounding land is desirable but owners will not enter beneficial options largely due to payment rates that do not adequately compensate for the loss of productive land. The earlier agri-environment schemes provided little benefit to raised bogs and the addition of raised bog options to HLS has provided only limited benefits to date, as ownership is often complex, management is difficult and there is lack of agricultural returns. Management of the surrounding land is critical to restoration of raised bogs, but current incentives generally do not seem sufficient to cover the effective loss of productive pasture or arable land (when the peat soils need to be saturated). Results for moorland appear better - habitat specific moorland agri-environment options (ESA, CSS or HLS agreements) now apply to 55% of land above the Moorland Line, and although not all this is priority habitat, more than 80% of land in the upland heathland and blanket bog habitat inventories is under agri-environment agreements, making a major contribution to the UK BAP targets for maintaining the extent of these habitats. In addition to these HLS payments, some peatland payments remain under earlier agri-environment schemes, but it is not possible to obtain details of these.

[1] **NOTE**: The annual value figure is based on the total cost of the options across the full 10-year duration of the agreements, divided by 10 to give an annual figure. This has been used rather than the amounts actually paid on the options specified during 2008/09, because some of these agreements would not have received their first payment during 2008/09.(Information provided by Natural England, 2011)

Table 2 *ENGLAND - examples of HLS agri-environment options for peatland habitats*

Maintenance or restoration of fen **£60 ha/year**
Objective: maintain or restore fen habitat for birds, insects and small mammals.
Requirements: maintain water control structures in good working order; keep fens open with just a few scattered trees or shrubs; do not allow water with high levels of nutrients to empty into fens, nor top up with poor-quality water. Restoration may include scrub clearance and the implementation of a water management regime.
Additional annual payments: for **cutting £350 ha/year** or **grazing £200 ha/year,** if this is most appropriate habitat management regime.
Capital payments: installation of water control structures, restoration of ditches.

Maintenance or restoration of lowland raised bog **£150 ha/year**
Objective: maintain or restore lowland raised bog, usually on acid peat deposits which are part of a wider wetland habitat and have some typical bog plants.
Requirements: preparation of a management plan; retaining rainfall to maintain a high water table throughout the year; maintaining water control structures in good working order; not digging or turning over peat; no fertilisers. Restoration will include removing scrub and tree cover to below 10% of the site area and/or filling or blocking ditches.
Additional annual payments: for **cutting £350 ha/year** or **grazing £200 ha/year,** if this is most appropriate habitat management regime.
Capital payments: installation of water control structures, restoration of ditches.

Maintenance or restoration of moorland **£40 ha/year**
Objective: maintain or restore moorland habitats to benefit upland wildlife, retain historic features and strengthen the landscape character; and, in the right situation, possibly provide flood containment and benefits to flood risk management.
Requirements: grazing the moorland following an agreed stocking calendar, which reflects the present condition of different habitats within the moorland unit.
Additional annual payments: **moorland rewetting supplement £10 ha/year**
Capital payments: grip blocking, temporary fencing (to reduce or exclude grazing).

Supplement for group applications **£10 ha/year**
This contributes to the costs of facilitating linked agreements for the management of a target feature, especially on common land, or areas of shared grazing with two or more active graziers. It could also apply to areas under more than one ownership, managed for resource protection, inter-tidal habitat and/or wetland.
Source: Natural England (2010)

2.3 EU LIFE-Nature peatland projects in England

The South Pennine Moors SAC represents the most south-easterly occurrence of active blanket bog in Europe, but two centuries of pollution have depleted the *Sphagnum* cover and subsequent fire damage has led to major erosion. The main purpose of the project is to protect the 1,600 ha of active blanket bog by reducing the erosion on adjacent degraded peatland through restoration of 862 ha of active blanket bog by stabilisation, diversification and gully blocking. The MoorLIFE project, managed by Moors for the Future, is a public-private partnership led by the Peak District National Park Authority, working with Natural England, the Environment Agency, the National Trust, United Utilities, and Yorkshire Water. The project runs from 2010 to 2015, with a budget of €6.9 million (£5.9 million[2]) of which 75% is provided by the EU LIFE-Nature fund.

[2] Estimating the sterling value of multi-annual EU-funded projects is difficult for a period when the value of sterling against the euro has fluctuated considerably. The sterling estimate here uses an exchange rate of £1= €1.17, which may not be an accurate representation of the project budget.

2.4 Other public funding for peatland SSSIs in England

Natural England's Wildlife Enhancement Scheme (WES) was a management agreement scheme for SSSIs that has closed to new applicants, although some existing agreements will continue until 2012. Existing WES agreements will gradually transfer across to Higher Level Stewardship, which will become the primary channel for funding the delivery of SSSI target condition. It has not been possible to identify the expenditure on peatland SSSI management agreements.

Other peatland projects with substantial public funding include the 50-year Great Fen Project in East Anglia, which in 2007 was given a grant of £7.3 million by the Heritage Lottery Fund to create a 3,700 ha wetland joining the National Nature Reserves at Woodwalton Fen and Holme Fen. The Environment Agency has contributed £350,000 to land purchases and scientific investigations into hydrology and hydro-ecology. Other funding has come from the Landfill Tax, partner organisations (Wildlife Trusts, Natural England, Huntingdonshire District Council and the Middle Level Commissioners), EU Interreg and LIFE funding and private sources.

