



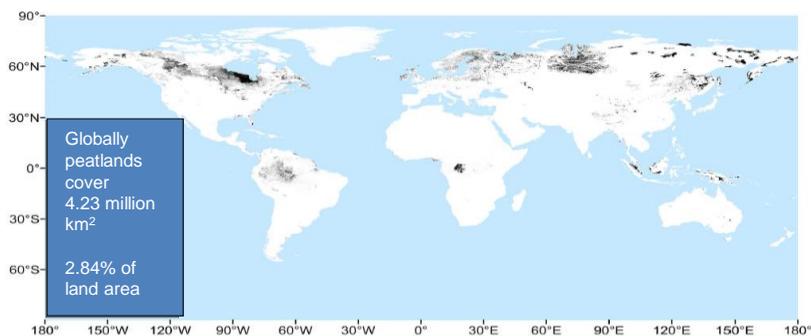
The economic case for restoring the largest natural terrestrial carbon store: benefits of peatland restoration

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Café Economic June 2022



“PEATMAP”





What is peat?

- Forms from dead plant material in waterlogged environments
- The organic matter decays very slowly
- Builds a deposit with varying rates of accumulation: often ~1 mm per year
- In some places there are >20 m deep deposits of peat



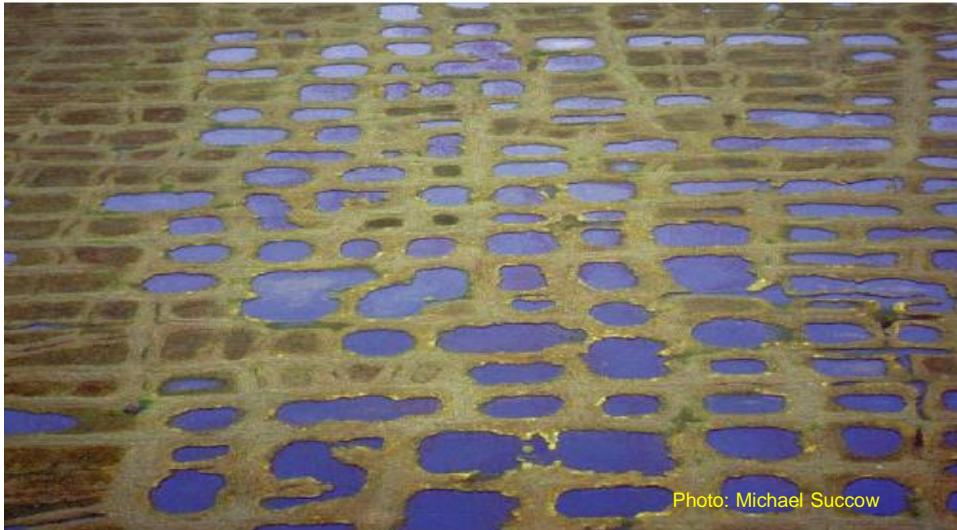


Photo: Michael Succow



Photo: Hans Joosten





Peatland importance

- 50 % of peat solid matter is carbon
- Hold almost half of all soil carbon and more than one third all C stored in the land biosphere. This is twice as much as the world's forests.
- Degraded peatlands are responsible for 5 % of global anthropogenic CO₂ emissions
- Good condition peatland can capture C from the atmosphere



Indonesia & Malaysia palm oil (doubled price recently)

Drainage and massive scale burning and destruction of the peat

85 % of Indonesia's greenhouse gas emissions = peat destruction



UK farming on peat = largest land use source of C emissions



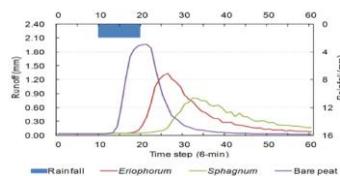
Peatland importance

- Hold 10 % freshwater - does not translate to global water provision except in hotspot locations - and the British Isles is a hotspot !
- Approximately 85% of all drinking water delivered directly from peatlands is consumed in the United Kingdom and the Republic of Ireland.
- In the UK peatlands provide water supplies for 28 million people.
- Brown dissolved carbon is difficult for water companies to treat.



Peatland importance

- UK upland peatland management can influence flood risk
- Energy infrastructure sites (disturbing peat)

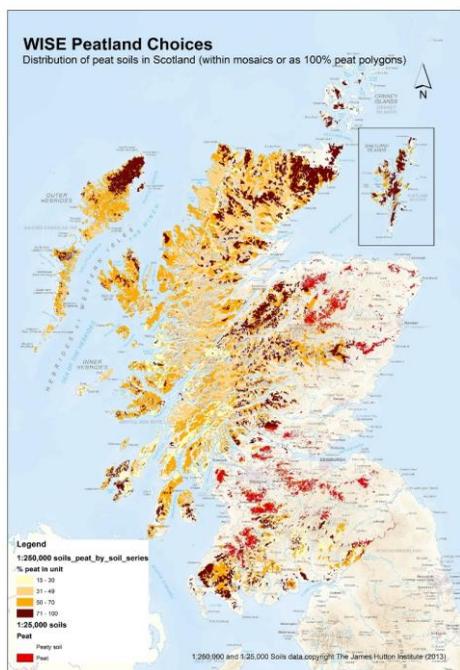


Biodiversity





Enhanced policy concern on the status of peatlands to support us in a climate emergency



70% of UK peatlands are in Scotland

>20% of Scotland's land surface

2/3 are degraded to some degree

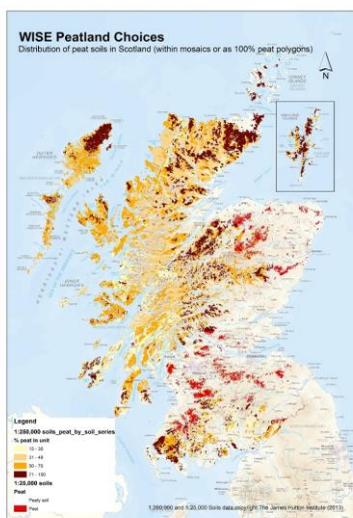
For peatland restoration to be successful it needs to be supported by the public and recognized as providers of well-being



In 2014:

“By 2020 we expect to see improvements in the protection and condition of peatlands. They will be valued by government policies, developers, land managers and the wider public.”

