

Proceedings of the workshop:

Scotland's peat bogs, what do you think about them?

Julia Martin-Ortega, Klaus Glenk, Anja Byg and Carol Kyle



November 2014

Table of Contents

Executive summary	III
List of figures.....	IV
List of tables	IV
List of Annexes	IV
1. Introduction.....	5
2. Specific aims of the workshop	6
3. Participant recruitment.....	6
4. Workshop plan.....	7
5. Workshop results	8
6. Key messages emerging from the workshop.....	19
7. Next steps.....	21

Executive summary

This document reports on the process and the outcomes of the workshop 'Scotland's peat bogs: what do you think about them?' held in Aberdeen on the 14th of October of 2014 by researchers from the Scottish Rural College and The James Hutton Institute. The aim of the workshop was to gather views from members of the public about peatlands in Scotland. It was part of a larger ongoing research project which aims at furthering the understanding on how people perceive and use peatlands, to help targeting restoration efforts by clarifying benefits that are connected with different restoration options and inform the development of the National Peatland Plan.

The workshop, which a total of 23 participants from different age groups, backgrounds and locations attended, was organized as a series of different activities including individual, break-out group and plenary group activities, in which the uses, activities, benefits and conflicts around peatlands in Scotland were discussed. Issues of uniqueness of benefits and impact degradation on those benefits were also discussed.

Even though many of the participants initially stated that they did not know much, they came up with an impressive list of activities, uses and benefits provided by peatlands, many of which could be referred to as cultural ecosystem services. However, the workshop showed that perceptions of and associations with peatlands are not uniformly positive. There are clear benefits, but at the same time peatlands evoke negative associations and can be seen by some as somewhat threatening, or as 'wasted/empty land'. Nevertheless, many of the participants also emphasised the importance of peatlands in relation to Scotland's image, identity and cultural and natural heritage. In a general sense most of the uses and benefits associated with peatlands could also be obtained elsewhere (i.e. they are not strictly unique to peatlands). However, the specific kind or quality of some of the benefits and uses were seen to be specific to peatlands.

In terms of changes in peatland condition, across all participants there seems to be a sense of fundamental trade-offs between negative impacts on biodiversity, greenhouse gas emissions, water, the attractiveness of the landscape, heritage and tourism/recreation on the one hand, and the recognition that drainage could make access to the land easier and enhance the productive capacity of the land for farming (grazing), wind energy use etc. with potential effects on local communities/employment on the other hand. Interestingly, whether impacts on productive uses are positive or negative is not consensual. Several comments touched upon the issue of irreversibility and the impact that changes may have on future generations, suggesting that at least some participants were aware of the longer-term nature of changes in peatlands.

The content reported here corresponds exclusively to the outputs of this workshop (the first of the broader research project), as an interim step of the research process and not as an end product. Therefore, it does not contain any policy recommendations

Acknowledgements: This work has been funded by the Scottish Government's Rural Affairs and the Environment Portfolio Strategic Research Programme 2011–2016. We are very grateful to workshop participants for making this work possible. We are also grateful to Rebekka Artz from The James Hutton Institute and Andrew McBride from Scotland's Natural Heritage for their sustained support.

List of figures

Figure 1. Workshop participants at a plenary session.....	8
Figure 2. Workshop participants at a plenary session, with evocations about peatlands in the background.....	9
Figure 1. Break-out group discussing benefits provided by peatlands.....	Error! Bookmark not defined.

List of tables

Table 1. Benefits produced by peatlands as stated by workshops participants	10
Table 2. Uses and activities carried out in peatlands.....	11
Table 3. Bad things associated with and occurring in peatlands.....	12
Table 4. General comments including on the desired general direction of use and management into the future	15
Table 5. Specific impacts of changes in peatlands	16
Table 6. Other comments in relation to effects of changes in peatlands.....	19

List of Annexes

Annex 1: Workshop presentation
Annex 2: Transcripts of evocations about peatlands
Annex 3: Notes from activity on 'Who benefits?'
Annex 4: Uniqueness activity

1. Introduction

This document reports on the process and the outcomes of the workshop ‘Scotland’s peat bogs: what do you think about them?’ held in Aberdeen on the 14th of October of 2014 by researchers from the Scottish Rural College and The James Hutton Institute.

The aim of the workshop was to gather views from members of the public about peatlands in Scotland. This is part of a larger research project which aims at furthering the understanding on how people perceive and use peatlands, so it can be used to inform policy and land management decisions in peatlands’ landscape.

The workshop was a first step of a series of events and tasks. Specifically, the outcomes of this workshop are going to be used: 1) to help design a stated preference valuation survey for the estimation of the value of key ecosystem services provided by peatlands, 2) as the starting point of a qualitative research process for identifying and understanding cultural ecosystem services from peatlands. The project is expected to help targeting restoration efforts by clarifying benefits that are connected with different restoration options and inform the development of the National Peatland Plan (<http://www.snh.gov.uk/climate-change/what-snh-is-doing/peatland-action/national-peatland-plan/>). This information can be used to prioritize restoration actions (e.g. by focusing on areas in which greater social value is to be obtained from restoration), or carry out cost-benefit analysis of restoration actions. This valuation work builds upon previous work on developing a framework for valuing spatially targeted peatland restoration (Glenk et al. 2014; Martin-Ortega et al. 2014), which concluded that little is known about the social welfare impacts of peatland restoration and in particular how to spatially target restoration activities to maximise net benefits from investments in restoration. This research tries to address these knowledge gaps and will provide information to support the prioritisation of restoration. Furthermore, it will contribute to a better understanding of public support for restoration efforts more generally especially where these are long-term changes.

It should be noted that the content reported here corresponds exclusively to the outputs of the first workshop, as an interim step of the research process and not as an end product. Therefore, it does not contain any policy recommendations.

The remainder of this document is organised as follows: in section 2, the specific aims of the workshop are presented. Section 3 describes the stakeholder recruitment process and a brief description of workshop participants. Section 4 describes the workshop process in detail, while section 5 contains the results. Section 6 summarizes the key messages emerged from the workshop and section 7 briefly describes the next steps of the research process.

2. Specific aims of the workshop

The workshop had the following specific aims:

- Get a first and general understanding of the associations that peatlands hold for the general public;
- Identify the activities and uses that take place in peatlands;
- Understand people's perceptions about the benefits provided by peatlands. These were also referred to as the 'good things' that peatland provide, including material and immaterial benefits;
- Understand people's perceptions about dis-benefits associated with peatlands. These were also referred to as the 'negative things' about peatlands, including bad things peatlands produce, bad thing that happen in peatland, bad things that people do in peatlands and conflicts that emerge around peatlands;
- From the benefits produced by peatlands, identify which are enjoyed locally, outside the local area, nationally or internationally;
- From the benefits produced by peatlands, identify which are enjoyed at the individual level, at the community level, by society in general and by future generations;
- Identify which activities and benefits are unique to peatlands and which ones can also take place in or be derived from other places
- Understand people's perceptions of the way changes in peatland status related to management and use (e.g., for livestock grazing, peat extraction, field sports, forestry) affect the benefits that are produced by peatlands and the activities and uses that occur in peatlands.