In the South Pennines, the Making Space for Water project in the Upper Derwent Valley aims to demonstrate how practical restoration of degraded moorland can help to reduce flood risk at the same time as delivering other benefits. In this case the partners are Defra, the Environment Agency, Natural England, the National Trust and the Peak District National Park Authority.

3. Scotland

3.1 Introduction

Public funding for private management of peatland areas in Scotland probably amounts to between £2 million and £3 million per year. This represents a small fraction of total expenditure under the CAP. Although the technical characteristics of best practice have been established, evaluation of the effectiveness of policy support in achieving improved peatland management has not been evaluated formally.

Although some Scottish land is held by public bodies and by NGOs, most land and thus many peatland sites are owned privately. However, public funding is used to influence management of such sites. In particular, elements of agri-environment schemes funded through the Scottish Rural Development Programme (SRDP) are highly relevant, as are some management agreements funded more directly by Scottish Natural Heritage (SNH). Funding is used to support activities such as blocking drains to rewet peatlands and appropriate grazing to encourage desirable vegetation cover. The design of such measures is guided by previous research (e.g. Brooks and Stoneman, 1997; SNH, 2005). In most cases, a set of interacting management actions are needed, rather than individual actions, and hence some form of management plan is required.

The technical effectiveness of best practice measures is largely accepted given previous research experience, and this is supported by some case-study evidence of land currently enrolled in schemes (SNH, undated). However, the policy effectiveness of funded measures in terms of achieving desired aggregate outcomes is less certain. For example, land managers may be reluctant to adopt best practice and/or may not implement it properly. Unfortunately, explicit evaluation of the policy effectiveness of funded peatland measures is largely absent. For example, peatlands and peatland measures are not mentioned at all in the formal evaluation report of the SRDP over the 2000-2006 period (SAC, 2008) and are mentioned only in very general terms in the ex-ante reports for the 2007-2013 period

(Haskoning, 2006; DTZ, 2007). This partly reflects a lack of relevant monitoring effort in the past, something that has now been addressed such that the current mid-term evaluation of the 2007-13 programme may offer some details (SAC, 2008; SG, 2010). In the meantime, policy evaluation is limited to simply reporting the level of funding offered and number of claimants.

SNH's reporting of the condition of designated sites provides further confirmation of the technical effectiveness of measures through commentary on the management required and/or implemented to improve site conditions. The first cycle of monitoring covered 90% of wetland sites and of these 54% were in favourable condition, 10% were recovering and 36% were in unfavourable or destroyed condition (SNH, 2006). Although not as comprehensive in spatial coverage, subsequent monitoring updates have reported improvements in conditions at unfavourable sites following adoption of mitigation measures. However, again, policy evaluation is limited to reporting headline funding and enrolment figures, and the more recent positive reports come not from a comprehensive monitoring programme, but from results on a smaller number of sites that were in poor condition and have improved following remedial treatment.

3.2 Agri-environment and forestry payments to land managers in Scotland[3]

The SRDP represents Pillar 2 of the CAP in Scotland, with the Single Farm Payment (SFP) largely accounting for Pillar 1. Although fluid exchange rates and co-financing rates make definitive figures difficult to establish, the SFP represents around £450 million and the SRDP around £225 million of annual support to rural land management. Within the SRDP, around £70 million is allocated to the Less Favoured Area Support Scheme (LFASS) and about £55 million to agri-environment schemes[4]. Both the SFP and LFASS operate as largely untargeted area payments decoupled from commodity production and linked only weakly through cross-compliance requirements to environmental performance on, respectively, around 4.4 million ha and 3.4 million ha of farmland.

Of the remaining SRDP budget, most is allocated to a two-tier agri-environment scheme of Rural Development Contracts (RDC) comprising around £20 million for Land Managers Options (LMO) and around £120 million for the Rural Priorities (RP). LMOs are non-competitive and offer relatively small amounts of funding for simple management actions whilst RPs are competitive and offer larger amounts for longer and more complex projects. Whilst LMOs contain little of direct relevance to peatland management, RPs encompass a number of relevant items within agri-environment schemes.

In particular, there are specific measures relating to creating, restoring and managing peatlands, wetlands and bogs. In addition, there are various measures relating to the grazing of moorland which may also be relevant to peatland management. Although the level of reporting detail available is insufficient to identify the precise management activities undertaken and thus the degree of specifically peat-related expenditure, the level of funding for such measures may be taken as broadly indicative of support for peatland management. In 2008/9, funding of moorland-related measures amounted to £0.7 million across around 350 claimants whilst support for peatland, bogs and wetlands amounted to just over £1 million – although almost all of this related to wetlands, with only £64,000 specifically for peat or bogs. Within this, support for capital expenditure on reducing drainage amounted to almost £0.2m across 39 sites, relative to total capital funding of £65m.

