Restoration of Blanket bogs; flood risk reduction and other ecosystem benefits

Annex 8. Valuing the Dark Peak: A Deliberative Approach to Payments for Peatland Ecosystem Services

Prof Mark Reed[1] and Dr Jasper Kenter[2]

[1] Knowledge ExCHANGE Research Centre of Excellence, Birmingham School of the Built Environment, Birmingham City University, City Centre Campus, Millennium Point, Curzon Street, Birmingham, B4 7XG; IUCN UK Peatland Programme, c/o Harbour House, 110 Commercial Street, Edinburgh, EH6 6NF [Mark.Reed@bcu.ac.uk; www.profmarkreed.com].
[2] Ecologos Consultancy, The Cottage, Taynuilt, PA35 1JE [EcoLogos@jasperkenter.com; www.jasperkenter.com]

Final report of the Making Space for Water project

Prepared for

By

Moors for the Future Partnership, 2015

Moors for the Future Partnership
The Moorland Centre,
Edale,
Hope Valley,
Derbyshire,
S33 7ZA, UK

T: 01629 816 579
E: research@peakdistrict.gov.uk
W: www.moorsforthefuture.org.uk

Suggested citation:
Read, M. & Kenter, J. (2015). *Annex 8: Valuing the Dark Peak: A Deliberative Approach to Payments for Peatland Ecosystem Services.* In Pilkington M.G. et al. (2015) *Restoration of Blanket bogs; flood risk reduction and other ecosystem benefits.* Final report of the Making Space for Water project: Moors for the Future Partnership, Edale.

CONTENTS

FIGURES

TABLES

SUMMARY

This report has considered the values held by Peak District stakeholders for peatlands and a number of interventions designed to enhance their climate mitigation potential. Specifically, it has considered the likely costs and benefits of gully blocking, revegetation and footpath restoration, and has considered the financial viability of paying for these interventions via Payments for Ecosystem Services (PES). This has been done in the context of ongoing work by Defra to assess the financial feasibility of projects under the pilot UK Peatland Code. Preliminary work was undertaken to understand the attitudes of landowners and other stakeholders towards a future peatland PES scheme in the Dark Peak. This identified general interest in exploring the potential for such a scheme, as well as a number of reservations, particularly around possible negative impacts on grouse moor management. A workshop was then held to enable stakeholders to gain familiarity with the PES concept, assess views and values around potential management options, and provide evidence to the Moors for the Future Partnership (MFFP) and other stakeholders that could inform the development of a future PES scheme, should interest be sustained.

The workshop included the following main stages:

1. A background presentation and discussion on PES
2. A 'values compass' to consider which transcendental values were most important to the group
3. Storytelling and a discussion on how participants experienced well-being in the Dark Peak landscape
4. A presentation and discussion on the evidence around links between management options and a range of ecosystem services
5. A carousel discussion of positive and negative effects of different management options
6. Establishing/negotiating a fair price
7. Feedback

Participants were invited and attended from the following stakeholder groups:

- Private land owners and their representatives and land agents
- Institutional land owners
- Grazing tenants
- National Park authority
- Local authority
- Conservation NGOs

In addition to this, participants were invited but did not attend from the following groups: shooting tenants, tourism, recreation, forestry and local communities. During the workshop, participants were split into four groups of four to six participants.

The most important deeper held values identified by participants in the 'values compass exercise were protecting the environment, honesty, responsibility and a varied life. Benefits that were most relevant to participants were engagement with and feeling connected with nature and memorable experiences that have a lasting impact. Stories related to livelihoods illustrated both increasingly diverse livelihoods, and the interdependence between livelihoods, nature and management. Engagement with nature often related particularly to specific shared experiences of nature, such as

listening for the first curlews. Place identity and sense of belonging related to both on the wide-open spaces that are characteristic of the area, and secret places that one can have a special connection with. Open spaces were also mentioned by some participants in relation to feeling free and being aware of one's own "insignificance". Peacefulness and aloness, but also, in contrast, connection with others were important themes in stories. The exercises thus brought out a range of values, signifying the shared emotional connections many participants felt with the Dark Peak as a place. It also identified many commonalities that participants shared in terms of their broader perspective on what was important to themselves and society.

The effects matrices provided participants with an opportunity to think broadly about the potential positive or negative social, economic and environmental effects of peatland restoration. Given the range of stakeholder interests being represented at the workshop, this was important to enable participants to consider effects from a range of perspectives and for subsequent discussions to represent the likely interests of stakeholders not present. Across all the matrices, beneficial effects on water quality (and consequent benefits for water treatment costs) and water table depth (with consequent benefits for biodiversity) were deemed particularly important. Effects linked to carbon sequestration, loss or storage, and linked to climate change were rarely mentioned across the matrices.

Broader value concerns, including those expressed via the value compass, storytelling and effects matrices were reflected in some of the indirect costs that were included in calculations around the prices during fair price discussions. This was most clearly expressed in the discussion of the management option to block gullies without burning allowed. Here, not just costs to landowners were considered but also indirect local economic costs resulting from a decrease in sporting activity, such as might be suffered by local hotels and restaurants. It was deemed fair that if a collective PES scheme was put in place, some of the revenue should be used to compensate those who would lose out. Thus the discussion transcended the direct economic interest of landowners to consider the local community as a whole and the importance of taking responsibility for the wider consequences of a scheme.

Notably, although there were conflicts of interest and position, and views to some degree differed on the evidence around impacts of burning, the deliberation and negotiation process still led the group to agreement on a fair price to ask for the management option of gully blocking with a ban on burning. Landowner interests accepted that this could be an option, if it was put in place on a limited amount of land, whilst conservation interests conceded that on other land burning could be maintained as a management practice. A substantial 'no-burn premium' can thus be deduced from the different fair prices for gully blocking with burning allowed and gully blocking with burning restricted; the fair price for a no-burning option, £643/ha/yr, was £386/ha/yr higher than the burning-allowed option with a fair price at £256/ha/yr.

The following is an overview of the 30 year total fair prices that might be sought for a peatland restoration scheme via the UK Peatland Code in the Dark Peak of the Peak District National Park, based on participants combined workshop inputs (and corrected for miscalculations).

Fair prices in the Peak District:

- Gully blocking in Peak District: £9,656/ha (burning allowed) - £21,222 (no burning)
- Revegetation: £44,064/ha.

Other considerations:

- Gully blocking in the Peak District is approximately £5,167/ha more expensive than elsewhere in the UK
- Higher fair prices were deemed necessary to account for risks associated with being unable to burn restored sites (a burning ban premium of £5,430/ha)
- Footpath restoration could be added to either gully blocking or revegetation projects for an additional £281/m or £2,810/ha, assuming 1 km of footpath restoration per 10 ha.

A decomposition of these costs is depicted in Figure 1 and given in detail in Table 12 (p. 32).

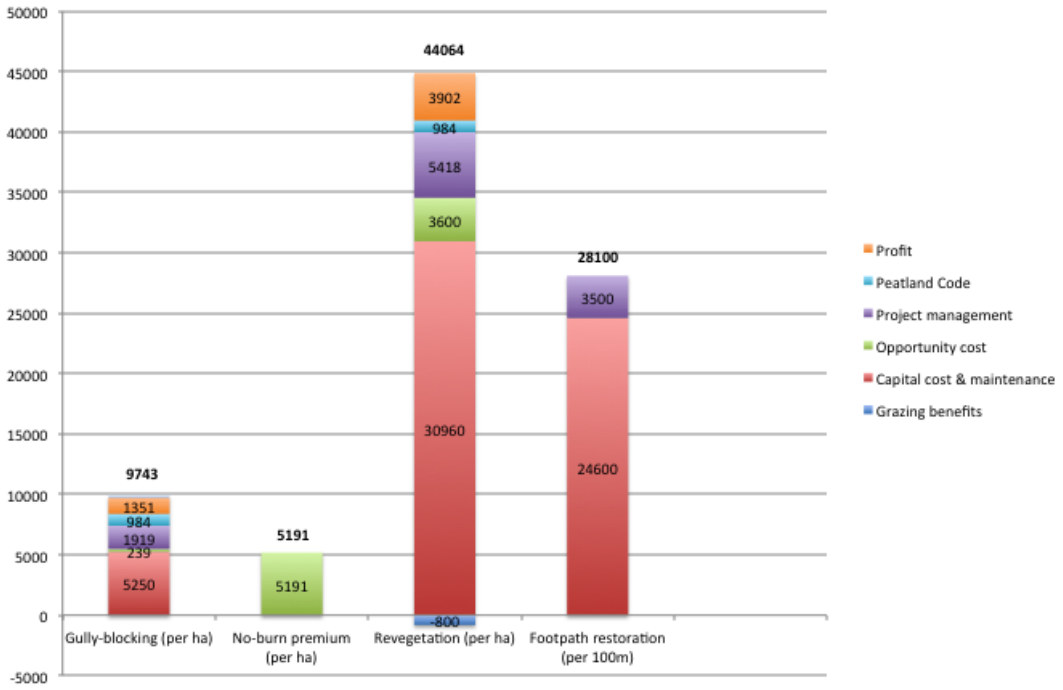


Figure 1. Overview of fair prices for gully blocking, revegetation and footpath restoration over 30 years and how they were composed by participants.

Bold figures indicate fair prices. The no-burn premium indicates the amount with which the opportunity cost and fair price for gully blocking would increase if burning would be prohibited in areas where gullies were blocked. Revegetation figures assume each ha of revegetation is distributed across a 10 ha area, exclusion of grazing in this larger area over a period of 10 years, and subsequent allowing of grazing over the remaining 20 year period.

For the Peak District, assuming a GHG emissions saving of 3 and 30 t CO2 eq/ha/yr for gully blocking and revegetation respectively, with revegetation of 1 ha of bare ground spread out over 10, and assuming burning is allowed under certain circumstances on restored sites:

- A fair price for gully blocking in the Peak District would be equivalent to £107 per tonne of CO_2 equivalent;
- A fair price for revegetation in the Peak District would be equivalent to £49 per tonne of CO2 equivalent; and
- Adding footpath erosion to these projects (assuming 10 m footpath restoration per ha of restored peatland) would increase GHG savings by approximately 0.03 t C per year per 1 m footpath restoration. This is equivalent to an additional £9,367 per tonne CO2 equivalent to cover the costs of footpath restoration and maintenance.

The level of profits suggested by participants varied significantly, and in some cases appeared to reflect the level of risk they perceived to their business from peatland restoration activities. In some cases, this was a substantial proportion of overall costs, ranging from £42-130/ha/yr. This compares with estimates of £10/ha/yr profit as the default value in Defra's Project Feasibility Tool. Similarly, opportunity costs were perceived to be high by workshop participants, ranging from £8-181/ha/yr, compared to an estimate of £20/ha/yr as the default value in Defra's Project Feasibility Tool. Project management costs were not included in the version of Defra's Project Feasibility Tool used in the workshops, but was estimated to be between £64-180/ha/yr by workshop participants (17.5% of capital costs). Compared to these figures, compliance with the Code was estimated to cost £33/ha/yr by workshop participants based on information from Defra's Project Feasibility Tool (which estimates this at £34.50/ha/yr). The most significant of these costs was consultancy fees to establish projects and create the relevant documentation. These fees would normally be absorbed in the operating costs of NGO landowners applying for projects under the Code, and so working in collaboration with NGOs who have this capability (such as the National Trust in the Peak District) for a jointly branded scheme may be able to offer economies of scale and cost savings for landscape-scale scheme, such as the one conceived for the Dark Peak.

Putting the additional opportunity costs, profit and project management costs together with the higher costs of restoration in the Peak District (almost twice as expensive as other parts of the UK), the price per tonne of CO2 equivalent in the Peak District for gully blocking (£107 per tonne) is approximately 4 times higher than would be likely elsewhere in the UK (revegetation costs are similar to elsewhere in the UK). The additional costs of doing restoration in the Peak District (£2,413/ha more than elsewhere in the UK) only account for between 15-48% of the total additional costs of restoring peatlands in the Peak District (including estimates of opportunity costs, profit margins and project management costs estimated by workshop participants). As such, if opportunity costs and profit margins were kept the same as Defra assumptions and project management costs could be absorbed (not charged), then the higher restoration costs in the Peak District alone would result in a price per tonne of CO_2 equivalent for gully blocking of £36.68 per tonne[1]. Given that costs of revegetation are not significantly different in the Peak District to elsewhere in the UK, using figures from Defra's Project Feasibility Tool without including the additional opportunity costs, profit and project management costs identified in the workshop, the price per tonne would be between £13-14 per tonne.

Whether the fair prices and profit margins that were considered to be "fair" by workshop participants could be sustained by the market remains to be seen, but they represent a starting point for negotiations with sponsors. Importantly, the approach taken in this workshop creates a transparent platform for continuing to explore the opportunities that may be afforded by peatland restoration sponsorship in an equitable way that reduces the likelihood of competition and conflict between stakeholders.