3. Participant recruitment

The target audience for the workshop was the general public. Participants were recruited through social media and posters in public spaces in the local area around Aberdeen, and using a 'snowballing' technique which involves identifying participants through referrals from others. Participants were offered a £30 incentive and a buffet supper.

A total of 23 participants from Aberdeen and nearby rural (but not remote) areas attended the workshop. While not intended to be representative of the overall Scottish population, a good range of age groups was attained (from undergraduate students to retired citizens). Some people were locally born and others came originally from other parts of Scotland, or further afield (London and France). Also, motivations, interests and previous relationship with peat or peatland landscape varied across participants, including participants who were professionally related to peatlands (e.g. involved in peat cutting, and land management), to participants who had no particular interest in peatlands but 'had nothing to better to do' that evening. The most commonly shared link between participants and peatlands had to do with hill walking and outdoor pursuits which had taken place in peatlands.

4. Workshop plan

The 3-hour workshop took place on the 14th of October 2014 at The James Hutton Institute in Aberdeen. It was organised as a series of different activities including individual, break-out group and plenary group activities. Annex 1 includes the material presented at the workshop. The workshop was organized and delivered by four trained facilitators (the authors of this report).

After a short introduction about the broad aims of the project and practical information about the evening, a word cloud with synonyms of peat and peatlands was displayed and workshop participants were asked to, individually, write down on post-it notes whatever came to their mind when thinking about peatlands and when seeing the words displayed in the word cloud. The aim of this activity was to gain an overview of the immediate associations people have in relation to peatlands. Participants were then asked to stick their post-it notes on a poster on the wall.

Next, one of the workshop facilitators presented a simple 'scientific' (neutral/objective) definition of peatlands and provided further details about variation (depending on the plants that grow on them, the colour and composition of the peat and the past and present human activities), locations (mostly highlands but also some in the lowlands) and extent (almost one fifth of Scotland's area). A series of photos representing peatlands in different status was presented. Participants were then separated into three break-out groups and, with the aid of one facilitator per group, were asked to list: 1) what activities can be done in peatlands and what peatlands are used for; 2) what are the benefits (also referred to as 'good things') that peatlands provide us with including material benefits (e.g. things, products, objects, etc.) and immaterial benefits (e.g. experiences and feelings); and 3) what are the negative things about peatlands including bad things they produce, bad things that happen in peatlands, bad things that people do in peatlands and conflicts that emerge around peatlands. This activity was organised as a carousel, so that groups rotated among three 'stations' each dealing with one of the questions listed above, adding new ideas to those previously suggested by the other groups.

For the rest of the workshop we focused mostly on the benefits produced by peatlands and to some extent on the activities and uses. After the carousel exercise, we went back into plenary to look at each of the benefits which had been identified in the carousel exercise. Workshop participants were asked to identify and discuss to what extent the benefits were enjoyed locally, outside the local area, nationally or internationally; and whether they were enjoyed the individual level, at the community level, by society in general or by future generations.

After looking at who enjoyed the benefits provided by peatlands, and a small coffee break, the participants again divided into three groups. Each group worked with a list of benefits and activities identified in the carousel exercise. For each benefit or activity on their list, participants discussed to what degree the benefit or activity was a) unique to peatlands, b) mainly provided by peatlands, but also from some other places, or c) mainly provided by other places or from anywhere. For case b, participants were also asked which other places the same benefit or activity could also be obtained from. The final exercise aimed to elicit participants'

reflections on how changes in peatlands as a result of their use and management over time would affect the previously identified activities and benefits.

Figure 1. Workshop participants at a plenary session



5. [Workshop results](#)

5.1. Peatland associations

In the first activity, on the different associations that come to mind in relation to peatlands, a wealth of different notions came up. The full list of comments can be found in Annex 2. Most of these reflected the perceived characteristics of peatlands such as being wet, open, treeless, etc. Not surprisingly, many of these referred to water and being wet though many also referred to wind and the open nature of peatlands. Also related to the characteristics of peatlands were items which referred to individual elements found in peatlands such as plants or animals (e.g., *Sphagnum* moss, heather, grouse). In addition, there were items relating to sensory experiences such as smells, views and getting wet, as well as more subjective evaluations such as 'boring', 'dramatic' or 'beautiful'.

Other things that came to mind referred to products, services or functions that peatlands provide both for humans and for other species such as the role that peatlands play in storing carbon, providing a place for wildlife or providing fuel. These items thus portrayed peatlands as something positive and useful. Likewise, there were items which related to human uses such as for grazing, crofting and peat, and historical human associations with peatlands.

In contrast, other items referred to peatlands as wastelands which were useless or only produced negative effects and at worst could be places of danger, while a few also related to peatlands as places that in themselves were vulnerable to human exploitation.

Other contrasts found amongst the participants' associations related to more subjective evaluations of e.g. the scenic value of peatlands (boring or beautiful, dramatic or peaceful). Many other items which were mentioned could be interpreted either as positive or negative

(e.g. 'wild'). Finally, peatlands were for some also related to particular places or regions (e.g., west coast) or to Scotland as a whole.

Figure 2. Workshop participants at a plenary session, with evocations about peatlands in the background



5.2. Activities, uses, benefits and dis-benefits

Benefits & products from peatlands

Workshop participants came up with a wide range of products and benefits (good things) that peatlands produce. One way of classifying services, products and benefits that we obtain from nature ('ecosystem services') is according to the following categories:

- Provisioning services: products such as food and materials obtained from ecosystems
- Regulating services: ecosystem processes or outputs that are not consumed directly by people but which affect us through their impacts on the systems we depend on such as nutrient cycles in the soil, flood regulation, carbon storage.
- Cultural services: non-material services and benefits that people obtain from ecosystems.

Table 1 presents the benefits according to the above categories. The largest number of benefits associated with peatlands could be placed under cultural ecosystem services. When asked about benefits workshop participants had no difficulties in identifying benefits from the uses and activities: only fishing and walking were mentioned in the carousel station regarding benefits and were easily expressed in terms of the benefits that these activities provide when prompted (health and well-being). Amongst the provisioning services, it is interesting to note that workshop participants suggested several ways in which the space provided by peatlands could be used for productive activities, such as wind farming, grazing and forest planting. This was linked to the job opportunities that these activities create.