[3] Derived from personal communications with staff in both the Scottish Government and SNH, but also from official websites, see http://www.scotland.gov.uk/Topics/farmingrural/SRDP/RuralPriorities/RuralPrioritiesStats and http://gateway.snh.gov.uk/portal/page?_pageid=93,866334,93_880293&_dad=portal&_schema=PORTAL

[4] The budget estimates here differ from those in the UK summary table in the introduction to this Annex because these estimates are more recent, there have been changes in the sterling/euro exchange rate, and the LFA budget has been increased by £10m in Scotland since 2008.

In addition to these agri-environment payments, two of the woodland management options funded by the SRDP within the RP programme have the potential to support peatland restoration. The Woodland Improvement Grant option includes capital payments of between £975 and £1375/ha for woodland clearance benefiting raised bog and blanket bog, and the Sustainable Management of Forests option can include payments for scrub clearance and ditch blocking. It has not been possible to identify total expenditure on these specific options.

***Table 3**: SCOTLAND - examples of Rural Priorities options for peatland habitats*

Management of Wetland **£90/ha/year**
Objective: to support the management of in-bye wetland areas for the benefit of plants, birds and invertebrates.
Requirements: grazing of livestock must be managed to create a sward with a range of heights across those areas of the wetland where grazing is practical. Livestock should be removed from the site when ground conditions are such that poaching is likely to occur. No applications of fertiliser, manure or pesticides. Management plan must reflect the specific biodiversity requirements of the site.
Capital payments: eradication of scrub/woody vegetation (£600 - £125/ha), Underdrain/culvert breaking (£20/drain).

Create, Restore and Manage Wetland **£226.17/ha/year**
Objective: to create and then manage wetlands to help improve biodiversity, the landscape and flood management.
Requirements: no mowing or grazing for a period of at least three consecutive months from 1 April until 31 July. Grazing of livestock must be managed to create a sward with a range of heights across those areas of the wetland where grazing is practical. Manage water levels and avoid reversion to woodland. Livestock should be removed from the site when ground conditions are such that poaching is likely to occur. No applications of fertiliser, manure, pesticides or supplementary feed. Management plan must reflect the specific biodiversity requirements of the site.
Capital payments: eradication of scrub/woody vegetation (£600 - £125/ha), Underdrain/culvert breaking (£20/drain), ditch blocking with plastic piling dams (£60 - £280/dam).

Management/Restoration of Lowland Raised Bogs **£40 - £83/ha/year**
Objective: to bring lowland raised bogs into favourable condition by ensuring that management is undertaken with conservation as the key priority and to the best possible standards.
Requirements: keep peat and vegetation of the bog surface intact, undisturbed and as wet as possible; monitor the site to ensure that the peatland habitats are in good condition; identify and undertake any ditch blocking work required to protect and enhance the site; no applications of fertiliser, manure, lime or pesticides. The higher payment requires management to avoid under and over-grazing/trampling.
Capital payments: eradication of scrub/woody vegetation (£600 - £125/ha), underdrain/culvert breaking (£20/drain), ditch blocking with plastic piling dams (£60 - £280/dam), peat dam (£300 min/dam), stock bridge for bog management (£170 - £620 /dam).

Management of Moorland Grazing **£1.30/ha/year**
Objective: to support changes in grazing management to benefit a wide range of landscapes, habitats and species found on moorland.
Requirements: prepare and implement a Moorland Grazing Plan; the plan should take account of the combined impacts of livestock and other grazing animals present on the land; the plan should describe the current condition and management of the moorland, and should propose changes in shepherding, managing livestock and feeding practices that will benefit the environment and wildlife.

Capital payments: fencing for stock exclusion from adjacent land e.g. SSSIs (£2 - £7.25/m).

Moorland Grazings on Uplands and Peatlands **£2/ha/year**
Objective: to protect and enhance wildlife and biodiversity, manage fragile upland soils, support the achievement of good water status by reducing upland soil erosion, mitigate greenhouse gas emission by maintaining and enhancing upland vegetation that forms peat soils and acts as a natural carbon store.
Requirements: prepare and implement a Moorland Grazing Plan; avoid excessive trampling on sensitive areas whilst avoiding the build up of dead plant litter elsewhere; this might require additional shepherding, modifying stock management or feeding practices or moving stock via alternative routes to avoid such areas. Agree a Muirburn Plan with SNH, detailing areas proposed for muirburn, an appropriate burning rotation, fire-free areas and additional resources available to control fires.
Capital payments: eradication of scrub/woody vegetation (£600 - £125/ha), ditch blocking with plastic piling dams (£60 - £280/dam), peat dam (£300 minimum/dam), stock bridge for bog management (£170 - £620 /dam), fencing (£2 - £7.25/m).

Moorland – Stock Disposal **£19.63/ha/year**
Objective: to regenerate suppressed heather or other moorland vegetation of conservation interest by reducing the numbers of sheep grazing.
Requirements: remove the agreed number of ewes from the site and the IACS business before 1 March in the first year of the agreement; no increase in the number of ewes on the moorland or business during the agreement; prepare and implement a Moorland Management Plan; the plan should describe the current condition of the moorland and how it is managed, how many ewes the flock will be reduced by and explain why this will benefit the condition of the moorland. Account should be taken of the combined impact of grazing by farm livestock and other animals present on the land.
Capital payments: none specified explicitly, but may be available.