[1] Based on a total cost of restoring a 100 ha site of £545,425 for blocking grips and gullies according to Defra's Project Feasibility Tool, with an additional £2,413/ha for the additional costs of restoration in the Peak District and a 40% project buffer with a net CO2 equivalent benefit over the 100 ha site over 30 years of 8,580 tonnes

1 INTRODUCTION

As part of the "Making Space for Water" project[2] MFFP commissioned a series of workshops to explore and inform the value of the Dark Peak to different stakeholders and consider the development of a future Payment for Ecosystem Service (PES) scheme in the Dark Peak Natural Character Area (NCA 51)[3]. The Making Space for Water project, in collaboration with the Environment Agency, was funded by Defra as part of the "Demonstration Multiple Benefit Catchment programme". A working group of around 20 stakeholders was formed, and met in three workshops over 15 months to assess options for the sustainable management of restored blanket bogs in the Dark Peak. The first workshop identified options for the future sustainable management of previously restored blanket bog. The second workshop sought to identify ecosystem services from blanket bog and assessed the effect of restoration and different forms of management on these services. The third workshop, developed in collaboration with Mark Reed (Birmingham City University) and Jasper Kenter (EcoLogos Consultancy) specifically focused on stakeholder perspectives on establishing a PES scheme linked to the UK Peatland Code (Appendix 1), and their views on what might a fair price for different management options. This workshop is the focus of this report. The approach taken for the third workshop was based on the insights and methods developed by the second phase of the UK National Ecosystem Assessment (Kenter *et al*, 2014a,b; and see: www.lwec.org.uk/sharedvalues).

Peak District moorlands are nationally and internationally important for their biodiversity and landscape value, and host a number of protective designations. The peat soils of the Dark Peak store around 30-40 Mt carbon (Bonn et al., 2009). They are also important as a water catchment supplying 450 million litres of water a day to the surrounding conurbations of Sheffield, Manchester and Leeds. The location of the Peak District between these cities makes it one of the most visited National Parks in the UK, with 38,000 local residents and 16 million people living within an hour's travelling time (Bonn et al., 2009). 79% of the National Park is farmed for livestock (mainly sheep) and 65% are managed for grouse shooting, including the practice of rotational burning (Sotherton et al., 2009). However, they are also among the most degraded moorlands in the UK. Following a historic legacy of atmospheric pollution, overgrazing, intensive burning and wild fires led to 19 km^2 moorland being assessed as unvegetated, bare peat in 2005 (Chapman et al., 2010). This is equivalent to 4% of all Peak District upland moorlands[4]. This compares to an estimate of 1.3% bare and eroding upland soils across the whole of England and Wales according to McHugh et al. (2002)[5]. Having said that, some other localized erosion hotspots in the UK are experiencing comparable or greater levels of erosion, such as the Ladder Hills (9% bare peat) and the Monadhliaths (14%), according to Cummins et al. (2011). Over the last decade, there significant restoration work has been undertaken by MFFP to restore and manage these peatlands. This work has been well studied, including carbon flux measurements and modelling, detailed vegetation and water quality monitoring, and leisure activity monitoring, helping to cement MFFP's first-hand experience and expertise in peatland restoration and management.

[2] One of three Defra funded 'Demonstration Multiple Benefit Catchment' projects
[3] http://www.naturalengland.org.uk/publications/nca/dark_peak.aspx
[4] Based on the area of Peak District moorlands being 509 km^2 according to Bonn et al. (2009)
[5] A total of 2.47% "degraded" soils were identified, of which 53% were classified as bare and eroding (other areas had revegetated and were no longer eroding)

1.1 Aims and objectives

The main objectives of the work were to:

- Understand initial preferences of landowners and other stakeholders in the Dark Peak for exploring a PES scheme, to determine levels of interest in a workshop and create an invitation list
- Design a workshop that could:
    - help stakeholders become familiar with the PES concept
    - build trust amongst stakeholders
    - assess views and values around potential management options and trade-offs between them
    - provide outputs that usefully inform decision-making by MFFP and others on which projects to prioritise
    - function as a deliberative pilot to inform establishment of a landscape based PES prospectus/scheme in the future
- Identify 'fair asking prices' for different management options that could form part of a future PES scheme, linked to the UK Peatland Code

2 METHODOLOGY

The approach incorporated two steps. First, key stakeholders were identified, informed about PES schemes and engaged via unstructured individual interviews. Second, to identify fair asking prices for different management options that could be included in a PES scheme, a deliberative workshop was held.

1.2 Preliminary visit

A long-list of landowners and other key stakeholders in the Dark Peak was identified by MFFP, and supplemented with contacts from the RELU-funded Sustainable Uplands project in February 2014. These were then short-listed by the research team in terms of their relevance (focusing primarily on landowners) and likely interest (avoiding those who have previously expressed preferences against working with the partnership). A leaflet was designed to communicate key benefits and risks of engaging with PES, in collaboration with the IUCN UK Peatland Programme and the steering group of the UK Peatland Code, incorporating feedback from MFFP, the Moorland Association and Scottish Land & Estates. A two-page version of the leaflet was sent to each of the short-listed contacts via email or post, requesting an interview. Contact was then made by telephone, seeking initial feedback on the idea of developing a PES prospectus in a future research phase, and offering a face-to-face meeting to discuss these issues further. In some cases, alternative contacts were provided, and followed up. Face-to-face meetings were then arranged with five landowners, with other landowners and stakeholders given the opportunity to attend an evening question and answer session in a local pub. Telephone interviews took place between 28th February and 26th March 2014, and face-to-face interviews took place on 28th March 2014.

1.3 Workshop

Design of the workshop was underpinned by the Deliberative Value Formation' (DVF) model, developed by Kenter *et al* (2014). The DVF characterises deliberative valuation as a process of

applying 'transcendental' values (our overarching principles and life-goals) that are important to people as individuals and to their communities and society, to a practical context. Through a process of exchanging and debating these transcendental values plus information and beliefs, participants can then form 'contextual' values; opinions about how much something specific is worth, and translate these into value indicators: in this case, fair prices to ask for different management options.

The workshop included the following main stages:

1. A background presentation and discussion on PES
2. A 'values compass' to consider which transcendental values were most important to the group
3. Storytelling and a discussion on how participants experienced well-being in the Dark Peak landscape
4. A presentation and discussion on the evidence around links between management options and a range of ecosystem services
5. A carousel discussion of positive and negative effects of different management options
6. Establishing/negotiating a fair price
7. Feedback

Participants were invited and attended from the following stakeholder groups:

- Private land owners and their representatives and land agents
- Institutional land owners
- Grazing tenants
- National Park authority
- Local authority
- Conservation NGOs

In addition to this, participants were invited but did not attend from the following groups: shooting tenants, tourism, recreation, forestry and local communities.

During the workshop, participants were split into four groups of four to six participants. Composition of the groups was determined in advance to ensure the different categories of stakeholders were more or less evenly distributed.

1.3.1 Introductory presentation

The workshop began with a short presentation providing background on PES and an introduction to the policy context, with a particular focus on the pilot UK Peatland Code. In this presentation, an initial overview was provided of the likely financial costs and benefits of developing restoration projects under the Code, supported by a detailed handout based on a draft Project Feasibility Tool being developed as part of a Defra R&D project running alongside the Code. The presentation ended with an overview of the workshop, justifying the approach taken, to ensure values are socially acceptable and designed in accordance with community values.

1.3.2 Values compass

A values compass asks participants to consider which of their individual transcendental values (e.g. honesty, enjoying life, family security, social status, harmony with nature) are most important by

ranking or rating them, and then asks to discuss the degree to which these values are important for one's community, culture or society. The exercise was designed to:

- Consider where people might have transcendental values in common that bridge their different interests
- Stimulate a broader set of values to enter discussion

Individuals selected their five most important values from a standard list of 56 broad transcendental values, based on Schwartz' (1999) standard list of values. During the following exercise and a short break these were aggregated and thereafter presented back to participants graphically and briefly discussed.

1.3.3 Sharing experiences and well-being values

Participants were asked to consider a list of well-being values. Specifically they were asked to consider personal experiences in the Dark Peak and assess (on a marking sheet) if they related to any of the following:

- learning about/from nature and getting to know nature
- beauty of the site
- feeling connected to something larger than oneself
- personal identity
- making bonds with other people
- memorable and transformative experiences
- feeling healthy (mentally/physically)
- cultural heritage

On the sheet participants could also add other well-being benefits. Each participants was then asked to share one short experience or story, and each group discussed together which of the above elements the stories related to, and participants could tick any further items on their mark sheet. These marks were then aggregated and after a short break presented back to participants alongside the values compass outcomes.

1.3.4 Evidence around links between management options and ecosystem services

The evidence presented at the workshop combined evidence from the published literature with data collected from previous workshops from the Making Space for Water project. Graphical representations of the perceptions of previous workshop participants were presented, showing: i) perceived impacts of a range of scenarios (including the commencement of Peatland Code projects) on different ecosystem services (Figure 2); ii) a more detailed assessment of the likely effects of adopting Peatland Code projects on different ecosystem services (Figure 3); and iii) a detailed assessment of the perceived effects of gully blocking and revegetation under the Peatland Code on a range of ecosystem functions underpinning these services, considering cross-linkages between these variables (Figure 4).

Evidence from published literature was based primarily on: i) recent evidence reviews including the IUCN Commission of Inquiry (Bain et al., 2011) and the Natural England Upland Evidence Review (Shepherd et al., 2013); ii) Peak District projects including Defra's Ecosystem Services of Peat project (Bonn et al., 2010), the Sustainable Uplands project (Reed et al., 2013) and the Making Space for

Water project; and iii) other peer-reviewed sources of evidence. Evidence for the effects of peatland restoration were presented for Greenhouse Gas emissions, water quality and flood risk alleviation, biodiversity and other benefits (e.g. archaeology, aesthetics and accessibility)[6]. The contested nature of evidence over the role of burning was noted and discussed in relation to the role of burning in restoration projects under the Peatland Code.

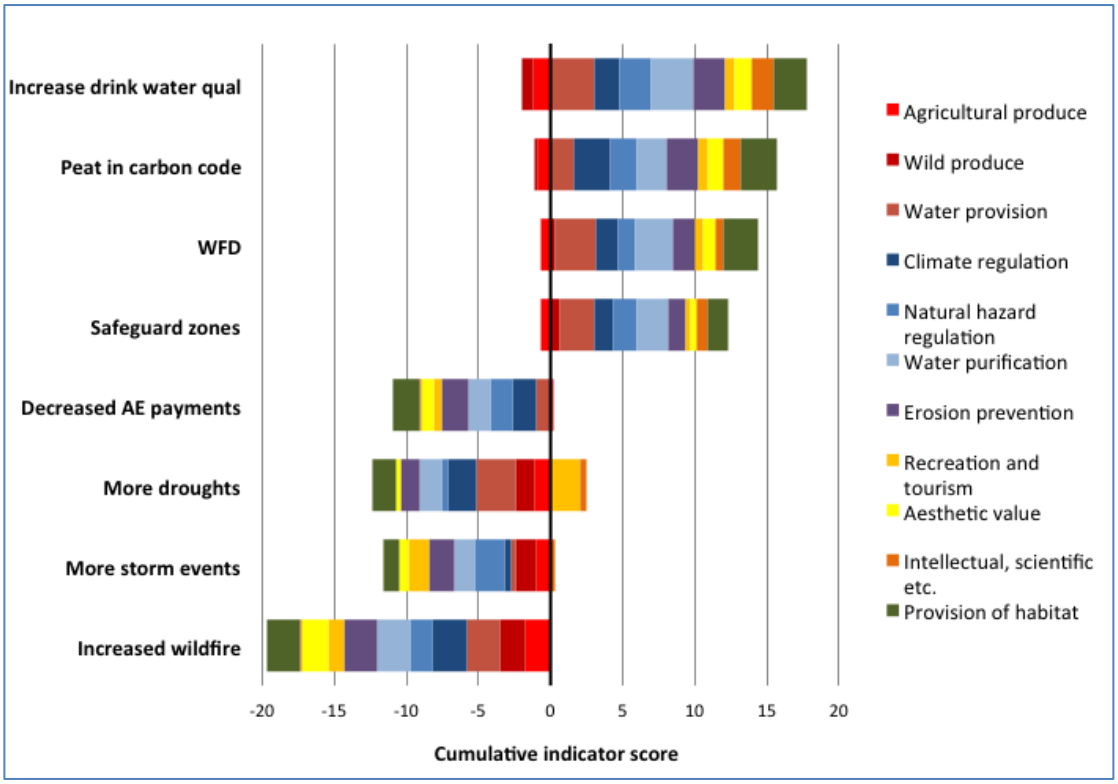


Figure 2. Perceived impacts of a range of scenarios (including the commencement of Peatland Code projects) presented to participants on different ecosystem services.
Source: Jim Rouquette, University of Northampton.