Table 1. Benefits & products from peatlands as stated by workshops participants and afterwards classified according to which kind of ecosystem service they are linked to

Provisioning services	<ul style="list-style-type: none"> • Food source for humans (fish, berries and plants) • Fossil fuel (peat burning and conversion into coal) • Animal grazing (deer, livestock) • Whisky • Therapeutic products (e.g. <i>Sphagnum</i> is antiseptic and the bog myrtle is an insect repellent) • Provision of space for productive activities: grazing, wind farming and forest planting (linked to employment opportunities).
Regulating services	<ul style="list-style-type: none"> • Clean air • Flood prevention • Water filtering • Carbon sink (inhibiting climate change)
Cultural services	<ul style="list-style-type: none"> • Country side nostalgia/good feeling of being in the country side/wilderness • Archive of plant history • Archive of society and civilization history • Leisure activities and tourism opportunities (e.g. grouse shooting) • Natural heritage (associated with 'the whole thing') • Views • Open space (and sense of), sense of fresh air • Landscape variety (colours) • Scotland's identity • Artistic inspiration (literature, photograph, etc.). • Health and well-being associated with recreational activities (fishing/walking) • Education and research • Potential therapeutic benefits by being there

Figure 3. Break-out group discussing benefits provided by peatlands



Uses and activities in peatlands

The uses and activities that are or can be carried out in peatlands according to workshop participants are presented next. We have divided them into productive activities (related to provisioning services) and cultural or recreational activities (related to cultural services) - Table 2. It should be noted that this distinction cannot be taken categorically since recreational activities can also be considered economic productive activities¹.

Table 2. Uses and activities carried out in peatlands²

Productive activities and uses	<ul style="list-style-type: none"> • Farming • Peat extraction (for fuel, compost and for making degradable pots) • Whisky making • Sheep and deer grazing • Wind farms • Feeding salmon hatcheries (rivers) • Advertising (for tourism)
Cultural and recreational activities and uses	<ul style="list-style-type: none"> • Walking • Grouse and duck shooting • Conservation • Bird watching • Water conservation • Study the past/archaeology • Study biology/scientific research • Orienteering • Old battles (in history) • Roman causeways (Romans used to get lost in peatlands) • Education, research and study • Chilling out (because they are remote and rural) • Photography • Therapeutic use (relaxation and medicinal plants <i>Sphagnum</i>, bog myrtle and maybe more that we just don't know about yet) • Exploration and discovery, recreational assault courses • Bog snorkelling

Again, cultural and recreational activities are very prominent and more numerous than productive activities. Contrary to what happened when prompted to discuss benefits (see previous section), when asked to discuss uses and activities, they also mentioned benefits that are not related to uses and activities (understood as carried out by humans). These included habitat, wildlife, carbon sink, biodiversity, *Sphagnum* moss as water filter and *Sphagnum* moss for Christmas wreaths. Moreover, some things are seen both as a use and as a benefit. For example, education, research and study, photography, therapeutic use, peat extraction, whisky making. In some cases this is a semantic issue, e.g. whisky is the product (or for some the benefit) and whisky making is the activity, but in other cases, it shows that there is not necessarily a categorical distinction between activities (or the ways in which humans interact with the ecosystem) and the benefits that they get out of these activities/interactions.

¹ Military training was also mentioned as one of the activities, which would not feed into this categorization between productive and cultural activities. As with any other classification, there will always be exceptions.

² Fishing and sport in lochs were also mentioned by some participants, but there were doubts within the group as whether lochs are really part of peatlands. Making safe paths across was mentioned as an activity, but it would rather correspond to an activity to avoid a dis-benefit (i.e. getting lost in peatbogs).

Peatlands' dis-benefits

Here we distinguish between on the one hand dis-benefits (bad things) associated with peatlands themselves and on the other hand, negative impacts from conflicts and problems arising around peatlands or in peatlands.

Table 3. Bad things associated with and occurring in peatlands

Dis-benefits associated with peatlands themselves	<ul style="list-style-type: none"> • Midges • Falling into them, getting lost and stuck • Smell (sulphur) • Boring for some to walk over • Bleak-open space without shelter in bad weather/ empty/ difficult to navigate (gullies) • Dead bodies (but can be positive if archaeological)
Conflicts and problems occurring in peatlands or in relation to peatlands	<ul style="list-style-type: none"> • Can't not use land easily (wasted space, sheep struggle, restricting property and transport development) • Wasteful destruction of ancient resource/ irreversible loss of unique habitat and species (due to drainage and peat extraction) • Extraction, development, forest use, industrial wind farming versus conservation • Pollution/greenhouse gases emission/ brown water associated with extraction and burning of peat and in general with disturbed peatlands (including long term impacts) • May be used as dumping site • Lack of information/awareness/understanding • Negative conservation effects on certain species. • Ivy-like destructive plant can affect adjacent property

Some dis-benefits correspond to the 'other side of the coin' of some of the benefits mentioned. For example, 'wasted space' was mentioned among the negative things, while 'space' and 'sense of open space' were mentioned as benefits. At the same time, space provided by peatlands had been mentioned among the benefits in relation to wind farming, forest planting and animal grazing, but peatlands are also seen as wasted space for property and transport development. Some of the dis-benefits are associated with loss of benefits (e.g. habitat loss, greenhouse gases emission, brown water, etc.). In other cases, the dis-benefits emerge from the trade-off between provisioning and other services (i.e. peat extraction and area development versus conservation).

5.3. Who benefits?

After having created lists of activities, uses, benefits and dis-benefits the whole group came back together in plenary to look at the list of benefits. For each of these benefits, the group discussed who the beneficiaries were (see Annex 3 for full list). On the one hand, we looked at the geographical scales at which benefits were enjoyed (local, national or international) while on the other we looked at whether benefits were mainly for individuals, communities, society or for future generations.

Many benefits were seen to be enjoyed at different levels, from the local to the national or global, and both by individuals, communities, and society. In some cases benefits could be further subdivided with different aspects being enjoyed by different groups. For example, low grade coal production benefitted local people by creating employment while it could be used as energy source outside the local area. Some of these aspects were time limited such as local

employment which was only provided during the construction phase of wind farms or planting of trees. For other benefits it was difficult to give an unequivocal answer as participants said that the distribution of benefits would depend on other things. Examples of this included the benefits from grouse shooting or grazing which were seen to depend on who owned the area. In case of a private estate, the financial benefit would go to an individual, but in case of community buy-out, the benefits would go to the community. Another example was that of tree planting. Depending on the aim of the tree planting, whether for conservation or for commercial timber production, this could benefit the government, private companies or wider society and future generations. Some benefits enjoyed by individuals were also seen to depend on a person's preferences such as benefits from wilderness, open space and views. Some of the individual benefits such as views could be compromised if too many people were trying to access the same benefit. Future generations were seen to mainly benefit from peatlands' function as carbon sink and as habitat for wildlife and from peatlands' ability to function as a record of the past.