Source: SG (2010)

3.3 EU LIFE-Nature peatland projects in Scotland

Beyond current on-going public funding, notable one-off support of over £1m was received under an EU-LIFE project in Caithness and Sutherland that ran from the late 1990s to the mid 2000s[5]. This facilitated collaboration between the Royal Society for the Protection of Birds (RSPB), Forest Enterprise, Scottish Natural Heritage, Plantlife Scotland, the Forestry Commission and private landowners. In addition to a legacy of technical best practice guidelines, the project also led to the current peatland strategy for the area, which is being supported by continuing involvement of public bodies and NGOs plus recourse to SRDP funding.

3.4 Other public funding for peatland SSSIs in Scotland

Outwith the SRDP, SNH funded over 1000 management agreements in 2008/9 at a cost of nearly £3m spread over 415,000 ha. Of these, around 160 were linked explicitly to peatland or bogs and a similar number related to moorland management that could include peat. Moorland agreements cost nearly £0.75 million for 82,000 ha, peatland and bog agreements cost £0.38 million and covered 203,000 ha. As part of on-going administrative rationalisation, the management agreements under SNH's Natural Care programme are migrating to the SRDP.

[5] See http://www.lifepeatlandsproject.com/

4. Wales

4.1 Introduction

Public funding for private management of peatland in Wales probably amounts to between £4 million and £5 million a year from higher-level agri-environment payments under the Wales RDP, SSSI management payments funded by CCW and, currently, two LIFE peatland restoration projects. From 2012 a new agri-environment scheme *Glastir*, with the management of soil carbon as one of its objectives, will replace existing agri-environment and LFA schemes.

Large areas of blanket bog still occur in Wales, but the majority have been seriously degraded through afforestation, encroachment by non-native species (e.g. *Rhododendron ponticum* and Sitka spruce), over-grazing, drainage, and deliberate or accidental burning. The remaining blanket bogs are mostly used for sheep grazing, by farmers who own the land, by tenants of large estates (some owned by water companies, the RSPB and the National Trust) or by farmers who hold common grazing rights. Livestock farms on the upland soils of Wales are heavily dependent on CAP support and non-farm sources of family income. In contrast, lowland raised bogs and fens are often no longer managed as farmland, and the lack of grazing and cutting is a major cause of habitat deterioration.

4.2 Agri-environment payments to land managers in Wales

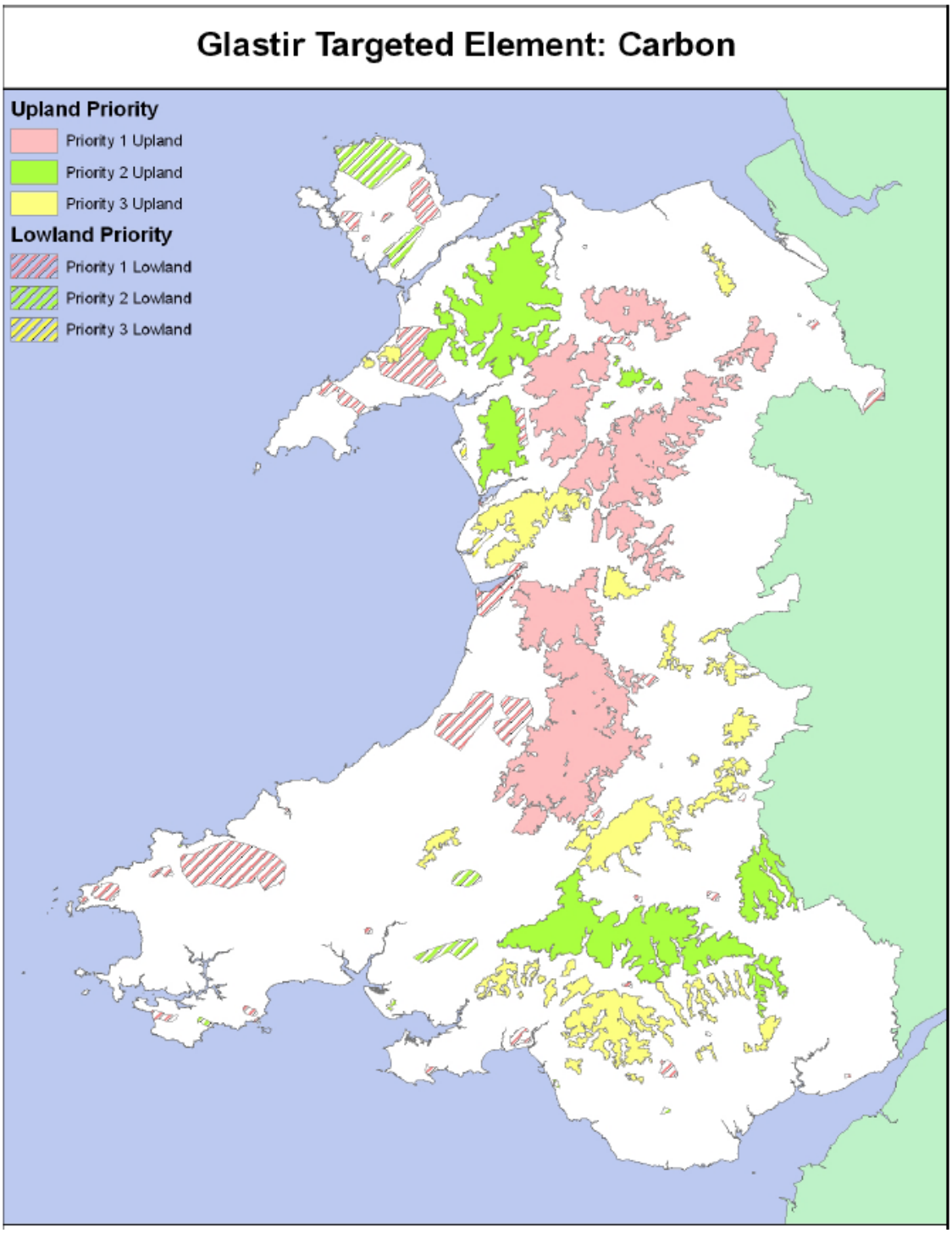
The Welsh Assembly Government's flagship whole farm agri-environment scheme *Tir Gofal* was designed to ensure the active conservation management of existing semi-natural habitats. In 2008 a total of £0.96 million was paid for the management of 26,282 ha of existing peatland within 729 *Tir Gofal* agreements, but the uptake of peatland creation options in *Tir Gofal* has been very low, and in 2008 only 1.4 ha of reedbeds and swamps were created, in four agreements[6]. In addition to *Tir Gofal* payments there would also be payments for targeted peatland management under remaining ESA agreements, but it is not possible to obtain habitat specific data for these.