[6] Presentation available at: http://www.slideshare.net/AberdeenCES/ws3-evidence-presentation-online-version

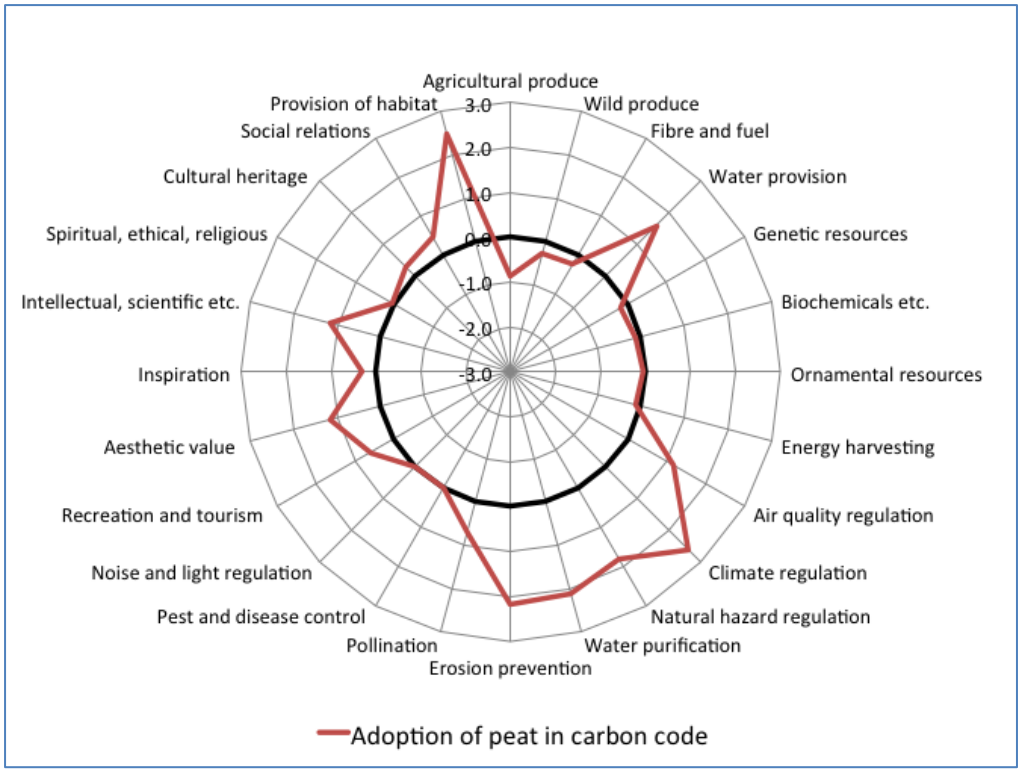


Figure 3. Strength of perceived positive and negative effects of adopting Peatland Code projects on different ecosystem services.
Source: Jim Rouquette, University of Northampton.

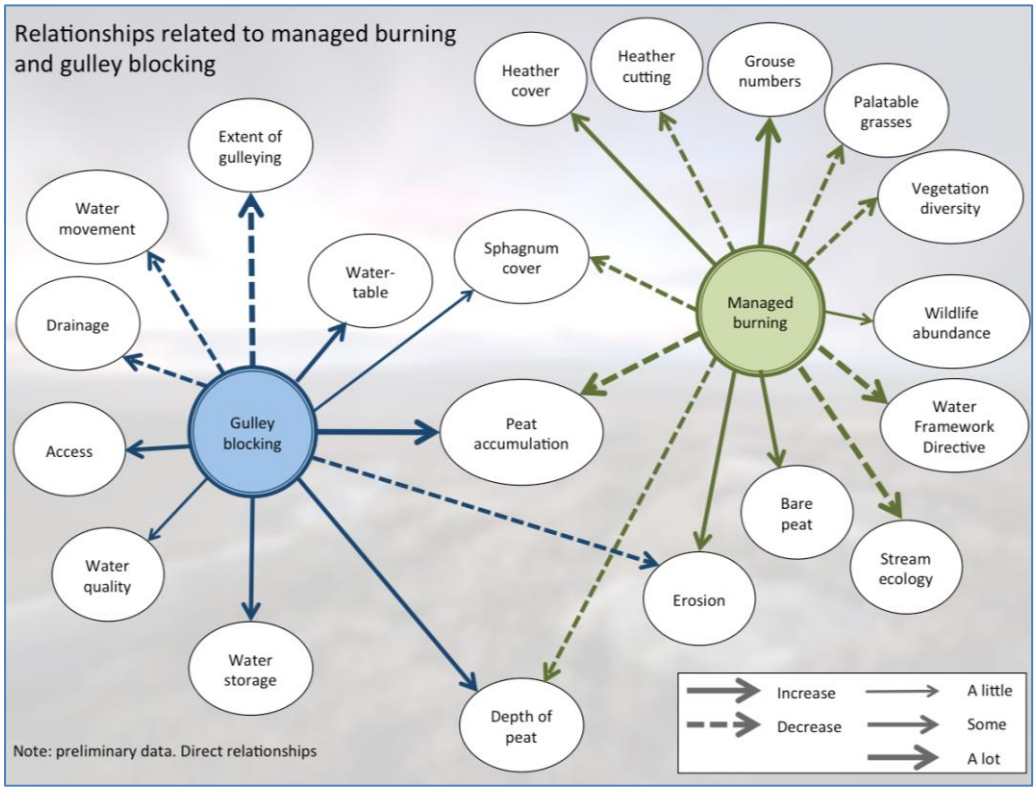


Figure 4. A detailed assessment of the perceived effects of gully blocking and revegetation under the Peatland Code on a range of ecosystem functions underpinning these services, considering cross-linkages between these variables.
Source: Dylan Young, Leeds University.

1.3.5 Positive and negative effects carousel

This exercise aimed to help participants discuss and digest evidence on management options presented as well as consider how management options would affect communities more broadly. In a carousel, small groups have short discussions at a 'station' where there is a large sheet of paper where they note their points. After a short while, all small groups move to the next station and add their points to what is there already. Participants were mixed up into four different small groups compared to the four small groups constituted previously.

Here, each station of the carousel consisted of a matrix (Table 1). Rows were labelled 'environmental effects', 'economic effects' and 'social effects and effects on community values'. Columns were labelled 'effects' and 'who is affected'. Effects could be local or at a larger scale. To reduce chance of conflicts, we avoided clear differentiation of positive and negative effects and instead emphasised that most if not all effects could be seen as positive or negative depending on ones' viewpoint/interest.

Four management options were considered:

1. Re-wetting with burning unrestricted
2. Re-wetting without burning
3. Re-vegetation without burning (and a 10 year grazing ban)
4. Footpath restoration

After completing a round of the stations in small groups, each individual participant was then asked to tick the one social, one environmental and one economic impact that they considered most important, however they might define that, to the Dark Peak as a place. This also provided opportunity to reflect on what others had written on all the carousel stations.

Table 1. The matrix used in the carousel exercise.

	Effect	*Who is affected?*
Social + community values impacts		
Economic impacts		
Environmental impacts		

1.3.6 Negotiation of a fair price

Having considered transcendental values, the experiential importance of the Dark Peak in terms of well-being, what the impacts of changes in management might be and how these things connected, now participants were asked to consider what they thought was a fair price to pay for each of the four options listed above. Participants were given an overview of costings associated with different management options originating from a draft version of a Peatland Code Project Feasibility Tool commissioned by Defra and from local figures provided by MFFP.

Participants were asked to consider direct costs to landowners, opportunity costs and indirect costs (e.g. loss of income suffered by others), as well as benefits of the management options, and what might be an appropriate profit margin. Initially it was envisaged that draft fair prices would be drawn up, and that the group as a whole would then be subdivided into a landowner group and a group representing other interests, who would then come to two sets of final values. However, given that

their were only four participants in the landowners and their agents and representatives group and calculations took more time than envisaged, this was not pursued.

1.3.7 Workshop feedback

Finally, participants were individually asked for their agreement or opinion around a small number of statements on a standard Likert scale of 1 (strongly disagree or very poor) to 5 (strongly agree or very good) around the process of the workshop, and on a scale of 1 to 3 (1: no or none; 2: perhaps or some; 3: yes or a lot) whether they felt they had gained knowledge on PES, whether they wanted to be involved in developing a PES prospectus, and whether they felt the deliberations had been useful.

3 RESULTS

1.4 Findings from preliminary visit

A total of 24 contacts were identified for the preliminary visit preceding the workshop. Of these, 4 were not contactable and 4 stated that they did not feel the opportunity was relevant to them (principally because they did not have decision-making power as tenants). Of the remaining 16 contacts, only one expressed opposition to the idea of exploring a PES scheme (on the basis that peatland re-wetting would damage grouse populations). The others expressed varying degrees of interest, ranging from those who were largely skeptical but interested to find out more, to those who were very interested.

Through discussion with landowners and managers, a number of elements were identified for possible inclusion in a future PES scheme, including peatland restoration and clough woodland creation for climate, water quality and biodiversity benefits, via the Peatland Code and Woodland Carbon Code respectively. In addition to this, interest was expressed in including footpath resurfacing on deep peat, involving revegetation of bare and eroding peat and creation of flagstone paths, for carbon, biodiversity and recreational benefits.

Although footpath resurfacing would be a very costly form of peatland restoration (per tonne of carbon), on deep peat, such restoration is likely to meet the eligibility criteria of the Peatland Code. However, as part of a wider landscape scale project where sponsorship is also sought for more cost-effective forms of peatland restoration and woodland creation, it may be possible to retain an average price of carbon across the landscape that remains attractive to sponsors. If signage opportunities in areas of high visitor footfall could be offered as part of the scheme, linked to footpath resurfacing, then this may significantly increase the value of the opportunity for some sponsors. It may therefore be possible to offer different sponsorship packages that include or exclude footpath resurfacing across the Dark Peak area, depending on the preferences of the sponsor. Given evidence that footpath resurfacing can reduce the proportion of walkers straying from the path, with benefits for ground nesting birds (Finney et al., 2005), it may be possible to promote the ecological benefits of resurfacing in any bundle of benefits communicated to sponsors.

A number of concerns were expressed about the viability of a PES scheme in the Dark Peak. A number of those interviewed were opposed in principle to peatland re-wetting, on the basis that it would reduce grouse populations, or lead to peat slides. In addition to this, concerns were expressed about the availability of land for restoration that is not already in HLS agreements. Subsequent

clarification from Natural England suggests that land that is in HLS agreements, but that has not yet been designated for capital works funding, could be considered additional under the Code. The majority of the National Trust's High Peak estate, for example, is in an HLS agreement, but only a small proportion of that area has been allocated capital works funding over the next three years, and there are no guarantees that more capital works will be funded in future years.

Concerns were also expressed about not burning restored sites under the Code for at least 30 years. There were two main concerns linked to this. First, there were concerns that without rotational burning on restored sites, wildfire risk would increase, and this may jeopardise the restoration, potentially requiring land to be restored again or money paid back to sponsors. Second, there were concerns that a lack of rotational burning would lead to a reduction in grouse habitat, with consequent declines in income from grouse. However, the most in-depth discussion about burning restrictions under the Code (with two grouse moor owners), concluded that replacing burning with mowing half way through a 30 year contract would be unlikely to have a major impact on grouse, and income via sponsorship may offset perceived losses due to changes in management. Mowing may also mitigate wildfire risk if it reduces fuel loads.

Another consideration for mitigating wildfire risk may be to consider creating a pooled buffer[7] across the Dark Peak, so if one property experiences a wildfire and loses all their GHG emission savings (i.e. exceeds their buffer), then they could have an arrangement to draw upon unused buffers from other properties at the end of the contract period. Given concerns about wildfire risk, this would be an important advantage of a scheme operating at a landscape scale in the Dark Peak.

The approach to burning in the Peatland Code is likely to be consistent with the approach being taken by Natural England in HLS negotiations in the Dark Peak, where they are aiming to lengthen burning rotations to at least 15-20 years, and would like to get this closer to 30 years if possible (with mowing allowed as an alternative). Linked to this, Natural England's conservation officer for the Dark Peak expressed concerns that negotiating sponsorship deals may delay HLS agreements that are currently being negotiated. However, his view was that in the long-term, the availability of sponsorship on top of HLS payments should make it possible to get more land into agreements in future, and so delays could be tolerated. The use of break clauses in HLS agreements to negotiate sponsorship deals was mooted, but this would likely fall foul of additionality criteria under the Code, and not be permitted.

Questions were also raised about levels of grazing permitted post-restoration. Grazing levels have not yet been set under the Code, as best practice restoration guidelines are still under development. The concern was that although current grazing levels are likely to be consistent with restoration work, stocking densities may increase in future, jeopardising the restoration work, and fencing would be expensive if this were required to maintain low grazing intensities.

Although restrictions under the Peatland Code are likely to mirror many of the restrictions imposed under HLS, one of the agents interviewed suggested that some landowners may be attracted to sponsorship under the Peatland Code as an *alternative* to HLS rather than in *addition* to HLS

[7] Defined by the Peatland Code as "a carbon pool of 'unclaimed carbon' to cover either uncertainty in carbon measurement or unavoidable potential losses which may occur from the project over time, thus ensuring the permanence of Greenhouse Gas emission reductions."

payments, as there is a general reticence among some landowners to take Government funding, due to the strings that are attached. Overall, the agents who were interviewed were positive about the opportunity presented by the Code, and interested in the potential to realize new opportunities for their clients from their natural capital. Support from agents is likely to be important in encouraging landowners to engage with the development of a future PES scheme.

1.5 Values compass

The values compass was one of the first exercises in the workshop itself. Figure 5 indicates which values were deemed most important by participants. The most important values were protecting the environment (marked by 12 participants), honesty (9), responsibility (6) and a varied life (6). Schwartz (1990) value groupings that scored highest were universalism and benevolence. Power, pleasure and tradition scored lowest.

Discussing whether these results reflected the communal values of the Dark Peak community as a whole, there was no unequivocal conclusion. Many participants were unsure of being representative of this, as they worked but not lived in the area.

1.6 Sharing experiences and well-being benefits

Figure 6 indicates which subjective well-being benefits were deemed most important by participants. Benefits that were most relevant to participants were engagement with and feeling connected with nature (indicated by 12 participants as important) and memorable experiences that have a lasting impact (11). All other preconceived benefits were important to six to nine participants. Three participants added a desire to look after the Dark Peak for the future as a benefit, two participants added enjoyment and respect for past management, and one participant added the importance of the Dark Peak for mystery and romance literature.