5.4. Peatlands' uniqueness

For this activity the participants again split up into the same three groups in which they had been during the earlier exercise. Each group was given a list of some of the activities and benefits which had been identified during the earlier exercise. The groups were asked to look at each item on their list and to discuss whether this was an activity, use or benefit which was a) unique to peatlands, b) mainly found in peatlands, but could also be in other places, or c) everywhere or mainly in other places. The full list of classified benefits and activities can be found in Annex 4.

At first glance the exercise seemed to show that very few activities, uses or benefits are unique to peatlands. Nearly all of the uses and benefits that participants had previously listed could also be obtained from other places and most of them were primarily obtained from other places or could be found nearly everywhere. Those that were said to be unique to peatlands were bog snorkelling, peat extraction, and creating low grade coal from peat.

However, as the groups discussed the different items on their lists it also became clear that the answers often depended on the level of specificity, and that there were indeed more specific things or aspects of things that were unique to peatlands. For example, participants noted that encountering and protecting wildlife can take place in many different places, but some species may only be encountered and protected in peatlands. Another example was education and research, which in a general sense can take place everywhere, but which in relation to particular topics may be dependent on the existence of peatlands. Likewise, whisky can be produced in many different places but whisky produced in peat areas has distinct characteristics and is in that sense unique to peatlands. In some cases, the answer was also said to depend on the preferences of individuals. For example, artistic inspiration can be obtained from many different places, but some people may feel particularly inspired by peatlands, or may find particular kinds of inspiration from peatlands.

A different kind of distinction was made in relation to wind farms. Again, participants agreed that wind farms could be placed in many different places and were therefore not unique to peatlands. However, because many peatlands are not actively used by humans for many other things there is often a tendency for wind farms to be placed in peatlands.

In other cases there were differences in opinion amongst participants with regard to how to classify uses or benefits. For example, while some thought that peatlands were unique in the way they act as carbon sinks, others thought that many other places can equally well act as carbon sink.

While it was not specified as part of the exercise participants also discussed the characteristics that make peatlands unique. Examples given included the ability to preserve things over long periods of time which make peatbogs such good records of the past.

5.5. Effect of past and ongoing changes in peatlands on the benefits, uses, activities and experiences produced by peatlands

In this task, participants were asked to note down how they thought changes in peatlands as a result of their use and management over time would affect the previously identified activities and benefits. The comments made on post-it notes covered a wide range of potential impacts, from impairments in the productive capacity of the land to concerns about (the irreversible loss of) unique habitat, biodiversity, and climate change impacts. What follows is an attempt to structure the comments made according to the key topic or theme they address. Because many participants listed several effects of changes in peatlands on uses, activities and experiences, this approach implies that parts of a comment made by a single participant is allocated to several themes. That is, no attempt is made here to analyse the collective of themes touched upon by any one participant. Further, some (parts of) comments made on the post-its can refer to more than one theme or topic and may thus appear more than once in the Tables. Note that any spelling mistakes or grammatical errors may be related to the transcription of the post-its and thus be ours.

A few participants used this as an opportunity to reflect more generally on the relationships between peatlands, or changes to them, and local communities, or to express their opinion on the future and on the desirable future use or conservation of peatlands as perceived by them (summarised in Table 4 below). While some of these statements argue for the need to conserve peatlands (e.g., B2, B3) or to be 'left alone' (B8), one comment refers to them as a barrier to (housing) development (B5). A view arguing for a balance between conservation and development is offered by the following comment (B3): 'Some peatlands should be left untouched. Others put to good use- get more peat, plant trees, maybe windmills'.

Table 4 General comments including on the desired general direction of use and management into the future

A	Communities/locally specific issues
1	In fragile communities peatlands are important and looked after in the main by local population
2	Dry peatlands in Invercauld estate, Cabrach etc. rather than seeing sheep, deer etc. Would be nice to see old houses made into homes to get people back to the area or holiday homes to make money to put back to save peatlands
3	Do we really need more farms and houses?
B	Future direction of use and management
1	As oil runs out more peat will be extracted
2	Peatlands need conserved
3	Some peatlands should be left untouched. Others put to good use- get more peat, plant trees, maybe windmills.
4	Many would prefer that peatlands remain natural
5	Removal for housing would be good
6	Research, preservation, archaeology are all relevant to peatbogs
7	Peatland limits concrete growth-let's keep it!
8	Squelching through peatbogs is an overstated pastime but it's the way to learn about them, peat bogs have far reaching effects mostly beneficial if left alone

Table 5 reports the comments made that relate to more specific impacts, including climate change and greenhouse gas emissions, biodiversity and wildlife, water and life in water bodies, impacts on values associated with heritage, identity and feelings, visual impacts and impacts on open space, intergenerational issues and long-term effects as well as 'use values', i.e. impacts on a variety of uses of peatlands including recreational activities (and tourism in general), rural viability and employment, farming and field sports, or income from land generally.

The participants made a wide range of observations. Taken together, there seems to be a perception of fundamental trade-offs between negative impacts on biodiversity, greenhouse gas emissions, water, the attractiveness of the landscape, heritage and tourism/recreation and the recognition that drainage could make access to the land easier and enhance the productive capacity of the land for farming (grazing), wind energy use, etc. with potential effects on local communities/employment. Interestingly, whether impacts on productive uses are positive or negative is not consensual. Further, identity, tradition and heritage aspects are quite strongly featured. Several comments touch upon the issue of irreversibility and the impact that changes may have on future generations, suggesting that at least some participants were aware of the longer-term nature of changes in peatlands.