Tir Gofal agri-environment agreements now cover 20% of Wales, and the scheme is closed to new applicants. An audit report in 2007 noted that coverage is greater in SSSIs and SACs, and concluded that there is some evidence to suggest that the activities funded by the scheme should benefit habitats, but there is only limited evidence about the extent to which beneficial changes to habitats can be attributed to *Tir Gofal* rather than other factors. This is partly due to a lack of comprehensive data on Welsh habitats and how they are changing over time, which makes it difficult to put the achievements of *Tir Gofal* into context (WAO, 2007).

From 2012 a single, integrated scheme called *Glastir* will replace both *Tir Gofal* and the entry-level agri-environment scheme *Tir Cynnal,* and also the LFA scheme *Tir Mynydd*. From 2013 woodland management grants in Wales will also be delivered through the new scheme. *Glastir* will have two tiers, an entry-level element available throughout Wales, and a geographically targeted higher-level element (plus an element for common land). Carbon is one of the *Glastir* targets, and Map 1 shows the priority areas, essentially those soils identified as organic and organo-mineral[7] (a definition which captures shallow peaty soils which are often overlooked). The area identified as organic and organo-mineral soil within Wales occupies an area of almost 430,000 ha. Although the targeted management options for these soils will be focused on 83,400 ha within the identified area it is expected that a high proportion of entry-level and commons agreements will also fall within the organic and

[6] Information provided by Welsh Assembly Government, January 2011
[7] as part of the Scottish Government and Welsh Assembly Government research project ECOSSE

organo-mineral soils area, based on historic take up of agri-environment schemes and the geographic locations of Welsh commons[8].



***Map 1**: Area of Wales identified as priorities for the carbon targeted element of the new Glastir agri-environment scheme from 2012*[9]

[8] Information provided by Welsh Assembly Government, January 2011
[9] source: http://wales.gov.uk/topics/environmentcountryside/farmingandcountryside/ruraldevelopment/axis2/glastir/glastirtargettedelement/?lang=environment

Table 4: *WALES - examples of (draft) Glastir Targeted Element options for peatland habitats*

Important note: *the first Glastir Targeted Element agreements will begin on January 1st 2013, and the requirements and payments rates shown below are* ***draft proposals, subject to revision*** *and to approval by the European Commission. Payment rates are not yet available for some of the options.*

Maintenance and restoration of upland bogs and fens £62 ha/year
Objective: maintain/restore mire vegetation, control scrub establishment, prevent peat erosion and enable peat formation.
Requirements: for blanket bog: prepare grazing management plan, stock at 0.05 – 0.1 LU/ha April to September and no more than 0.01 LU/ha October to March; no supplementary feeding, cultivation, drainage, burning, fertilisers, tree-planting or peat removal; agree location of watering troughs and mineral licks. Management plan for restoration may include raising water levels, removing scrub, excluding grazing and encouraging revegetation of bare peat.
Additional annual payments: none specified.
Capital payments: culverts, drain blocking, harvesting and removal of material, scrub control, reprofiling, matting.

Reedbed management or restoration (N/A) ha/year
Objective: maintain and enhance existing reedbeds, increase overall area of reedbeds >1ha in extent, minimise risk of agricultural pollution and control spread of invasive non-native pond animals and plants.
Requirements: ensure scrub covers less than 5% of the area and open water at least 10%, cut in late summer and winter on two-yearly cycle in rotation (at least 30% uncut in any year), avoid stagnation of ditches, maintain water levels and fences, no fertilisers, no supplementary feeding of livestock within 50m. Restoration plan may include removal of accumulated thatch, scrub removal, reinstating water flow.
Additional annual payments: re-wetting supplement.