All of the different subjective well-being benefits, both the preconceived and those added by participants, could be seen as themes throughout the stories and experiences related by participants (Table 2), though some more explicitly than others. Stories related to livelihoods illustrated both increasingly diverse livelihoods, and the interdependence between livelihoods, nature and management. Management needed to find a balance between moorland for livelihoods and recreation. Engagement with nature often related particularly to specific shared experiences of nature, such as listening for the first curlews. Place identity and sense of belonging related to both on the wide-open spaces that are characteristic of the area, and secret places that one can have a special connection with. Open spaces were also mentioned by some participants in relation to feeling free and being aware of one's own "insignificance".

An emergent theme from storytelling (neither preconceived nor added by participants as a well-being benefit previously) was the peacefulness associated with being alone and undisturbed in the landscape: *"This was particularly poignant on an occasion with my young daughter on Kinder when there was snow lying on the ground and everything was silent with nothing to disturb the peace."*

In contrast, connection with others was felt through taking part in the same activities that brought people together: *"I […] was forlornly limping down the hill but was struck by the number of people in the race that stopped to see if I was OK. I feel that the community of people that like going up the hill have a close connection with each other; it's a people thing."*

Some of the memorable experiences with lasting impact had to do with the sense of wilderness and the danger this can put one in if one is unprepared: *"Although I have good familiarity with the moor I have to remind myself that it is a wilderness and one can die up there."*

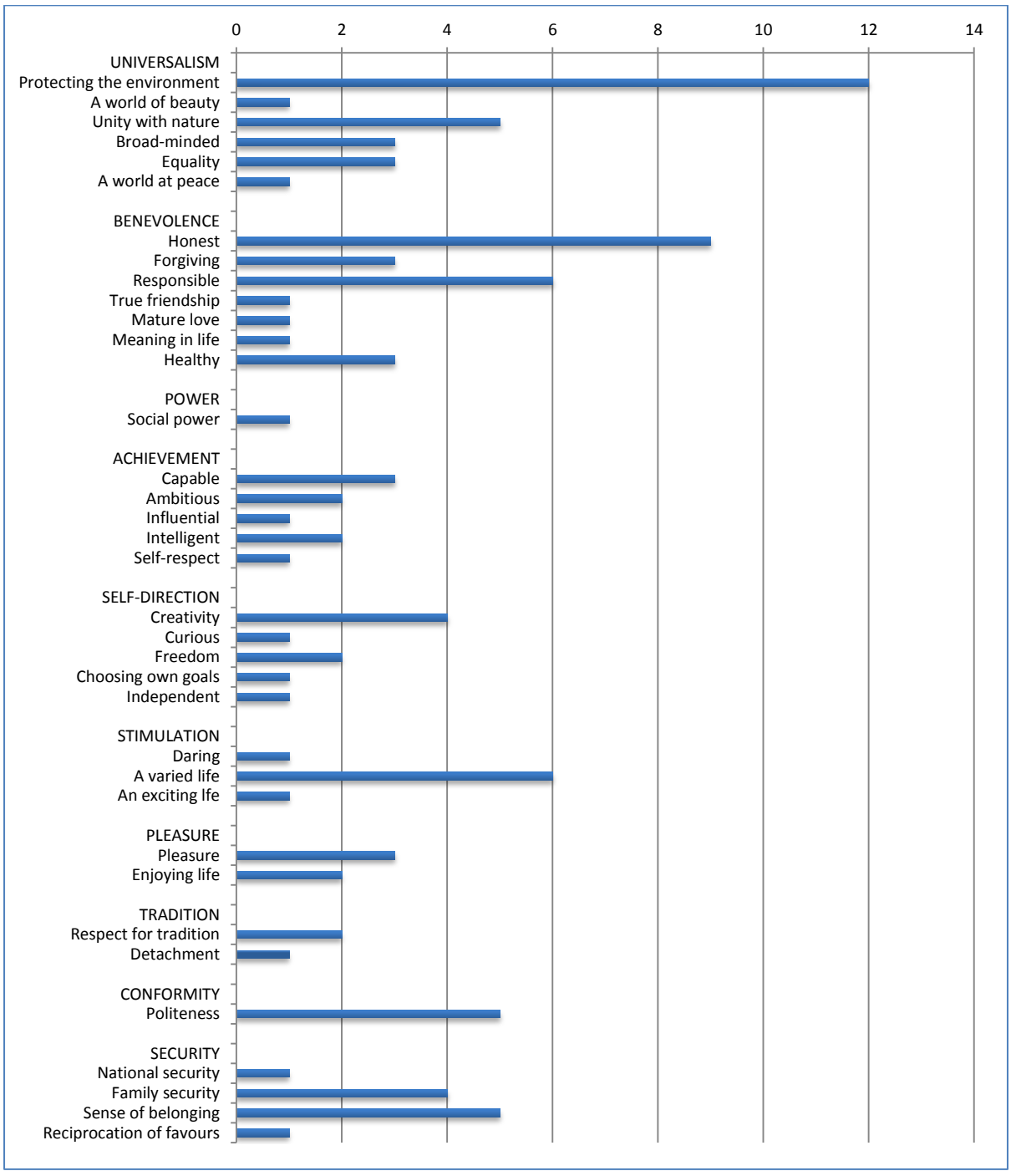


Figure 5. Values compass results.
Length of the bars indicate the number of participants who stated that that value was one of the five most important to them. Values are organised by Schwartz (1990) category (capitalised). Values that were not circled by any participants are omitted.

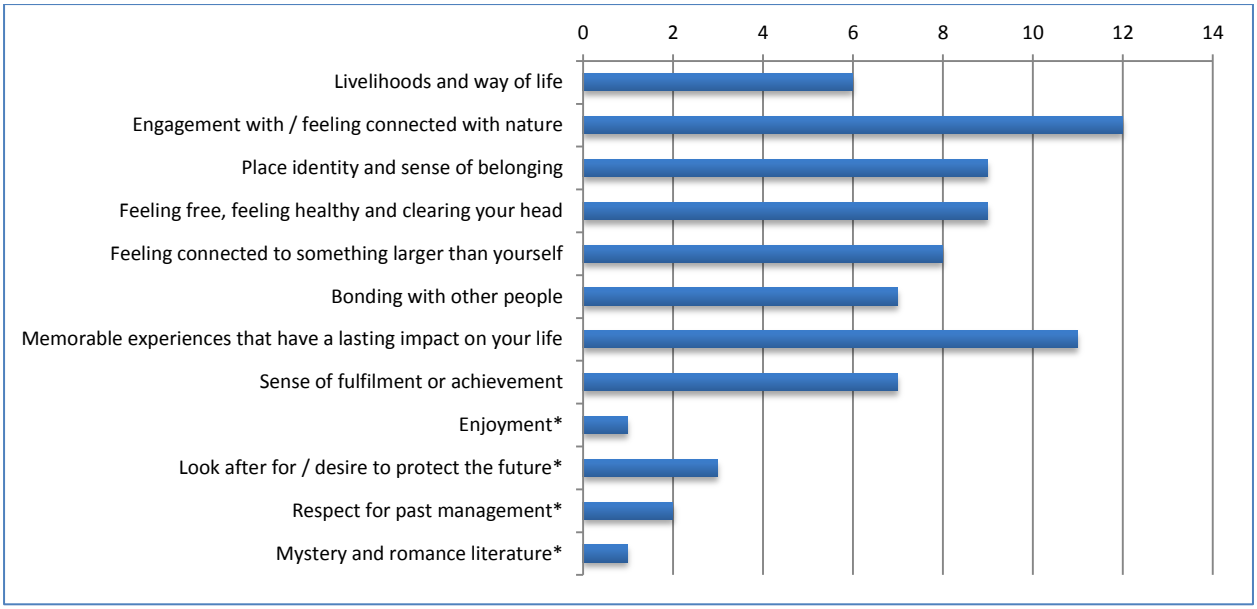


Figure 6. Importance of different subjective well-being benefits identified by participants.
Starred benefits were added by participants.

Table 2. Experiences and stories related by experiences coded by subjective well-being theme.

Theme	***Experiences and stories***
Livelihoods and way of life	• People can't simply farm in the Peak District anymore. Work is more varied. • This is an area of work, lifestyle and nature. • Environmental schemes have helped farmers to survive and this lifestyle to continue.
Engagement with / feeling connected with nature	• All the time never tiring of the sound of the curlew. • I enjoy the wildlife especially the sound of curlews in the morning
Place identity and sense of belonging	• Had a landscape view of the industry in the valley on one side and the national park on the other. A landscape of freedom and open space in comparison to that of the valley. • I grew up in the Middle East and first came to Edale on a geography field trip - everyone seemed to speak strangely - it was the furthest north I had ever been and i had never experienced hills like this before. Mam Nick gave me a real sense of this place and I was very impressed by it. If you had said to me then that I had to find a way to work and live specifically here then I would not have believed it possible. It did look very black here and the landscape was on a scale I had not seen before: open, unenclosed places, wild, grand, it all had an impact on me. • I went on a visit to Longshaw where a friend showed me a secret place of marsh, where pitcher plants exist. • 'Guilty' is not on values compass sheet, but it's a feeling when one finds a special place but not wanting to share it with other moorland visitors.
Feeling free, feeling healthy and clearing your head	• A landscape of freedom and open space in comparison to that of the valley. • I felt free and had an impression of my own insignificance. • I was running a race on Kinder […] a great boost to health. • The sense of freedom…..being on top of Kinder and nearly being blown off my feet.
Feeling connected to something larger than yourself	• I felt free and had an impression of my own insignificance.
Bonding with other people	• There is an opportunity for bonding with others when on the Moors. • I enjoy sharing these experiences with people new to the area.

Theme	*Experiences and stories*
	• I was running a race on Kinder […]. I retired from the race and was forlornly limping down the hill but was struck by the number of people in the race that stopped to see if I was OK. I feel that the community of people that like going up the hill have a close connection with each other – It's a people thing.
Memorable experiences that have a lasting impact on your life	• Came to the Peak as part of a Duke of Edinburgh award as an air cadet, the impressions of wide open spaces brought wonderment. • About 40 years ago my husband and I set out to walk all the way around Kinder and we had a time limit to get back. While at a trig point the clouds came down from the west, but we walked on until we met someone and asked for directions only to fine that we were on the wrong side of the hill. With the cloud still down the stranger navigated for us to the Kinder Downfall with a compass, walking straight up and down gullies. It is so easy to get lost up there in cloud and even die from exposure. […] I learnt a lot from this experience. • During a walk on the Moscar Estate when I was about 8 years old, my sister, then 7, sank up to her shoulders in a green boggy bit after being told by my mother to avoid it! And then in the next generation, my own daughter did exactly the same thing, which could have had serious consequences and had a lasting impact on me. Although I have good familiarity with the moor I have to remind myself that it is a wilderness and one can die up there, especially with a lack of understanding of the effects of changing weather and danger.
Sense of fulfilment or achievement	• Began coming to the Peak as a youngster to achieve something (climb hills) and so earliest memories of the area are related to a sense of achievement. An appreciation of nature and livelihoods came later. • The satisfaction of going through all the processes of restoration work from the initial stages of planning on spreadsheets and negotiating right through to the final stages using helicopters and then, over time, seeing the development of the vegetation and the greening-up of previously bare peat areas.
Participant added: enjoyment	• I enjoy the wildlife especially the sound of curlews in the morning
Participant added: looking after for, and a desire to protect for the future	• I want this lifestyle to continue into the future for future generations • This is an area of work, lifestyle and nature. I was brought up in the area. I want to pass on this way of life to children and want to remain here.
Participant added: respect for past management	• Want this lifestyle to continue as it is now - doesn't want things to happen to stop it continuing. • This story involves having a view of moorlands from both sides: my grandfather on one side was involved in the struggle for rights to roam on moorlands, while my grandfather on the other side was an upland farmer. And now my own work involves managing moorland and the balance between this and enjoying moorlands for recreation.
Participant added: mystery and romance	• My first visit to the Peak District was to Castleton, this was my first ever visit to a castle and to mines. It gave me an understanding of the balance between environment and living landscape and first hand experience of the mystery and myth of the moors.
Emergent theme: being alone, undisturbed and peaceful	• The feeling of walking alone on the moor and not seeing or meeting other people. This was particularly poignant on an occasion with my young daughter on Kinder when there was snow lying on the ground and everything was silent with nothing to disturb the peace. • The feeling of being alone and undisturbed in a beautiful place. • I was setting up a project and looking for sites for Clough Woodland development in the Derwent Valley. This involved imagining what it might look like while also experiencing peace and quiet and being away from crowds.

1.7 **Effects matrices**

Next, participants were asked to consider the likely social and community, economic and environmental effects (whether positive or negative) of four scenarios, identifying affected groups. Tables 3–6 show the perceived effects of: i) gully blocking if burning were allowed in certain circumstances as a restoration tool; ii) gully blocking if no burning were to be allowed in restored areas; iii) footpath restoration; and iv) revegetating bare and eroding peat (including stock exclusion for 10 years).

Table 3. Perceived effects of gully blocking if burning were allowed in certain circumstances as a restoration tool.
Showing likely social and community, economic and environmental effects (ranked according to the number of times they were prioritised (in square brackets) by participants) and the groups most likely to be affected. Note: effects that are not numbered were mentioned during discussion but not subsequently prioritised by participants. Question marks were added to some effects by participants.