Table 5 Specific impacts of changes in peatlands

C	Carbon/GHG emissions/climate change
1	If not looked after more carbon emission
2	Carbon sink reduced, energy reduced
3	Can affect the future of global warming if the bogs are destroyed
4	Destroy or make <u>impossible</u> the use of the peatlands as carbon sink
5	Acts as carbon sink-without them more carbon in atmosphere contributing to climate change reduce carbon sink
6	Also releases carbon when dug up and disturbed (detrimental to ecosystem)
7	Reduction of peat from cutting leads to greenhouse effect
8	Reducing carbon sink by altering/ reducing peatlands.
9	Carbon which was in the sink will be released, carbon reintroduced into the cycle can have an effect on global climate
10	It no longer acts as a C sink because it becomes dry- I'm talking about draining peatland and not looking after it – cutting it too to let it erode
11	Drying out affects ability to be an efficient carbon sink
D	Biodiversity/wildlife/ecology
1	If not looked after less birdlife
2	Changes to species diversity unlikely to affect general human population, sadly
3	Changing the environment & habit of species-affects conservation
4	Drying out changes the type of vegetation, specific wildlife can be affected/ could die out if too much change in habitat
5	Habitat for many species- important for conservation
6	Effect habitat, reduce bird population
7	Drainage and erosion caused by overgrazing can be detrimental to the highly specialised biodiversity that occurs in peatland
8	Effect local eco life, reduce grouse numbers
9	Draining peat bog is detrimental to plant life and therefore the whole ecosystem
10	Reduction of peat from cutting leads to reduced biodiversity
11	Changes in peatland will affect wildlife meant species will lose habitat- endemic species not found elsewhere will be lost (and become extinct)
12	Migratory species which rely on peatlands may be affected
13	Wildlife will change
14	Wildlife habitat- where will the specific birds, insects, animals go, the ones that are specific to bogs, they will die or be eaten
15	Wildlife- very specific wildlife that belongs in peat bogs will not be there if the top is cut off to reveal the bare peat
16	Loss of habitat for wildlife
17	Peatlands are beneficial to wildlife, a great habitat
18	Affects wildlife- impact on conservation products
19	Changes may reduce or impact on bird populations, bad for environment
20	Changes to animals' habitat may cause species to decrease, rare plants may also lose their habitat,
E	Water/water-related impacts
1	Important water storage- reduce flooding-changes to peat bogs will affect this- increase
2	Drainage removes the ability of peatlands to retain water and help prevent flash floods

	in the lowlands
3	They are so important for tourism both for scenery and also walking, shooting, fishing etc.,
4	Water which was previously retained will be lost
5	Less fishing as drier areas
6	Rivers- could impact on river levels, this may negatively impact on fishing
F	Identity/history/heritage/feelings
1	Identity slightly changed
2	History all still good
3	Only guilt
4	The loss of peatlands would make me sad and I'd feel guilty that it happened in my lifetime.
5	Might affect the way literature/ art is perceived by the change in the environment (i.e. loss of)
6	Losing the traditional aspect of peatbogs & natural side
7	Heritage- what will be passed on to other generations in terms of wildlife of symbol (identity) for the country etc.
8	Tradition-locally, effect on the community that used to live in such environment & developed ways of living related to it (hunting, education, local history, identity....)
9	Destroy or make it <u>impossible</u> the use of the peatlands as archive of plant growth
10	Important for the country's natural heritage- without them this diminishes
11	Reduction affects individuals & their perception of identity, loss of information about past environments- key to the past, loss of cultural tradition-peat whisky.
12	Land which is important locally for its heritage will no longer be able to be enjoyed
13	Cause decline in other areas worldwide, loss of culture / tradition e.g. whisky, grouse, deer who graze on peatlands etc.
14	Changes in use- less unique, therapy,/ artistic inspiration/ walking- still do-able
15	Scottish identity- if it's cut then it doesn't have the colour, the texture and 'me' feel that is in line with our identity or the idea people have of Scotland
16	Heritage, we lose a lot of info about the past but also Scottish identity is kind of lost because when people come to visit they think 'ugh I thought it was covered in beautiful peat not cut with holes in it'
17	Loss of heritage sites
18	Experiences & feelings about: an overall sense of loss both locally and nationally, a change of how area is regarded internationally, reduced sense of worth to area as it becomes denuded
19	Peatlands are a great piece of Scotland's heritage that is often overlooked
20	Nostalgia/ landscape- negative experience of tourists , not meeting expectations
G	Visual impacts/open space/landscape
1	Loss of peatlands would mean Scotland would lose some (a lot) of its natural beauty and character
2	Changes affect the landscape- where less vegetation becomes less picturesque and reduces tourist / therapeutic appeal
3	They are so important for tourism both for scenery and also the walking, shooting, etc.
4	Reduced sense of worth to area as it becomes denuded
5	It's less of an inspiration as it looks dry and bare but not in a nice way, it looks sad
6	Variety in landscape the beautiful thing about peat is the colours-if you cut it, drain it etc. it looks dry and loses its colours- it doesn't look fertile anymore

7	No impact still a large place with little / no light pollution
8	Walking/ orienteering- not as scenic , less likely to be recommended
9	Views / landscape-not as scenic, impact on tourism
10	It changes the landscape and the beauty of the landscape forever
H Intergenerational issues/long-term effects/irreversibility	
1	Future generations- less remains for them
2	It is so important to keep peatbogs for our future generations to learn about the past and also for diversity and wildlife
3	Reduction of peat from cutting leads to impacts on future generations and education
4	Draining or 'managing' peatland is a short term benefit but long term problem, learning to appreciate it takes time- usually about 1000life times
5	If not managed properly the damage is irreversible in our lifetime
6	When peatlands are lost all the benefits specific to them are lost
I Direct uses and productive capacity (incl. agriculture, field sports, recreation, tourism, employment effects)	
1	Whisky, employment, all still good
2	Drainage could open additional recreation space
3	Protection under subsidy could affect grazing animal production
4	Loss of tourism, international aura (what would people think of Scotland with no peatbogs?)
5	Changes affect the landscape- where less vegetation becomes less picturesque and reduces tourist / therapeutic appeal.
6	They are so important for tourism both for scenery and also walking, shooting, fishing etc.
7	Destroy or make it <u>impossible</u> to use of the peatlands as source of peat for horticulture or energy & allow the land to be used for other purpose; generation of energy, grazing, game birds etc.
8	Draining peatlands might make the land more 'user friendly' for other purposes-farming, transport, building etc.
9	If peatland changes to heather moor the land can be used for farming, grazing, grouse shooting, honey etc. which are also benefits.
10	Use of peat reduces remaining natural resources, development of peatlands into alternative uses- wind farms, farmland
11	Important for the countries natural heritage- without them this diminishes, could affect tourism and local activities like hiking
12	Lack of grass affects grazing for animals, affect local economy, employment
13	Grazing may be affected where erosion occurs
14	Loss of grouse, deer who graze on peatlands etc.
15	More wind farms as easier access, more grouse shooting as easier access
16	Grazing improved
17	Star grazing- no change
18	Less fishing as drier areas
19	Shallower bog snorkelling
20	Loss of grazing, reduction in farming, loss of fossil fuel, no more peat to extract
21	Overall uses are reduced, -activities: no more farming once change to methods, loss of soil to farm
22	Loss of fuel source
23	Reduction of leisure activities

24	Local community affected by loss of recreation area
25	Lack of / reduced production
26	Landscape- negative experience of tourists , not meeting expectations
27	Walking/ orienteering- not as scenic , less likely to be recommended
28	Views / landscape-not as scenic, impact on tourism
29	It may create more land for farming & development
30	It may affect tourism
31	It may affect shooting/ walking
32	Scottish estates only survive on this - is a large part of the economy
33	Could affect the spread of population in rural areas

Finally, for completeness, Table 6 reports other comments that did not fit the above categories.