Reedbed creation (N/A) ha/year
Objective: create new reedbeds on arable, ley grassland or permanent improved grassland, on flat sites with good water supply (but not where archaeological features may be damaged).
Requirements: prepare reedbed creation plan, including for example: reedbed minimum 1 ha, range of depths but at least 2m deep in some areas; plant reeds of local origin uncontaminated by non-native invasive species; provide fish pass for any water control features; maintain as above.
Additional annual payments: re-wetting supplement.
Capital payments: ditch management, thatch removal, ditch and open water creation, reed cutting/planting, bunds, culverts, sluices, fencing, scrub clearance

Lowland bog management or restoration (N/A) ha/year
Objective: maintain open herbaceous mire vegetation, discourage scrub and plants favoured by heavy grazing, prevent peat erosion and nutrient enrichment; enable peat formation.
Requirements: management plan appropriate to site, including for example: raise water level, target or exclude grazing, remove scrub seedlings and saplings.
Additional annual payments: re-wetting supplement.
Capital payments: drain blocking, mowing, scrub control, weed wiping, diversion of enriched water, reprofiling, temporary fencing.

Source: WAG (2010)

4.3 EU LIFE-Nature peatland projects in Wales

There are two current LIFE projects for peatland restoration in Wales. The five-year project to restore active blanket bog in the Berwyn and Migneint SACs in North Wales is due for completion in 2011[10], with the majority (75%) of the €3.76 million (£3.2 million[11]) funding coming from the EU LIFE-Nature programme. The aim is to restore active blanket bog in key areas of two of the most important Natura 2000 sites for blanket bog in the UK, and promote awareness and best practice in the surrounding communities and more widely. The project, which is run by the RSPB in partnership with the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales, seeks to implement restoration and conservation actions over 5,479 ha of the two SACs, benefiting a total of 3,229 ha of blanket bog[12]. Most of the work in the Berwyn SAC will be on the RSPB Lake Vyrnwy Reserve, which is owned by Severn Trent Water and managed as an organic hill farm.

The project work includes blocking more than 95 km of drains, removing trees from 300 ha and removing *Rhododendron* and Sitka spruce from a further 900 ha, reseeding 50 ha with heather (*Calluna vulgaris*) and creating fire control areas. An area of good blanket bog on the Migneint will be purchased to conserve the habitat and demonstrate its value to local people. The targets for the majority of land management under the project have already been met or exceeded, resulting in the significant improvement of large areas of blanket bog, but the targets for conservation awareness among tenant farmers and schools have proved more difficult to achieve (RSPB, 2009).

The second project is to restore alkaline and calcareous fens in the Anglesey and Llyn Fens SACs in north-west Wales, which have been damaged by under-grazing, drainage, increasing nutrient loads and inadequate burning management. Work started in February 2009 and the project runs until 2013, with 50% of the €5.4 million (£4.6 million[13]) funding provided by the EU LIFE-Nature programme. The project will focus on 84 ha of alkaline fen and 104 ha of calcareous fen found within the overall mosaic of wetland habitats[14]. Work involves radical reversal of habitat neglect by stripping off unwanted vegetation, controlled burning, restoring hydrological systems and setting up conservation grazing agreements with local farmers. The Countryside Council for Wales (CCW) is the lead partner, working with the Environment Agency, *Dwr Cymru* (Welsh Water), United Utilities, North Wales Wildlife Trust, Isle of Anglesey County Council, Gwynedd County Council, Menter Môn and PONT[15].

4.4 Other public funding for peatland SSSIs in Wales

There are 179 upland SSSIs covering more than 138,000 ha of different upland habitats and representing 59% of the whole SSSI area in Wales. In 2008-09 CCW spent a total of £3.4 million throughout Wales on managing and maintaining National Nature Reserves and on

[10] See http://www.blanketbogswales.org

[11] Estimating the sterling value of multi-annual EU-funded projects is difficult for a period when the value of sterling against the euro has fluctuated considerably. The sterling estimate here uses an exchange rate of £1= €1.17, which may not be an accurate representation of the project budget.

[12] See European Commission (undated) *Active blanket bog in Wales - Restoring active blanket bog in the Berwyn and Migneint SACs in Wales LIFE06 NAT/UK/000134* http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.createPage&s_ref=LIFE06%20NAT/UK/000134&area=1&yr=2006&n_proj_id=3152&cfid=99207&cftoken=2999c452d32e3b33-93A41414-D7B8-CB91-F40C77EAA8E4B36E&mode=print&menu=false

[13] see footnote 10 above.