	Effect [showing number of times prioritized]	**Who's Affected?**
Social effects and community values	• Improved water quality (with best practice burning) [12] • Possible benefits for water storage • Reduced water treatment costs • Potentially reduces localized (and wider) flooding [5] • Reduced off-path rambling • Access difficulties from newly re-wetted ground (in short to medium term)	• Water companies • General public
Economic effects	• Water as cheap as possible [9] • Reduced water treatment costs [3] • Work for locals [3] • Water Framework Directive penalties? [1] • Cost of the work	• Landowners • Water companies • Locals
Environmental effects	• Higher water table [9] • Reduced carbon and sediment loss and reduced erosion [3] • Improved water quality [2] • Increased populations of invertebrates and therefore birds [2] • Re-vegetation impact of burning to edge of gully?	• Grouse managers • Biodiversity • Everybody

Table 4. Perceived effects of gully blocking if no burning were to be allowed in restored areas.
Showing likely social and community, economic and environmental effects (ranked according to the number of times they were prioritised (in square brackets) by participants) and the groups most likely to be affected. Note: effects that are not numbered were mentioned during discussion but not subsequently prioritised by participants.

	Effect [showing number of times prioritized]	**Who's Affected?**
Social effects and community values	• Improved water quality [12] • Improved aesthetics [1] • Increased risks involved with public access (due to boggy ground) [1] • Improved water storage [1] • Increased wildfire risk [1] • Increased carbon storage [1]	• Everyone
Economic effects	• Reduced water treatment costs [9] • Reduced wildfires (compared to no gully blocking), although potential increase in wildfires compared to gully blocking where burning is allowed [5] • Grouse numbers (and knock-on effects) [1] • Possible benefits in drought years [1]	• Landowners and managers • Everyone
Environmental effects	• Raise water table [15] • Increase blanket bog species (plants, animals and invertebrates) [2] • Potential increase in biomass and therefore wildfire risk • Potential decrease in grouse numbers	• Water companies and users of water • Nature conservation

Table 5. Perceived effects of footpath restoration.

Showing likely social and community, economic and environmental effects (ranked according to the number of times they were prioritised (in square brackets) by participants) and the groups most likely to be affected. Note: effects that are not numbered were mentioned during discussion but not subsequently prioritised by participants.

	Effect [showing number of times prioritized]	**Who's Affected?**
Social effects and community values	• Improved environment [10] • Enjoyment and appreciation [4] • Higher footfall [2] • Wider range of user groups (though increased conflicts between access types and some will be badly prepared) [1] • Aesthetic appearance (good and bad) • Increased erosion risk due to increased use • Negative impact on archaeology • Disturbance due to increased use of helicopters • Increased learning opportunities • Disturbance to local residents/farmers	• Public/walkers/users • Landowners • Interest groups • Farmers
Economic effects	• High cost of footpath restoration [10] • Reduced erosion will give small water quality benefits [3] • Benefit to local suppliers and contractors; business opportunity [2] • Debatable if there would be any financial benefits • Maintain the rural economy	• Conservation bodies • Landowners • Water companies and users • Suppliers and contractors
Environmental effects	• Positive effect on vegetation and biodiversity [9] • Positive effect on breeding birds, either side of the path [3] • Less erosion due to footpath restoration [2] • More erosion due to more visitors [2] [two participants noted their disagreement with this] • Beneficial for invertebrates • More dogs off leads may lead to negative effects on birds	• Wildlife • Landowners • Interest groups

Table 6. Perceived effects of revegetating bare and eroding peat (including stock exclusion for 10 years).

Showing likely social and community, economic and environmental effects (ranked according to the number of times they were prioritised (in square brackets) by participants) and the groups most likely to be affected. Note: effects that are not numbered were mentioned during discussion but not subsequently prioritised by participants.

	Effect [showing number of times prioritized]	**Who's Affected?**
Social effects and community values	• Increased water quality [8] • Improved landscape and views in long term [6] • Disruption to graziers livelihood – loss of hefting and sale of livestock [2] • Decreased availability of local food [1] • Fencing – negative effect on views, bird strikes • Stock exclusion • Increased pride of place • Loss of heritage, skills and opportunities in farming	• Sheep & birds • Visitors, local residents, gamekeepers • Local residents • Farmers
Economic effects	• Reduced agricultural opportunity, need to compensate graziers, agri-env + PES opportunities [10] • Better grazing in long term [3] • Cost of revegetation + stock exclusion [3] • Increased tourism, potentially new audiences, marketing benefits for donors • Reduced earnings from grazing • Loss of stock in rewetted areas • Loss of birds through fence collision • Potential to increase fire risk	• Local business • Farmers • Everyone
Environmental effects	• Increased vegetation cover, biodiversity, species and habitats [10] • Reduced flood risk [4] • Increased water quality [3] • Improved resilience to climate change [2] • Decreased carbon loss [2] • Potentially wrong vegetation due to lack of grazing e.g. trees • Rise in water table	

1.8 **Fair price negotiation**

Participants worked in four groups, each discussing a fair price for Peatland Code projects under four scenarios: i) gully blocking if burning were allowed in certain circumstances as a restoration tool; ii) gully blocking if no burning were to be allowed in restored areas; iii) footpath restoration; and iv) revegetating bare and eroding peat. Tables 7-10 show the fair prices and how these were calculated by each group. Where errors or omissions may have altered the fair price, the original fair price suggested by the group is given, but a revised fair price is suggested under "other considerations", explaining how this figure was calculated and why it differs from the group's original figure.

Table 7. A fair price for gully blocking with no burning permitted as part of a Peatland Code project in the Dark Peak.
As considered by subgroup 1. Considerations and notes made by facilitators, as opposed to the group itself, are indicated in italic. Costs that were accidentally miscalculated by the group are in brackets.

Category	Item	Amount
Assumptions	1 hectare of "degraded" peatland might contain three gullies, each 100 m long, with stone gully blocks placed every 10 m and gully reprofiling only at the bottom of the gully; 30 year project duration.	
Benefits	No direct economic benefits associated with the management option were identified	
Direct costs	• 30 gully blocks (2-3 loads of stone carried to site by helicopter at £165 per dam) = £4,950/ha [*Note: the other group considering gully blocking (Table 8) assumed half stone/peat dams at the lower price of £3,150/ha, not used in the calculations here*] • Re-profiling (7 sections re-profiled per gully (21 sections in total) at £300 per section = £6,300/ha. *This group assumed all gullies would need re-profiling, whereas subsequent discussion suggested only the most severe gullies would need this work. Hence it may be more realistic to assume a third of gullies need reprofiling, bringing the cost of reprofiling down from £6,300 to £2,100/ha*. • Site survey and management plan: £800/ha [*this should be £16/ha site survey and a one-off £800 management plan for the whole site – assuming a 100 hectare site, the total for management plan would be £24*. • Maintenance: £7.50/ha/yr for 30 years = £225/ha • Start-up consultancy costs: £3,750 (including 25% group discount). *Note this would be for the whole site, not per ha = £37.50/ha for a 100 ha site*. • Monitoring: £7 per year for 30 years = £210/ha • Recertification: £5 per year for 30 years = £150/ha	(£16,385) *£12,013*
Opportunity costs	• Direct: Loss of income from sporting rights: £50/ha/yr for 30 years = £1,500 • Indirect: Knock-on effects to local economy of lost shooting days (employment, tourism): £131/ha/yr for 30 years = £3,930	£5,430
Other costs	Risk of lost capital value of the land = £510/ha over 30 years (£17/ha/yr), based on assumption of lost grouse shooting potential, with current shooting potential at £3,500 per brace, assuming 4 brace per ha.	£510
Profit margin	10% of direct costs and direct opportunity costs (not on indirect opportunity costs and lost capital value) (£13,513) = £1,351/ha	£1,351
Fair price (including all opportunity costs, lost capital value and profit margin)	£19,303/ha over 30 years or £767/ha/yr (calculated by participants) or **£19,303/ha over 30 years or £643/ha/yr** (re-calculated by project team)	(£23,007) ***£19,303*** (£767/ha/yr) ***£643/ha/yr***
Other considerations	If restoration were proposed over any significant proportion of an estate with no option to burn (e.g. 20% of a site was discussed), there was no amount of money that would induce estate owners to participate in a scheme. *The Peak District has unusually severe gullies, requiring 2–3 heather bales per gully to block, compared to 1 bale estimated in the Defra project feasibility tool. Similarly, reprofiling costs are estimated to be £2.50/m in Defra project feasibility tool, but MFFP estimate £21/m in the Peak District, which is the cost used in the workshop.*	

Table 8. A fair price for gully blocking with burning permitted under certain circumstances as a restoration management tool as part of a Peatland Code project in the Dark Peak.
As considered by subgroup 2. Considerations and notes made by facilitators, as opposed to the group itself, are indicated in italic. Costs that were accidentally miscalculated by the group are in brackets.

Category	Item	Amount
Assumptions	1 hectare of "degraded" peatland might contain three gullies, each 100 m long, with gully blocks (half stone and half peat) placed every 10 m and gully reprofiling only at the bottom of the gully; 30 year project duration.	
Benefits	No economic benefits (apart from profit below) were identified	
Direct costs	• 15 stone gully blocks (£165 per dam) and 15 peat gully blocks (£45 per dam) = £3,150/ha (£3,225/ha) *Note: the other group considering gully blocking (Table 7) assumed all stone dams at the higher price of £4950/ha, not used in the calculations here*] • Management and set-up fees (20% capital costs): £645/ha. *Using Defra figures, this would be a site survey (£800 per site = £8/ha assuming 100 ha site) and management plan (£16/ha), maintenance (£7.50/ha/yr for 30 years = £225/ha) and start-up consultancy costs (£375/ha, assuming 100 hectares of restoration being carried out) = £624/ha*. • *Reprofiling was assumed but not included in direct costs – assuming this was the same as the other gully blocking group, this would equate to an additional £2100/ha.* • Monitoring: £7 per year for 30 years = £210/ha (considered too low by this group) • Recertification: £5 per year for 30 years = £150/ha	(£4,230) *£6,234*
Opportunity costs	• No opportunity costs for sheep, assuming only a small proportion of land rewetted, given low stocking densities in Dark Peak • 5% reduction in grouse populations in rewetted areas – assume 2 days shooting lost per year. Assuming shooting days lost across a number of estates due to re-wetting, there would be a £1.56/ha/yr trickle down loss of benefits to the wider economy (assumes 5% of a total £31.25 loss/ha during shooting season, which includes effects on beaters, keepers costs, accommodation/food, pubs) = £46.80/ha • £6.54/ha/yr for a 5% reduction in re-investment (based on the basis that MA members invest £52.5M per year across 400,000 hectares = £130.75/ha, and 5% of this would be £6.54/ha/yr) = £196.20/ha	£243
Other costs	None identified	
Profit margin	Based on a carbon value at £10/t assuming 4.2 t CO2 eq/ha/yr = £42/ha/yr over 30 years = £1,260/ha	£1260
Fair price (including all opportunity costs, lost capital value and profit margin)	£5,733/ha over 30 years or £191/ha/yr (calculated by participants) or **£7,737/ha over 30 years or £258/ha/yr** (re-calculated by project team)	(£5,733) ***£7,737*** (£191/ha/yr) ***£258/ha/yr***
Other considerations	The group discussed that although the costs were too high to be met by carbon prices (assuming £10/t and 3 t CO2 eq/ha/yr), when one considers there are 3 million visitors to the Peak District per year, if 25% paid £15 per year, this would equate to £11.25M per year.	

Table 9. A fair price for revegetating bare and eroding peat as part of a Peatland Code project in the Dark Peak.

As considered by subgroup 3. Considerations and notes made by facilitators, as opposed to the group itself, are indicated in italic. Costs that were accidentally miscalculated by the group are in brackets. Benefits are indicated as negative costs.

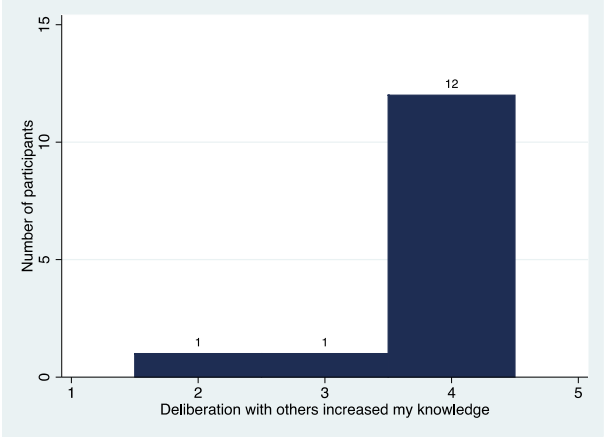
Category	Item	Amount
Assumptions	1 ha of bare peat spread over a 10 ha area with grazing excluded for the first 10 years; 30 year project duration	
Benefits	£800 addition of 1 ha of grazing land for 20 yr	-£800
Direct costs	Basic capital costs • £8,500 heather brash • £3,300 liming & fertilising (3x application) • £300 seed • £2,500 plugs for brash • £10,000 plugs for sphagnum • 10% contingency	£27,060
	Project management (15% of basic capital cost)	£4,059
	Fence for 10 year time period (1/4 needs fencing, by helicopter, £10/m)	£3,000
	Removal of fence	£900
	Registration & compliance costs	£1,200
Opportunity costs	Loss of grazing (£40/ha/yr x 9 ha x 10 yrs)	£3,600
Other costs	None identified	
Total costs/benefits		(£63,818) *£39,019*
Profit margin	10% of net costs	(£6,382) *£3,902*
Fair price (including all opportunity costs, lost capital value and profit margin)	Participants: £234/ha/yr (for 1 ha bare ground spread across 10 ha). *However, the calculation to derive this figure included some of the costs above twice. A recalculated fair price to correct for this error comes to: £143/ha/yr (for 1 ha bare ground spread over 10 ha).*	(£70,200) *£42,921* **(£234/ha/yr)** ***£143/ha/yr***
Other considerations	The current carbon market value of the option was thought to be around £300/ha/yr of degraded land (assumed 30 tons of carbon savings from 1 ha of revegetation), i.e. £30/ha/yr/yr of land (assuming 1 ha bare ground is spread over 10 ha).	