Table 6 Other comments in relation to effects of changes in peatlands

J	Other comments
1	How do changes in peatlands affect us? Who is 'us'? Those living in Scotland? Those residing near peatlands? The future generations of South Sudan? This is a largely metaphysical question that transcends morality, social taboos and wildlife enthusiasts' day outs. To answer the question it is best to respond with another question; how do the constraints in the peatlands not affect us? Think about that
2	I love bogs
3	I found out today that there is more happiness on the bogs than I ever knew

Figure 4. Wrap up session



6. Key messages emerging from the workshop

Even though many of the participants initially stated that they did not know much or had little experience with peatlands, it did not seem difficult for them to express their views and engage in discussions about peatlands. The participants collated an impressive list of activities, uses and benefits provided by peatlands as well as negative associations with peatlands. The number of activities, uses and benefits that could be referred to as cultural ecosystem services

was larger than that of other benefits and services, and included a large variety of activities, products and benefits, including a number of intangibles. The workshop also showed that it can be difficult to separate activities, uses, products and benefits from each other.

Furthermore, the workshop showed that perceptions of and associations with peatlands are not uniformly positive. There are clear benefits, but at the same time peatlands can be seen by some as somewhat threatening, or as 'wasted/empty land'. The term bog itself was seen by some to have negative connotations, and from a visual amenity point of view, it was mentioned that peatlands can look boring and dull. Nevertheless, many of the participants also emphasised the importance of peatlands in relation to Scotland's image, identity and cultural and natural heritage.

Some negative aspects of peatlands correspond to the 'other side of the coin' of some of the benefits mentioned. For example, 'wasted space' was mentioned among the negative things, while 'space' and 'sense of open space' were mentioned as benefits. These differences can partly be related to individual differences in people's perceptions and preferences, but may also reflect trade-offs among different benefits and uses. For example, space provided by peatlands could be used for productive activities, such as wind farms, grazing and forestry, thereby creating benefits such as job opportunities. These benefits were linked to the conversion of peatlands to something else. They would therefore come at the cost of other benefits that peatlands could provide if left unconverted such as carbon storage or the natural heritage that peatlands were seen to represent.

In a general sense most of the uses and benefits associated with peatlands could also be obtained elsewhere (i.e. they are not strictly unique to peatlands). However, the specific kind or quality of some of the benefits and uses were seen to be specific to peatlands. In general, it was felt that benefits and their uniqueness depend on: who is asked; the type of peatland (e.g. if too wet some of the benefits are not realized), the scale/level of detail considered and the management/ownership regime (e.g. private estate). Also, differences were noted in relation to the quality of the experience/product depending on where people do it or get it from. Likewise, there were differences between where people *could* do particular things and where they *actually do* them (e.g. placement of wind farms on peatlands).

There seemed to be a change in people's perceptions and understanding in relation to peatlands as the workshop progressed. This was seen in relation to appreciating the variety of peatlands, their uses/usefulness, the need for careful management and the need for raising awareness regarding their benefits.

In terms of changes in peatland condition, across all participants there seems to be a sense of fundamental trade-offs between negative impacts on biodiversity, greenhouse gas emissions, water, the attractiveness of the landscape, heritage and tourism/recreation on the one hand, and the recognition that drainage could make access to the land easier and enhance the productive capacity of the land for farming (grazing), wind energy use etc. with potential effects on local communities/employment on the other hand. Interestingly, whether impacts on productive uses are positive or negative is not consensual.

Several comments touched upon the issue of irreversibility and the impact that changes may have on future generations, suggesting that at least some participants were aware of the longer-term nature of changes in peatlands. The workshop ended with suggestions from some of the participants about the need to raise awareness regarding the benefits provided by peatlands and the need for 'sensible' management.

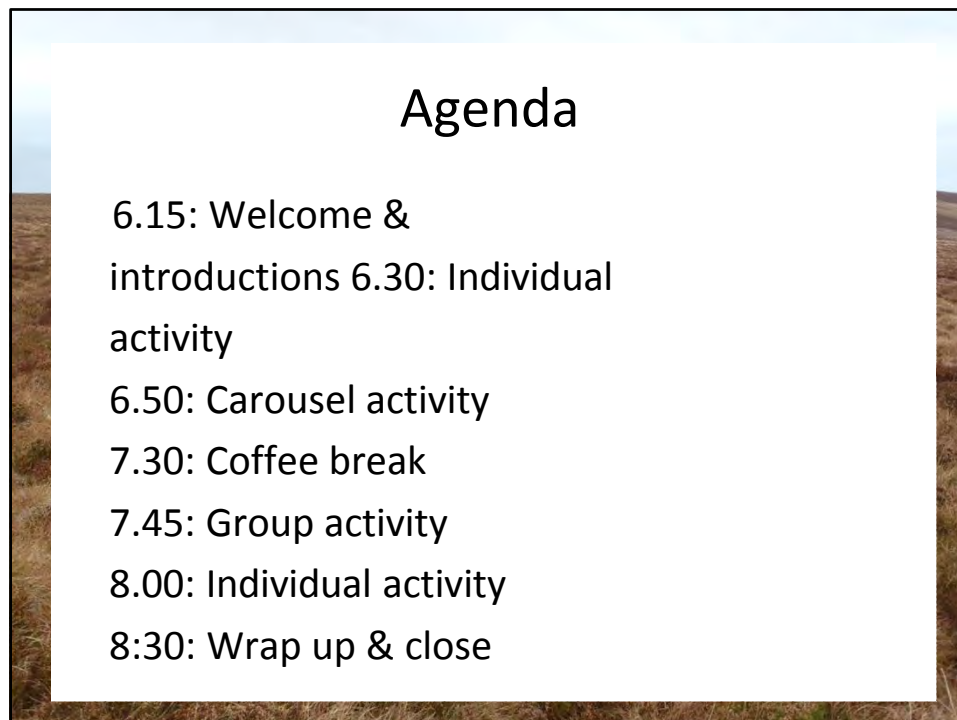
7. Next steps

This report has been circulated to all workshop participants for information and it will be used by the researchers to design the rest of the research activities. Notably, the information reported here will be used to design a questionnaire that will be used in a survey in which preferences and values associated with peatlands by the population of Scotland will be collected and analysed in a quantitative way. Information from a second workshop in November 2014 will also feed into that process.

The final outputs of the research will be used to produce scientific publications contributing to the scientific literature on the social values and perceptions of ecosystems. Also, they will be sent to the Scottish Government and other relevant stakeholders, including regulating agency, NGOs, etc., to inform decision-making regarding peatlands in Scotland.

For more information on the content of this report or the research plans, please contact Carol Kyle at carol.kyle@hutton.ac.uk.