[14] See European Commission (undated) *Anglesey and Lleyn Fens - Restoring Alkaline and Calcareous Fens within the Corsydd Mon a Llyn (Anglesey & lleyn Fens) SACs in Wales* LIFE07 NAT/UK/000948 http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.createPage&s_ref=LIFE07%20NAT/UK/000948

[15] PONT is the Welsh arm of the Grazing Advice Partnership, which bridges the gap between those responsible for land which needs to be managed for nature and those with livestock to do the job. http://www.grazinganimalsproject.org.uk/pont_home.html

SSSI management payments[16], of which a significant proportion is likely to have been for the management of peatland habitats.

5. Northern Ireland

5.1 Introduction

Public funding for private management of peatland in Northern Ireland probably amounts to between £0.2 and £0.3 million a year from agri-environment payments under the Northern Ireland RDP.

5.2 Agri-environment payments to land managers in N Ireland

The current Northern Ireland agri-environment scheme, the Countryside Management Scheme (CMS), which replaced earlier, similar schemes in 2008, includes options for the management of key peatland habitats. Data for agri-environment agreements at the end of 2008 (including "live" agreements under older agri-environment schemes) show a total of:

- 490 ha of fen, swamp and reedbed in 269 agreements;
- 1,858 ha of lowland raised bog in 339 agreements; and
- 4,569 ha of blanket bog in 185 agreements.

Most of these payments are degressive (the rate per hectare is highest for the first 50 hectares within each agreement, then decreases) making it difficult to estimate expenditure, but a very broad estimate is between £0.2 and £0.3 million a year of targeted agri-environment payments for peatland habitats.

Evidence of effectiveness of these schemes is inconclusive, but this may be partly a consequence of the long timescale required for significant habitat improvement to occur. Biological monitoring of land in a sample of CMS agreements over a four-year period, reported by Flexen and O'Mahony (2008), found that there was limited evidence that some moorland and raised bog sites had improved, i.e. fewer sites were classed as severely unfavourable. It is important to consider that favourable condition may never be reached in moorland and raised bog sites, even over the longer-term, because bog habitats degraded through extensive cutting and drainage are not likely to be restored under current management prescriptions. There had been little change in lowland raised bog sites since the baseline survey but there are very few intact raised bog sites in Northern Ireland (and the authors noted that in 2008 only 21% of statutory lowland raised bog ASSIs/SSSIs in the UK were in favourable condition, with failure mainly due to drainage, neglect and invasive species).

Table 5: *NORTHERN IRELAND - examples of Countryside Management Scheme options for peatland habitats*

Blanket bog **£65 ha/year (payment progressively reduced for moorland sites > 50ha)** **Objective**: contribute to the BAP targets for blanket bog, and priority species; peatlands acting as a carbon store; preventing drainage, reclamation and peat cutting, to reduce potential emissions of carbon dioxide. **Requirements:** land to be maintained by grazing with sheep only at 0.075 LU/ha during the period 1 March to 31 October (no grazing 1 November to 28/29 February); no cultivation, fertilisation, herbicides, pesticides, reclamation, mineral extraction, dumping, infilling; no supplementary feeding or storage of silage; no new drainage, tracks or fencing; existing

[16] This total does not include the cost of rents and leases of NNRs (CCW, 2011)

drainage systems can be maintained, but not widened, deepened or extended; the spread of scrub/trees must be controlled; no burning without prior approval. Peat cutting is limited to 0.1ha maximum for domestic use (mechanised peat cutting is not permitted), and within designated sites peat cutting is prohibited, unless consented by NI Environment Agency.
Additional annual payments: none - the annual payment includes an element for routine positive management such as scrub control each year.
Capital payments: blocking drains.

Fen, swamp and reedbed **£85ha/year**
Objective: contribute to the BAP targets for fens, reedbeds, and priority species, prevent drainage, cultivation and nutrient input (for carbon benefits) and provide a buffer to filter nutrients and reduce runoff from agricultural land to water bodies.
Requirements: land to be maintained by grazing, where possible and required, on fen between 1 June and 31 December at a 1.0 LU/ha, and on swamp and reedbed between 1 June and 31 December at 0.075 LU/ha. No grazing from 1 January to 31 May; no cultivation, fertilisation, herbicides, pesticides, reclamation, mineral extraction, dumping, infilling, new drainage or tracks; no supplementary feeding or storage of silage; no tree planting, and the spread of scrub/trees must be controlled. Water levels in open drains maintained as close as possible to bank height 1 March to 30 June to create soft ground, which improves feeding areas for snipe and curlew.
Additional annual payments: none - the annual payment includes an element for routine positive management such as scrub control and reed cutting each year.
Capital payments: Funding for alternative drinking sites, to reduce poaching and trampling damage.

Source: DARDNI (2008 and 2008a)

5.3 LIFE peatland projects in N Ireland

In 2010 an unsuccessful bid was made for LIFE+ Nature and Biodiversity funding for restoration of 365 ha of wetland habitats within seven Northern Ireland peatland SACs. The project was planned to bring at least 18 ha of transitional fen and 13 ha of alkaline fen into favourable or recovering condition through mowing and harvesting, sustainable grazing, scrub management and restoration of hydrological pathways. A decision on possible resubmission has not yet been made.