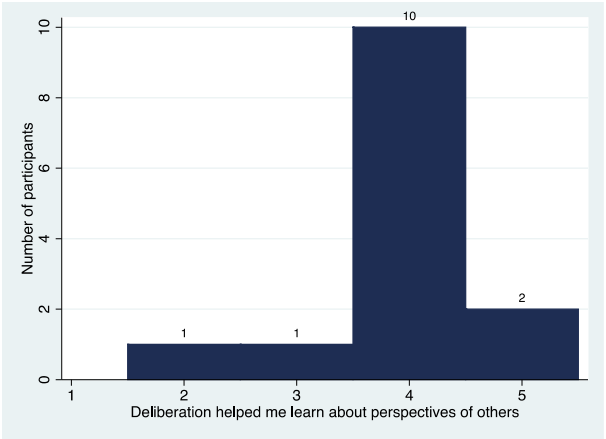
Table 10. A fair price for footpath restoration (per km) as part of a Peatland Code project in the Dark Peak.
As considered by subgroup 4. Considerations and notes made by facilitators, as opposed to the group itself, are indicated in italic.

Category	Item	Amount
Assumptions	Revegetation takes place 5 m each side of footpath; no additional grants are available; 30 year project duration.	
Benefits	• Signage (generating prestige) • People more likely to stick to paths • Reduced erosion • Biodiversity benefits • Increased carbon sequestration • Improved water quality • Guaranteed income for 30 years • Potential for company team building days during restoration	Not monetised
Direct costs	£200/m including revegetation	£200,000
	£40/m for partnerships and collaborative work	£40,000
	£1/m/year inspection & maintenance	£30,000
	£0.12/m/yr compliance with Peatland Code	£3,600
Opportunity costs	None identified	
Other costs	£5/m/yr for: • Littering, antisocial behavior • Increased fire risk • Increased number of dogs • SSSI consents • Insurance and legal expenses • Tax advice • Agent fees • Effects of inflation	£150,000
Total costs/benefits		£423,600
Profit margin	None requested considering benefits	
Fair price (including all opportunity costs, lost capital value and profit margin)	Considered equal to cost: • **£270,000/km for direct costs of path restoration and maintainance plus £153,600/km other costs over 30 years**	£423,600 **£14,120/km/yr**
Other considerations	*During the discussion it was clear that path restoration would only be considered as part of a wider restoration scheme based on gully blocking and/or revegetation, so certification costs would not need to be included for footpath restoration (to avoid double-counting), reducing "other costs" by a total of £3,600 (based on £0.12/m).* *Assuming 5 m revegetation either side of a footpath, 1 hectare of land would be revegetated for every 1 km of footpath restoration. Assuming 30 tons of carbon savings per year from 1 ha of revegetation along footpaths, this would equate to approximately £300/ha/yr or £9,000 over 30 years.*	

1.9 **Workshop feedback**

At the conclusion of the workshop, participants were able to provide feedback on the process. Overall, the workshop and the deliberative process were considered to have had positive outcomes (Figures 7-8). Participants felt they had been able to provide input into the process for establishing a PES scheme, and most participants strongly felt they wanted to take this route further (Figure 9). A limited number of participants also gave verbatim feedback (Table 11), which highlighted the complexity of the work and a note by some participants that they felt not enough time had been available for the costing session in the afternoon relative to the values and storytelling session in the morning.





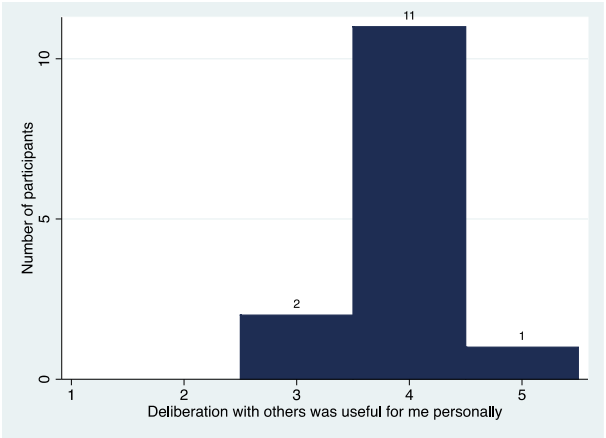


Figure 7. Effects of deliberation, on a scale of 1–5.

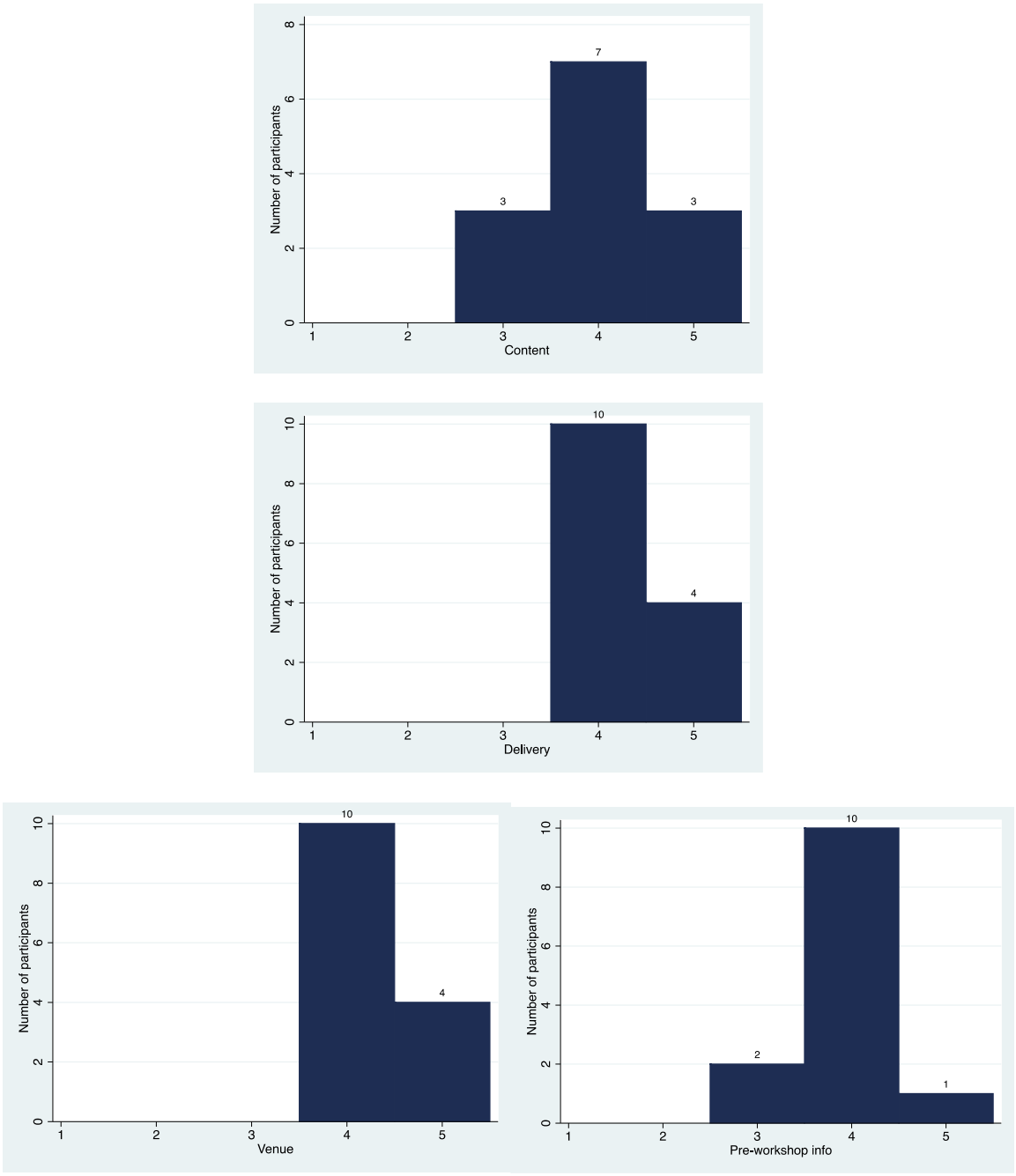
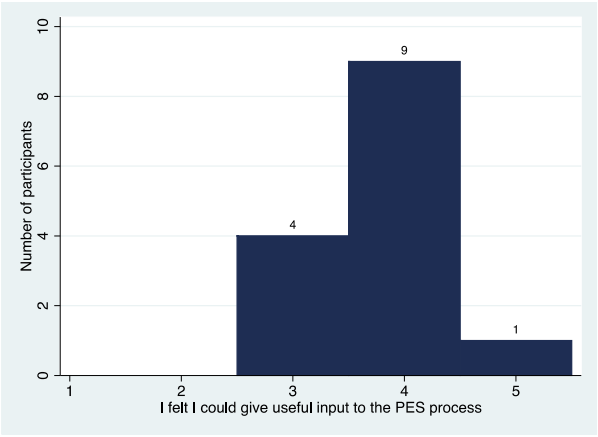


Figure 8. Satisfaction with different aspects of the workshop, on a scale of 1–5.



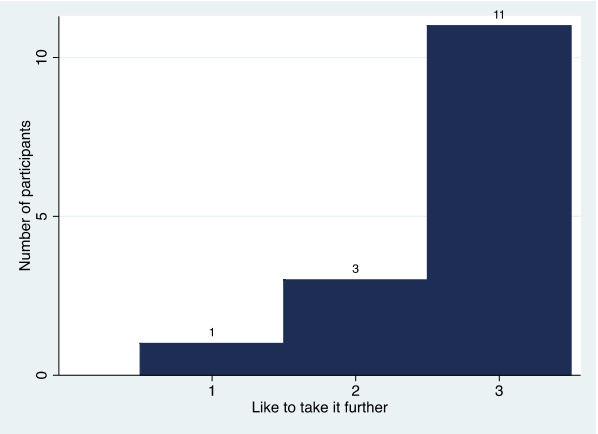


Figure 9. Views on the PES process, on a scale of 1–5.

Table 11. Verbatim feedback.

I found afternoon session difficult because so many variables were not quantified. Maybe this was the point of the exercise!
Difficult complex issue. Still some hurdles to transverse. Great day & looking forward to the next one.
Need more clarity how this would fit with HLS -> NELMS plus work currently ongoing in the Dark Peak including water company ground
Reduce morning session and increase afternoon session. Too much time spent on 1st activities which resulted in later discussions cut short.
I would like to see how this goes further
Interested to be involved in future costing scenarios / price definition
Too much time in the morning on storytelling etc + not enough detail on how the scheme would work (e.g. interaction with HLS), insufficient time to work out costs at the end. Variability in costs shows how subjective this process is.

4 DISCUSSION

The value compass and storytelling brought out a range of values, signifying the shared emotional connections many participants felt with the Dark Peak as a place. It also identified many commonalities that participants shared in terms of their broader perspective on what was important to themselves and society, including the importance of honesty, responsibility, protecting the environment and feeling a sense of belonging. While some participants indicated in their feedback that they felt these exercises were of limited direct relevance to the PES considerations and could have been shortened, on the other hand they clearly reflected back to the group their shared values and shared sense of place, regardless of their background or professional interests. This supported constructive discussion and collaboration during subsequent fair price discussions. Also, several of the values that arose as most important resurfaced during the more concrete fair price discussions, particularly responsibility.

When discussing the values that the group held in common, questions did arise around their representativeness in terms of the broader local community. Some participants worked in the area but did not live there and others had only lived there for a limited period, and though backgrounds differed most participants had a lot of direct exposure to the outdoors. Some participants thus speculated that many members of the local community had a more utilitarian relationship and less emotional connection to the Dark Peak as a place, but this notion was also contested by other participants.

The effects matrices provided participants with an opportunity to think broadly about the potential positive or negative social, economic and environmental effects of peatland restoration. Given the range of stakeholder interests being represented at the workshop, this was important to enable participants to consider effects from a range of perspectives and for subsequent discussions to represent the likely interests of stakeholders not present. Across all the matrices, beneficial effects on water quality (and consequent benefits for water treatment costs) and water table depth (with consequent benefits for biodiversity) were deemed particularly important. Effects linked to carbon sequestration, loss or storage, and linked to climate change were rarely mentioned across the matrices.

Although all participants were given the opportunity to contribute to each effects matrix, some inconsistencies emerged, in particular between the impacts of gully blocking with or without burning. For example, both increased *and* reduced incidence of wildfires was cited as an effect of gully blocking if no burning were allowed. However, further probing during plenary discussion of the effects matrices showed that the suggestion that ceasing burning would reduce wildfire risk was made in relation to the gully blocking part of the scenario, rather than in relation to burning i.e. gully blocking would reduce wildfire risk, whether burning was permitted or not. Similarly, a reduction in flood risk and off-path rambling (due to more boggy ground) was only associated with gully blocking if burning were allowed, but this was most likely a comment on gully blocking in general, rather than about whether burning would be permitted.