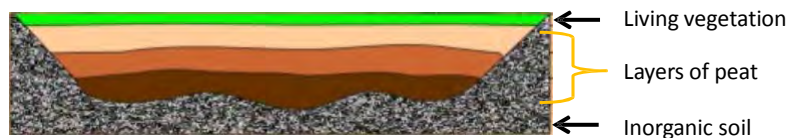
Annex 1: Workshop presentation





What are peatlands?

A peatland is simply an area where peat is found
 It consist of layers of peat which have
 accumulated naturally over centuries
 Peat is formed over time by the remains of plant
 matter



Peatlands in Scotland

There are variations in Scottish peatlands Peatlands can be different depending on

- the plants that grow on them
- the colour and composition of the peat
- past and present human activities

Peatlands can be found in the lowlands but the largest areas are found in the uplands

Overall, peat soils cover over a fifth of Scotland's land area













Let's think about....

- **Activities and uses**
 - What activities can be done in peatlands?
 - What are peatlands used for?
- What **good things (benefits)** peatlands provide us with?
 - Material benefits (things, products, objects, etc.)
 - Immaterial benefits (experiences, feelings, etc.)
- What are the **negative things** about peatlands?
 - Bad things they produce
 - Bad things that happen in peatlands
 - Bad things that people do in peatlands
 - Conflicts that emerge around peatlands

Who benefits?

Looking at each of the benefits that you have come up with:

- Are they enjoyed
 - Locally?
 - Outside of the local area?
 - Nationally, internationally?
- Are they enjoyed?
 - By individuals?
 - By the community?
 - By society in general?
 - By future generations?

Coffee!



Are the activities and benefits unique
to peatlands?

Same groups as before (15 min.)

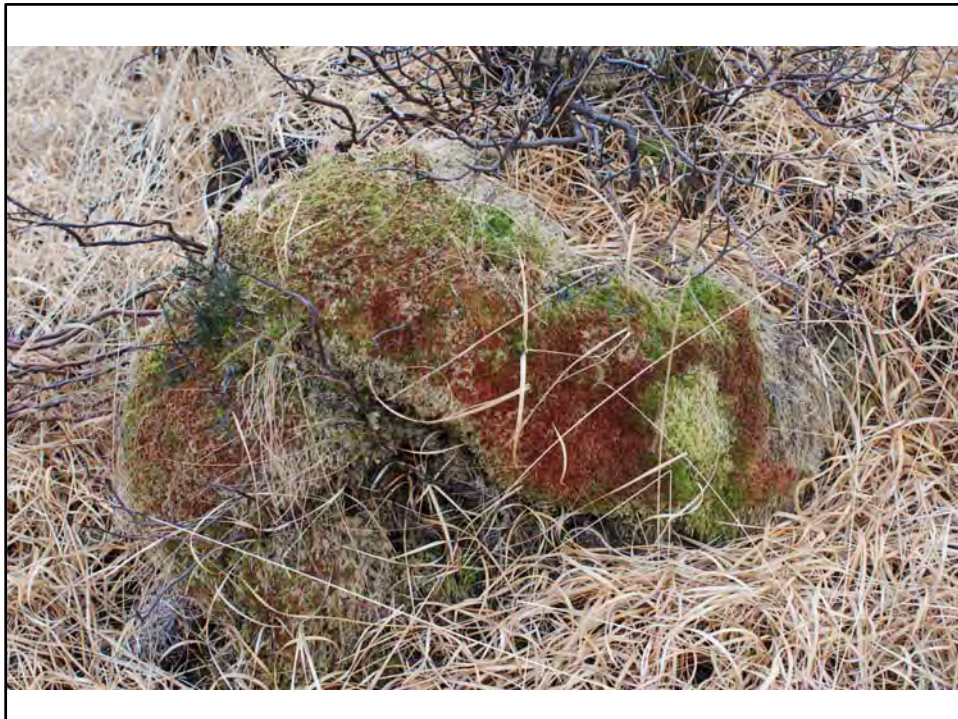
Which activities & benefits are

- A. Only in peatlands?
- B. Mainly in peatlands but can also happen
somewhere else? (where?)
- C. Anywhere or mainly somewhere else?

Many peatlands have changed over time

- Our past and present use and management of peatlands has affected many of them
- How does this change look like?
- ... and how does it affect us?



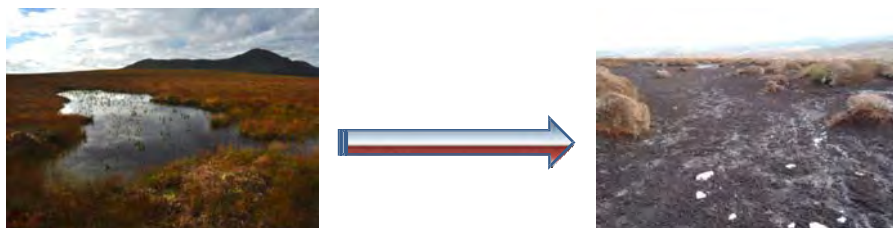






Think about ...

- How do the changes in peatlands affect
 - ... the benefits provided by peatlands?
 - ... the activities taking place in peatlands?
 - ... our experiences with peatlands and feelings about them?



Scotland's peatlands

Any further thoughts, comments, questions?



Wrap-up

What is the point of all this?

- Help to design a survey about peatlands to gather the views of the whole of Scotland's population (representative sample)
- Inform decisions and policies about peatlands

Wrap-up

- Compensation forms
 - Future contact
 - Any other comments? Please tell or write us
- (Carol.Kyle@hutton.ac.uk)



A large photograph of a rolling landscape with dry, brownish-yellow grass under a cloudy sky. The text "Thank you!" is centered in a large, bold, yellow sans-serif font.

Thank you!