5.4 Public funding for peatland management in ASSIs in N Ireland

Between 1987-2002 there were one-off “perpetuity” payments totalling £2.513 million for peatland management agreements covering 2,279 ha of ASSI. These agreements have declined since the Northern Ireland Environment Agency (NIEA) established a new working relationship with the Department of Agriculture and Rural Development, on the implementation of the CMS agri-environment scheme in protected areas. The outcome has been nearly 8,400 ha of land within ASSIs managed under agri-environment agreements (this includes a wide range of terrestrial habitats and geological sites, not just peatlands). Where agri-environment agreements cannot deliver the appropriate site management the role of the former “perpetuity” payments is now taken by the Northern Ireland Environment Agency’s Management of Sensitive Sites (MOSS) agreements [but uptake of these has been low].

Recent monitoring of blanket bog on ASSIs has shown improvements in habitat condition, which may be due in part to the general reduction in over-grazing of heathland and blanket bog as a consequence of reduced stocking rates on semi-natural rough grazing across Northern Ireland, following the shift from Pillar 1 headage to area payments in 2005. The stock removal has had other, less welcome, effects related to the growth of tall, shrubby

heather in response to reduced grazing pressure. Under Northern Ireland's redefined eligibility rules for Pillar 1 payments some of this grazing land is deemed ineligible for SFP payments, and the mature heather also poses a potential fire risk. Following an unusually dry and warm spring in 2011, there were large numbers of wildfires in parts of the UK. During the last two weeks of April fires burnt heathland and blanket bog throughout Northern Ireland including around 1,600 ha of blanket bog on an SPA in County Antrim and 1,000 ha of heathland in the Mourne Mountains[17].

6. Water Company Funding

The advent of River Basin Management Plans (RBMPs) under the Water Framework Directive (WFD) has facilitated greater involvement in catchment planning by water companies. Specifically, whereas their capital investment plans previously tended to focus solely on water bodies and down-stream processing, greater attention is now paid to adjusting upstream land management as another means of influencing water quality and quantity. In particular, increasing water discolouration or dissolved organic carbon (DOC) derived from degraded peat catchments presents a major problem for water companies. New treatment works to solve this problem effectively typically cost at least £5 million (Walker, 2010). This involvement of industry is important since it represents a significant source of private rather than public funding for peatland restoration.

This evolution of this approach has required regulatory approval, since investment costs are ultimately carried by water customers and water pricing is carefully controlled. Moreover, there is some political sensitivity in burdening water customers with targeted funding of land management to mitigate some effects of existing but less targeted public funding such as the Single Farm Payment. Consequently, detailed planning is often still at an early stage and examples of practical implementation are scarce.

Nevertheless, most water companies now make explicit reference to land and catchment management in their operational and strategic plans, which have been developed in close consultation with the relevant Environmental Agencies. Examples cited include reducing nitrate and pesticide concentrations in drinking water and peatland restoration to aid flood management and soil erosion control, and are variously referred to as "Asset Management Plans", "Branching Out" and "Upstream Thinking".

At the aggregate level, the Regulators' "Final Determinations" approving investment plans cite headline figures[18] of £90 million in England and Wales plus £15 million in Scotland allocated to catchment planning over the next five years. In Northern Ireland, trialling of sustainable catchment management is mentioned in the regulator's final determination without a specific investment allocation being identified within overall quality enhancement expenditure.

A detailed breakdown of these headline figures by individual water companies is not yet readily available. However, several companies have progressed catchment management activities further and illustrate what can be achieved in terms of peatland management. For

[17] (Department of Environment, Northern Ireland, May 2011, personal communication) Following a report by EU Auditors on Northern Ireland's implementation of the Single Farm Payment scheme, the Department of Agriculture Northern Ireland has ruled that land which has more than 20% cover of heather plants taller than 50cm does not qualify for the Single Farm Payment (for details see DARDNI, 2011 p14-p17).

[18] See Tables 34 and 35 in http://www.ofwat.gov.uk/pricereview/pr09phase3/det_pr09_finalfull.pdf (Ofwat) , Table 4 in http://www.watercommission.co.uk/UserFiles/Documents/Final%20Determination%20document.pdf (WICS) and http://www.uregni.gov.uk/uploads/publications/Final_Main_Report_PC10_FD_-_Main_Report_0300_revised_web_version.pdf

example[19]: South West Water have committed £9.1 million to "upstream thinking", of which £3.8 million is linked explicitly to peatlands on Exmoor and Dartmoor; United Utilities have earmarked £12 million under "SCaMP" mainly for upland peat areas in North West England; Yorkshire Water are spending £9 million on a 'back to nature' approach with peat restoration in the Pennines; and Northumbrian Water have spent between £35,000 and £175,000 on the North Pennines AONB Partnership Peatscapes project in the Tees catchment. In each case, private funds have been used alongside public funds to work with local private, public and NGO stakeholders to improve land management practices to deliver water, wildlife and recreational benefits.

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[19] See http://www.southwestwater.co.uk/index.cfm?articleid=684 , http://www.unitedutilities.com/scamp.aspx and http://www.unitedutilities.com/Documents/Detailed_plan.pdf, http://www.nwl.co.uk/Part_A_Company_Strategy_(N.East).pdf http://www.northpennines.org.uk/index.cfm?articleid=12218
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