Whether burning were permitted or not, workshop participants perceived that gully blocking would likely improve water quality, reduce water treatment costs, raise water tables, increase blanket bog

species, and make access more difficult. A number of differences emerged between the effects of gully blocking with or without burning. For example, not allowing burning to be used as a management tool on restored sites might improve aesthetics, improve water storage and increase carbon storage, but might be more likely to have economic effects on grouse moor businesses. On the other hand allowing burning to be used as a management tool in certain circumstances during restoration was thought to be more likely to create work for locals and reduce the costs of restoration, but possibly lead to penalties under the Water Framework Directive, if burning led to water quality problems.

Revegetating bare and eroding peat was perceived to have a number of positive effects on biodiversity, water quality, carbon loss, flood risk and the visual aesthetics of the landscape (over the long-term, noting short-term impacts of fencing). Although concerns were expressed about potential disruption to graziers' livelihoods due to a loss of hefting and sale of livestock, others noted that grazing would be improved in the longer-term. Concerns were expressed about the likely costs of revegetation and stock exclusion.

There was a wide range of positive effects associated with footpath restoration for a wider range of affected parties than gully blocking or revegetation. These included improvements to the natural environment (including reduced soil erosion and benefits for vegetation, invertebrates and biodiversity more generally) and greater enjoyment and appreciation of the environment. Having said this, some concerns were expressed during discussion about increased visitor numbers, including effects of dogs off leads on birds. There were also concerns expressed about the high costs of footpath restoration, and debate over the economic benefits that might accrue to the rural economy.

Broader value concerns, including those expressed via the value compass, storytelling and effects matrices were reflected in some of the indirect costs that were included in calculations around the prices during fair price discussions. This was most clearly expressed in the discussion of the management option to block gullies without burning allowed. Here, not just costs to landowners were considered but also indirect local economic costs resulting from a decrease in sporting activity, such as might be suffered by local hotels and restaurants. It was deemed fair that if a collective PES scheme was put in place, some of the revenue should be used to compensate those who would lose out. Thus the discussion transcended the direct economic interest of landowners to consider the local community as a whole and the importance of taking responsibility for the wider consequences of a scheme.

While the process of establishing a fair price thus clearly referred back to the values and the positive and negative impacts deliberated on in the effects matrices, it was nonetheless mainly dominated by technical discussions on costs and calculations. Because we had concerns that providing a single, simplified list of costs could be perceived as too simplistic or not sensitive to local differences, a more detailed list of machinery, materials and labour costs had been provided with both national estimates (Defra) and local estimates (MFFP). This was perceived as useful by some participants in terms of transparency and being able to think through requirements, becoming familiar with process, and coming to prices that were supported by participants in terms of how they were derived. On the other hand it also had the effect of (over)engaging participants with minutiae, and

reducing the time available to consider broader questions about issues such as opportunity costs and profit margins.

Notably, although there were conflicts of interest and position, and views to some degree differed on the evidence around impacts of burning, the deliberation and negotiation process still led the group to agreement on a fair price to ask for the management option of gully blocking with a ban on burning. Landowner interests accepted that this could be an option, if it was put in place on a limited amount of land, whilst conservation interests conceded that on other land burning could be maintained as a management practice. A substantial 'burning premium' can thus be deduced from the different fair prices for gully blocking with burning allowed and gully blocking with burning restricted; the fair price for a no-burning option, £489, was £181/ha/yr higher than the burning-allowed option with a fair price at £308/ha/yr.

Table 12 provides a best estimate of the cost of a peatland restoration scheme via the UK Peatland Code in the Dark Peak of the Peak District National Park. The workshop process primarily focused on providing a process for stakeholders to engage with the economics of peatland restoration in a context of deliberating and bridging different interests and values, rather than establishing precise economic estimates within the short time span available. Consequently, the figures are indicative of what might be a broadly acceptable compensation for landowners who engage with peatland restoration.

Other factors also need to be considered when interpreting these figures. Costs of restoration in the Peak District are widely considered to be among the highest in the UK, given the severity of degradation (size of gullies and amount of bare and eroding peat) and accessibility constraints (requiring helicopters to supply materials to most sites). The workshop assumed that the majority of land put into a scheme would be from private landowners (rather than NGOs), and although a group scheme discount[8] was applied, the cost of hiring consultants to assess and document projects in Project Design Documents (PDDs) under the UK Peatland Code was substantial. However, most NGOs have in-house expertise they can use to develop PDDs, thereby absorbing these costs. Where it is possible for private owners to collaborate with local NGOs, it may thus be possible to significantly decrease the costs of complying with the Code.

[8] Where consultants need to assess and document multiple sites together as part of a group scheme, ongoing R&D research by Defra suggests they are likely to be able to offer a 25% discount.

Table 12. Estimates of costs and fair prices for peatland restoration in the Peak District combining all four workshop sub-group estimates.

Category	Item	Amount
Assumptions	• 1 hectare of "degraded" peatland might contain three gullies, each 100 m long, with half stone and half peat gully blocks placed every 10 m and gully reprofiling required for a third of gullies • 1 ha of bare peat is spread over a 10 ha area with grazing excluded for the first 10 years • 30 year project duration	
Direct costs	Gully blocking: • 15 stone gully blocks (£165 per dam) and 15 peat gully blocks (£45 per dam in the Peak District, £7.50 elsewhere in UK) = £3150/ha (£2,588 elsewhere in the UK) • Re-profiling 100 m (assuming £21/m in the Peak District compared to £2.50 elsewhere in the UK, and assuming a third of gullies need to be reprofiled) = £2,100/ha (£250 elsewhere in UK)	£5,250/ha total (£175/ha per annum over 30 years) in the Peak District (vs £2,838/ha and £95/ha/yr elsewhere in UK)
	Revegetation: • £27,060 basic capital costs using heather brash, three applications of lime/fertilizer, Sphagnum plug and 10% contingency • £3900 fencing and removal of fencing after 10 years	£30,960/ha of bare ground in total (£1,032/ha/yr)
	Footpath restoration: • £200/m capital costs • £40/m for partnerships and collaborative work • £1/m/yr inspection & maintenance • £5/m/yr for other costs (see Table 10)	£246/m
	Peatland Code scheme costs (based on Defra data): • Site survey and management plan: £24/ha (assuming £800 site survey (£8/ha assuming 100 ha site) and £16/ha management plan) • Maintenance: £7.50/ha/yr for 30 years = £225/ha • Start-up consultancy costs: £375/ha (assuming 25% group discount, split over 100 hectares of restoration) • Monitoring: £7 per year for 30 years = £210/ha • Recertification: £5 per year for 30 years = £150/ha	£984/ha
	Project management costs: 17.5% of capital costs (based on average of two subgroups' estimates)	• Gully-blocking: £1,919/ha • Revegetation: £5,418/ha • Footpath restoration: £35/m
Opportunity costs	• Gully blocking: estimates ranged from £239/ha (£7.87/ha/yr) if burning were permitted where necessary, to £5,430 (£181/ha/yr) if no burning were allowed under the Code • Revegetation: £3,600 loss of grazing over the 10 years it is excluded per 10 ha	• Gully blocking: £239-£5,430/ha • Revegetation: £3,600
Benefits	Revegetation: £800 addition of 1 ha of grazing land for 20 yr	• Revegetation: £800
Profit margin	Suggestions ranged from zero (for footpath restoration) to £1,260-1,351/ha (£42-45/ha/yr) for gully blocking and £3,902 (10% of direct costs as	• Gully blocking: £1,260-1,351/ha • Revegetation:

Category	Item	Amount
	calculated by participants)/ha (£130 / ha / pa) for revegetation.	£3,902/ha • Footpath restoration: £0
Fair prices (including direct and indirect opportunity costs and profit margins)	• Gully blocking in the Peak District ranged from £9,656 (with lowest estimate of profit and opportunity costs) to £21,222/ha (with highest estimate of profit and opportunity costs, based on not allowing burning) over 30 years • Gully blocking elsewhere in the UK (on the same basis): £5,321-11,448/ha over 30 years • Revegetation: £44,064/ha of bare ground over 30 years (assuming 1 ha of bare ground per 10 ha)	• Gully blocking in Peak District: £9,656-£21,222/ha • Gully blocking elsewhere: £5,321-11,448/ha • Revegetation: £44,064/ha
Premiums	• There is a Peak District premium (due to the severity of degradation) of £5,167/ha for gully blocking (based on 50:50 stone:peat dams and a third of gullies needing reprofiling) more than estimates based on an average of sites from elsewhere in the UK (£83/ha/yr according to Defra project feasibility tool) • There is a burning ban premium (due to perceived additional opportunity costs) of £5,430 (£181/ha/yr) for gully blocking • Footpath restoration premium – adding this to a gully blocking or revegetation project, assuming 10 m footpath restoration/ha of restored peat (1 km footpath restoration included in a 100 ha revegetation project) = £281/m or £2,810/ha of revegetation or gully blocking for the total costs of footpath restoration (including direct and indirect costs).	• Peak District gully blocking premium: £5,167/ha • Burning ban premium: £5,430/ha • Footpath restoration premium: £281/m or £2,810/ha (1km per 10 ha).
Carbon prices	Assuming a GHG emissions saving of 3 and 30 t CO_2 eq/ha/yr for gully blocking and revegetation respectively, with revegetation of 1 ha of bare ground spread out over 10, and assuming burning is allowed under certain circumstances on restored sites: • A fair price for gully blocking in the Peak District would be equivalent to £107 per tonne of CO_2 equivalent; and • A fair price for revegetation in the Peak District would be equivalent to £49 per tonne of CO_2 equivalent • Adding footpath erosion to these projects (assuming 10 m footpath restoration/ha of restored peatland) would increase GHG savings by approximately 0.03 t C per year per 1 m footpath restoration. This is equivalent to an additional £9,367 per tonne CO_2 equivalent to cover the costs of footpath restoration and maintenance	• Gully blocking in Peak District: £107-235 per tonne of CO_2 equivalent Elsewhere: £59-127 • Revegetation in Peak District: £49 per tonne of CO_2 equivalent • Footpath restoration: £9367 per tonne CO_2 equivalent

5 CONCLUSIONS AND RECOMMENDATIONS

This report has considered the values held by Peak District stakeholders for peatlands and a number of interventions designed to enhance their climate mitigation potential. Specifically, it has considered the likely costs and benefits of gully blocking, revegetation and footpath restoration, and has considered the financial viability of paying for these interventions via Payments for Ecosystem Services (PES). This has been done in the context of ongoing work by Defra to assess the financial feasibility of projects under the pilot UK Peatland Code. Preliminary work was undertaken to understand the attitudes of landowners and other stakeholders towards a future peatland PES scheme in the Dark Peak. This identified general interest in exploring the potential for such a scheme, as well as a number of reservations, particularly around possible negative impacts on grouse moor management. Given the level of interest expressed in exploring a scheme in greater depth, a workshop was held to enable stakeholders to gain familiarity with the PES concept, assess views and values around potential management options, and provide evidence to MFFP and other stakeholders that could inform the development of a future PES scheme, should interest be sustained.

Although there is growing evidence about the likely costs of projects under the Peatland Code, arising from an ongoing Defra-funded R&D research project, little is known about the perceptions of the wider private landowning community, including their perception of likely opportunity costs and other trade-offs and barriers to participation in Peatland Code projects, and perceptions on fairness of payments to the different stakeholders that might be directly or indirectly affected by management changes. There has also been little assessment to date of the likely wider costs and benefits of restoration projects on adjacent and downstream properties and rural communities. Although this single workshop was not able to provide a detailed assessment of all these likely costs and benefits, it has provided valuable insights into the wide range of potential positive and negative effects of peatland restoration that may need to be considered when setting prices for the sponsorship of peatland restoration projects.

Many of these considerations reflect deeply held values that were shared by many in the group. In particular, the most highly cited values, linked to protecting the environment, honesty and responsibility, were highly compatible with pursuing peatland restoration in a way that considers effects on all stakeholders and that is transparent in the way prices are calculated to reflect these wider responsibilities. These shared values, and the stories through which they were expressed, emphasised a strong sense of place and belonging, that was associated with the natural environment of the Dark Peak, rather than to specific landholdings. The creation of a place-based PES scheme that includes multiple land-holdings at a landscape scale, if inclusive of the range of concerns raised, may have the potential to support that sense of place, which may further add value to any sponsorship proposition for sponsors with strong links to the Peak District.

The fair price discussions for the first time began to capture the sorts of opportunity costs likely to be perceived by landowners (in particular private landowners), and hence the trade-offs and potential barriers to engagement with the Peatland Code. The most important of these opportunity costs was the perceived impact of peatland restoration on grouse populations, and hence on grouse moor businesses, with potential knock-on effects on land values. The most significant concern was

the effect of restrictions on burning that may be enforced on restored land. Workshop participants agreed that there was likely to be a threshold proportion of an estate where burning was not allowed, under which impacts on the carrying capacity of the estate for grouse would be limited, though landowners and those indirectly affected within the community should still be compensated. However above a certain threshold area of land under restoration where burning was not allowed, there was a perception that impacts on grouse populations would not be acceptable. Further research would be necessary to quantify where this threshold lies. Workshop participants were thus content for there to be some restrictions on burning as long as burning was not completely removed from their moorland management toolkit and adequate compensation was put in place (i.e. a no-burning premium, which was quantified by participants at around £386/ha/yr). A suggestion was made that a criterion-based approach could be developed where burning could be used if heather were to re-grow to a certain height after restoration. This suggestion has subsequently been developed into draft text for the UK Peatland Code, through discussion with stakeholders from the Moorland Association and National Farmers Union (who were present at the workshop), and members of the Peatland Code Steering Group including representatives from each of the devolved administrations.