Annex 2: Transcripts of peatland associations

- Wind farms, Birds, Developers
- Treeless
- Carbon, Habitat, Biodiversity
- Nature, Mountains/hills, Open space, Heather, Wildlife, Mud, Banchory beast race
- Negative words, quag, slough, sticky, a problem to be solved.
- Wildlife, fuel, grazing, open land, history, landscape
- Important carbon sink, environmental issues with extraction, fuel use by burning, important habitat, releases carbon back into carbon cycle.
- Lake District, bog of eternal stench from 'Labyrinth', west moorland services in Tebay, preservation of dead people, semi-fossil fuels, rural areas that I don't visit, adult cartoon surnames.
- Moorland, uncompromising places, wildlife-often hungry and angry, not the sort of place to go without a clear idea of the layout.
- Carbon, organic matter, vegetation, water logged, biodiversity, fuel source- burning, exploitation, coal, low grade, lignite, greenhouse effect, terrestrial.
- Nature, conservation, wildlife, vegetation, plants, natural resources, evolution of species, acidic surroundings.
- Morass, boggy, mud mess, trouble?, peat for fuel, bog unusable, swamp, marsh-needs to be drained.
- Water logged land, deep puddles, grass, moss, wert, cold, fuel
- Great scenery, bleak, wild places, open spaces, mud, smelly (sometimes), green, water, wet
- Remote locations
- Beauty, ground nesting birds, cotton grass, west coast (of Scotland)
- Plants and animals, great smell peat smoke, ecosystem, ancient, energy source
- Carbon cycle, vegetation, humidity, problem relating to exploitation, ecosystem, slow regeneration, fossil fuel(not renewable at human scale)
- Country- west coast, falling into wet peat bog, Scotland
- Boring, not scenic
- Open space, dunlin, grouse, red deer, heather, rushes, sundew, *Molinia*, *Sphagnum*
- Countryside, mummy, preserve, water, whisky, wellies
- Quaqmire-sounds weird, like strange animal
- Vulnerable land, horror
- Exposed, dramatic, windswept, atmospheric, biodiversity, waterlogged, insects, birds
- Sheep, countryside, rain, mountains, fog, walkers, croft, green, boggy, squelch, Scotland, birds
- Fresh air, family guy, moisture, tuffets
- Fuel
- Natural resource
- Social history

- Wet, huge, barren looking spaces (but with a multitude of life underneath, water logged, earthy smell)
- Curlews, grass, misty, birch lands, heather, heath plants, rushes
- Wet, sinking, midges, smelly, birdlife, frogs/newts, smelly legs from falling in, hill, windy, cloudy/foggy, open ground, sheep country
- Slough, moss, swamp, bog, blanket bog, wetlands, all sounds very wet and squelchy, rain, cold, bare land
- Mist, walking, dangerous, unfortunate, peaceful, damp, bleak, coal, ancient, beautiful, fuel, fire, diversity, loss, isolated
- Black, wet, open space, gas, soggy, fire heat smell, bones
- Peat, heather, white flower

Annex 3: Notes from activity on 'Who benefits?'

Alternative 'fossil' fuel: local but also whole country and international –employment, tourism, money

Carbon sinks: everyone (local, national, global, future generations)

Wildlife habitat/natural heritage: wildlife, local (can go there and see) but can also be national, international (people going to see species, income), future generations

Gives space (open)/views-photographers: depends on the individual and their preferences. Individual (ruined by too many)

Scotland's identity/whisky/literature and artistic inspiration: also for other countries? All levels, those who visit, but also through images

Water storage/flood prevention/water filter: communities, local people, those who drink it, also global (e.g. in the form of exported whisky).

Good for animal grazing/grouse shooting: local but also national (revenue from sale), community buy out + private estates – individual + community. Depend on ownership + how wet

Alternative energy use when used for wind farms/space for forest planting: depends on purpose (e.g. tree planting for conservation – future. For felling – company + government. Conflict between wind + trees. Employment but mainly during construction + planting/cutting.

Archive of plant history and history of society and civilization/education/research - future generations (enhances the understanding of the past), what has been where, when, past whether patterns.

Countryside nostalgia/ good feeling of being in the country side/ wilderness: individual but subjective (untouched, pure, stereotype of Scotland) depends on what is there.

Annex 4: Uniqueness activity

Categorisation of benefits and activities according to whether they are found; B: mainly in peatlands, but also in other places, or C: everywhere or mainly elsewhere.

A: only in peatlands
<p>Alternative fossil fuel: unique ability of peatlands- if specific to peat cutting</p> <p>Bog snorkelling</p> <p>Carbon sinks: unique ability of peatlands</p> <p>History: very specific historic + level of preservation</p> <p>Peat extraction: unique ability of peatlands</p>
B: mainly in peatlands but also in other places
<p>Crofting: doesn't have to be in peatlands (e.g. machairland, coastal land).</p> <p>Military training: mainly in peatlands. Other places that the military uses are beaches and mountains.</p>
C: Anywhere or mainly in other places
<p>Carbon sink: mostly other places such as sea, forests, coal and oil natural deposits</p> <p>Clean air</p> <p>Exploration/discovery</p> <p>Farming</p> <p>Films</p> <p>Fishing</p> <p>Food source</p> <p>Grazing (deer, livestock, employment): mostly in other places (lowland grasslands)</p> <p>Grouse shooting: mostly on hill sides, mountains, steep slopes, grass moors.</p> <p>Historical archive: mostly other places such as beaches, rock faces (fossils), caves, other soils</p> <p>Open space: other places such as deserts, mountain ranges, golf courses, open fields</p> <p>Orienteering</p> <p>Rivers</p> <p>Star watching</p> <p>Tourism</p> <p>Walking</p> <p>Water sports</p> <p>Water storage: mostly other places (lochs/groundwater)/everywhere</p> <p>Wind farms – could also be in other places, but are mainly put on peatlands because these are not used for other things.</p>
Things that could not be easily fitted into just one of the categories
<p>Artistic inspiration – depends on the individual, what they find inspirational. You only get the 'peatland' inspiration from there, but other kind of inspiration can be found somewhere else</p> <p>Bird watching: in general everywhere, but depends on the birds</p> <p>Compost: compost can also be derived from other places, but the quality differs. Peat is better than other types of compost and for certain plants it is the only kind that you can use</p> <p>Conservation: depends on which wildlife and if found only in peatlands or also in other places?</p> <p>Countryside, health & wellbeing: everywhere but depends on individuals preferences</p> <p>Education: many places, but particular subjects/things can only be experienced/learned here so</p>

depends partly on how broad or narrow you define education. Examples of education which is particular to peatlands: learning how to navigate peatbogs, conservation issues, survival, knowledge of particular species that only live here, particular uses, learning from the natural archive which peat represents, living education: how things are connected in an ecological chain, influences of past weather

Energy – in general also in many other places, but for peat burning (non-renewable) it is unique to peatlands.

Heritage: many other places, though particular aspects of heritage only found here

Open spaces: mostly other/everywhere (apart from cities), but different kinds of open spaces.

Peatlands are free from noise and light pollution (in contrast to some other open spaces). There are also differences between peatlands.

Research: many other places, but specific kinds of research unique to peatlands

Scotland's identity: also mountains and coastlines, but depends on who you ask.

Therapy: in terms of therapeutic products these are unique to peatlands, but in terms of feelings, depends on who you are but can probably be found in many other places

Variety in landscape: the question was difficult to apply to this. Also lots of variety in peatlands.

Views: everywhere, but particular plants can only be seen here

Whisky: can be made everywhere, but depends on the whisky; for peat taste this is unique to peatlands

Wildlife: depends on which wildlife; specific wildlife can only be found in peatlands