The workshop also identified other factors that may increase the cost of projects under the Code, notably profit margins, inclusion of footpath restoration and a location-based premium for Peak District projects compared to other locations nationally. It is important to note that the high costs of capital works identified in this project are not representative of peatland restoration projects nationally, given the severity of degradation experienced in the Peak District, combined with accessibility issues. Some of the private landowner representatives at the workshop were particularly interested in the potential to pay for footpath restoration via Code projects, given the costs they face in relation to footpath erosion, which they typically find it hard to pay for. The limited GHG emission savings from such work compared to the high costs of this form of restoration mean that this is unlikely to be viable for most projects. However, where sponsors are particularly interested in appealing to the wider public, opportunities for signage could significantly increase the value or any sponsorship, and so it may be worth leaving this as an option for future sponsors.

Putting the additional opportunity costs, profit and project management costs together with the higher costs of restoration in the Peak District (almost twice as expensive as other parts of the UK), the price per tonne of CO2 equivalent in the Peak District for gully blocking (£107 per tonne) is approximately 4 times higher than would be likely elsewhere in the UK (revegetation costs are similar to elsewhere in the UK). The additional costs of doing restoration in the Peak District (£2,413/ha more than elsewhere in the UK) only account for between 15-48% of the total additional costs of restoring peatlands in the Peak District (including estimates of opportunity costs, profit margins and project management costs estimated by workshop participants). As such, if opportunity costs and profit margins were kept the same as Defra assumptions and project management costs could be absorbed (not charged), then the higher restoration costs in the Peak District alone would result in a price per tonne of CO_2 equivalent for gully blocking of £36.68 per tonne[9]. Given that costs of revegetation are not significantly different in the Peak District to elsewhere in the UK, using

[9] Based on a total cost of restoring a 100 ha site of £545,425 for blocking grips and gullies according to Defra's Project Feasibility Tool, with an additional £2,413/ha for the additional costs of restoration in the Peak District and a 40% project buffer with a net CO2 equivalent benefit over the 100 ha site over 30 years of 8,580 tonnes

figures from Defra's Project Feasibility Tool without including the additional opportunity costs, profit and project management costs identified in the workshop, the price per tonne would be between £13-14 per tonne.

Whether the fair prices and profit margins that were considered to be fair by workshop participants could be sustained by the market remains to be seen, but they represent a starting point for negotiations with sponsors and identifying cost savings. For example, it may be possible to reduce consultancy fees for establishing Peatland Code projects by working in collaboration with NGOs who have the capability to complete Project Design Documents (such as the National Trust in the Peak District), in a landscape-scale scheme, such as the one conceived for the Dark Peak. Importantly, the approach taken in this workshop creates a transparent platform for continuing to explore the opportunities that may be afforded by peatland restoration sponsorship in an equitable way that reduces the likelihood of competition and conflict between stakeholders.

6 REFERENCES

Bain, C., Bonn, A., Stoneman, R., Bruneau, P., Chapman, S., Coupar, A., Evans, M., Geary, B., Howat, M., Joosten, H., Keenleyside, C., Lindsay, R., Labadz, J., Littlewood, N., Lunt, P., Miller, C., Moxey, A., Orr, H., Reed, M.S, Shepherd, M., Smith, P., Swales, V., Thompson, D.B.A., Van de Noort, R., Wilson, J.D. , Worrall, F. (2011) *Commission of Inquiry on UK Peatlands*. IUCN UK Peatland Programme, Edinburgh.

Bonn, A., Allott, T. E. H., Hubacek, K., Stewart, J. (2009) Introduction: drivers of change in upland environments: concepts, threats and opportunities. *Drivers of Environmental Change in Uplands. Routledge, London and New York*, 1-10.

Bonn, A., Holden, J., Parnell, M., Worrall, F., Chapman, P.J., Evans, C.D., Termansen, M., Beharry-Borg, N., Acreman, M.C., Rowe, E., Emmett, B. & Tsuchiya, A. (2010) *Ecosystem services of peat - phase 1*. Report to Defra. Project code SP0572.
http://randd.defra.gov.uk/Document.aspx?Document=SP0572_9018_FRP.pdf

Chapman, D.S., Bonn, A., Kunin, W.E. and Cornell, S.J. (2010) Random Forest characterization of upland vegetation and management burning from aerial imagery. *Journal of Biogeography* 37: 37–46.

Cummins, R., Donnelly, D., Nolan, A., Towers, W., Chapman, S., Grieve, I. and Birnie, R.V. (2011) Peat erosion and the management of peatland habitats. *Scottish Natural Heritage Commissioned Report No. 410*

Finney S.K., Pearce-Higgins J.W., Yalden D.W. (2005) The effect of recreational disturbance on an upland breeding bird, the golden plover *Pluvialis apricaria. Biological Conservation* 121 53–63

Kenter, J.O., Reed, M. S., Everard, M., Irvine, K.N., O'Brien, E., Molloy, C., Bryce, R., Brady, E., Christie, M., Church, A., Collins, T., Cooper, N., Davies, A., Edwards, D., Evely, A., Fazey, I., Goto, R., Hockley, N., Jobstvogt, N., Orchard-Webb, J., Ravenscroft, N., Ryan, M., Watson, V. (2014a) *Shared, plural and cultural values: A handbook for decision-makers. UK National Ecosystem Assessment follow-on phase*. UNEP-WCMC, Cambridge. http://www.lwec.org.uk/sharedvalues

Kenter, J.O., Reed, M. S., Irvine, K.N., O'Brien, E., Brady, E., Bryce, R., Christie, M., Church, A., Cooper, N., Davies, A., Hockley, N., Fazey, I., Jobstvogt, N., Molloy, C., Orchard-Webb, J., Ravenscroft, N., Ryan, M., Watson, V. (2014b) *UK National Ecosystem Assessment follow-on phase. Work Package Report 6: Shared, Plural and Cultural Values of Ecosystems.* UNEP-WCMC, Cambridge. http://www.lwec.org.uk/sharedvalues

McHugh, M,, Harrod, T., Morgan, R. (2002) The extent of soil erosion in upland England and Wales. *Earth Surface Processes and Landforms* 27: 99-107.

Reed MS, Hubacek K, Bonn A, Burt TP, Holden J, Stringer LC, Beharry-Borg N, Buckmaster S, Chapman D, Chapman P, Clay GD, Cornell S, Dougill AJ, Evely A, Fraser EDG, Jin N, Irvine B, Kirkby M, Kunin W, Prell C, Quinn CH, Slee W, Stagl S, Termansen M, Thorp S, Worrall F (2013) Anticipating and managing future trade-offs and complementarities between ecosystem services. *Ecology & Society* 18(1): 5 http://dx.doi.org/10.5751/ES-04924-180105

Schwartz, S.H. (1999) A theory of cultural values and some implications for work. *Applied Psychology*, 48, 23–47.

Shepherd, M. J., Labadz, J., Caporn, S. J., Crowle, A., Goodison, R., Rebane, M., Waters, R. (2013) Natural England review of upland evidence - Restoration of Degraded Blanket Bog. Natural England Evidence Review, Number 003.

Sotherton, N., May, R., Ewald, J., Fletcher, K., Newborn, D. (2009) Managing uplands for game and sporting interests: an industry perspective. *Drivers of Environmental Changes in Uplands*, 209-227.

7 APPENDIX 1: THE UK PILOT PEATLAND CODE

The pilot Peatland Code is a voluntary standard for sponsoring peatland restoration projects in the UK on the basis of their climate and other benefits. It is designed to ensure the highest environmental standards and assurances on the carbon and other benefits of restoration.

How it works

The pilot Peatland Code was launched in September 2013 for an initial 18 month period, and includes pilot peatland restoration projects as part of the pilot phase in south west England, the Lake District and Wales (some of which are still seeking private sponsorship), alongside work with a series of pilot projects as part of the Scottish Government's Peatland Action programme. The Code is owned by the International Union for the Conservation of Nature (IUCN)'s UK National Committee and is directed by a Steering Group that includes representatives from each of the devolved administrations and their agencies, the business community, academia and landowners.

The Peatland Code works by setting out the standards against which privately funded peatland restoration projects can be assessed to verify the projects in terms of their viability, additionality, ecological quality, the benefits for carbon, biodiversity and water. This provides sponsors with the confidence they need to know that their contributions are making a measurable, verifiable and lasting difference to UK peatlands. Agreements may be bi-lateral between a business sponsor and a landowner who wishes to restore peatland, or multi-lateral with a single sponsor paying for restoration across a suite of sites in different ownership or multiple sponsors splitting the costs of restoring a single site. Prices are negotiated between buyer and seller on a case-by-case basis, and differ between sites depending on a range of factors, including the differing costs of restoring different sites, the level of carbon and co-benefits of restoration and site location in relation to the interests of the sponsor (e.g. headquarters or customer base). Contracts must be for at least 30 years, to ensure net greenhouse gas emission (GHG) benefits. GHG emission savings are estimated and then monitored using a proxy method, based on vegetation surveys, with a tool currently under development, funded by Defra.

The Peatland Code defines eligibility criteria for projects in terms of the types of site and activities permitted and a number of additionality criteria that projects must meet. It sets out principles, requirements and guidance for the eligibility of projects, how projects are governed and documented, and how the climate and other benefits of restoration should be monitored.

At this stage the Pilot Phase Code is designed to facilitate business sponsorship motivated by corporate social responsibility; it is not yet intended for use in formal offset schemes, corporate carbon reporting or to be traded on international carbon markets. The Code does provide guidance on quantifying climate and other benefits, to reinforce the value of the sponsoring restoration, and it may be possible to count these benefits in Mandatory Carbon Reporting in future if Government guidelines allow. It may also be possible to trade this carbon on carbon markets in future via additional verification to accepted international standards. However, these options are not included in the Pilot Phase of the Code. Initially the Pilot Phase will focus on validating and certifying peatland restoration projects in selected pilot areas, to feed into the development of revised guidance, which will be issued prior to extending the Pilot Phase to other sites. The aim of the Pilot Phase is to

encourage early sponsorship of peatland restoration to help demonstrate peatland benefits and build an increasingly robust evidence base and methodology for future phases of Code development.

Business interests

By sponsoring peatland restoration, businesses can enhance their brand integrity and value, deliver corporate sustainability objectives and contribute strategically to the long-term protection and enhancement of some of the UK's most iconic landscapes. Prior to marketing these opportunities, the majority of interest in pilot projects has been from water companies.

Market research published as an appendix to the Defra Payment for Ecosystem Service Pilot, which initially developed the Peatland Code in 2013, suggests that the recognition of major NGO brands is likely to increase trust, and it will be important to have a range of opportunities across the country with different co-benefits that may be close to the operations, headquarters or customer base of potential sponsors. Market research suggests there are two types of likely sponsor:

i) Large multi-national companies with a dominant UK customer base and/or brand identity linked to the UK who want to quantify the climate change benefits of their sponsorship for Corporate Social Responsibility purposes, but who are not interested in counting this towards Mandatory Carbon Reporting or future carbon markets (either because they have an anti-offsetting policy or their carbon footprint is so large that peatland restoration would make a negligible difference), and hence are not so sensitive to costs per tonne of carbon;
ii) SMEs and multi-national companies who are interested in the potential for CSR investments to one day become assets that could provide a return on investment on the voluntary carbon market; and
iii) SMEs who are interested in sponsoring peatland restoration to enhance branding or the promotion of particular product lines linked to peatland habitats/environments or geographical locations that contain significant peatlands.

Private intermediaries have been slow to emerge in this market, and an alternative model is currently being explored in Wales, where private restoration may be channeled through the Rural Development Programme. In the meantime, a Peatland Alliance has been formed to channel private sponsorship into peatland restoration via the NGO community.

Peatland Alliance

A Peatland Alliance was established in early 2014 between as a partnership of the UK's leading environmental charities and organisations with proven experience in peatland restoration, including the RSPB, National Trust, John Muir Trust, and the Wildlife Trusts. A prospectus has been put together describing "shovel-ready" opportunities for peatland restoration across the UK, focusing primarily on NGO-owned land, but with some privately owned restoration opportunities. Alliance members have established a standalone charitable body to receive and distribute funds (operating as a Scottish Charitable Incorporated Organisation SCIO called 'Sustainable Peatlands'). If the funding grows large enough, this body could provide support for any peatland project across the UK that met the objectives of the SCIO. The Alliance are also exploring the potential to offer loans for peatland

restoration to sponsors via the European Investment Bank. Opportunities will be pitched to business later in 2014 in collaboration with the fund-raising teams from the NGOs in the Alliance.

Next steps

The Peatland Code's Steering Group will produce recommendations for its formal adoption in early 2015. Once the Code is formally adopted a formal structure will be required to oversee the ongoing development of the Code and to maintain a register of projects. Verification of projects will be done by independent accredited bodies.

For more information visit: http://www.iucn-uk-peatlandprogramme.org/peatland-gateway/uk/peatland-code