“By 2030 we want to see peatlands in a healthy state and widely regarded as resilient ...By now, peatlands are viewed as essential to the nation's wellbeing and natural capital.”



National level study to understand the values that the public places on peatlands,

& make the economic case for public investment in peatland restoration (benefits vs. costs)

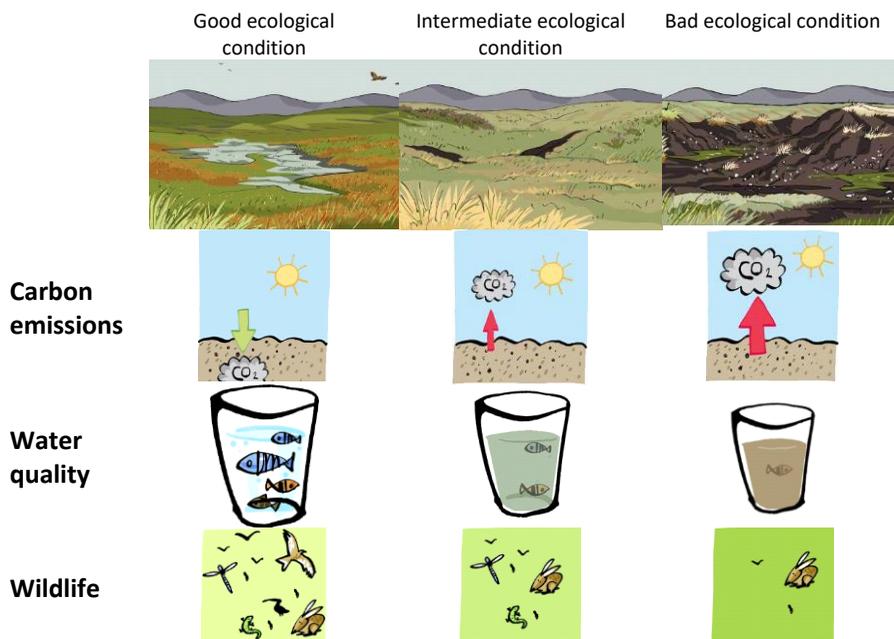
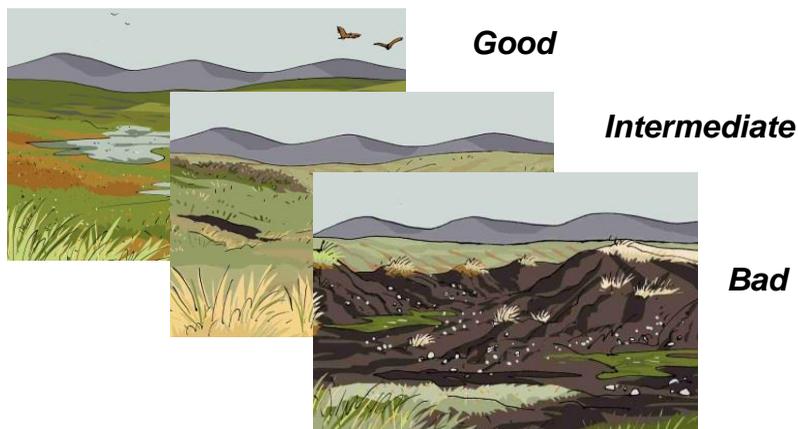
Some basics of environmental economics.....

The notion of ecosystem services

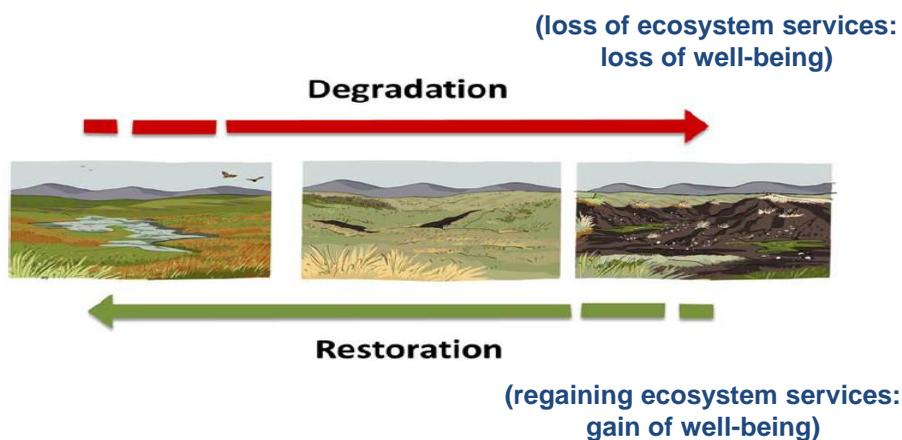
- The **benefits** that humans obtain from nature
- Benefits are the increase on **well-being** that humans derive from enjoying ecosystem services
 - Being able to get food, shelter, energy, cultural fulfilment, etc.. **increases** our well-being
 - Conversely: not being able to do so, **decreases** our well-being



Ecosystem services delivery is associated with ecosystem condition



Changes in peatland conditions = changes in well-being



Environmental valuation

- Set of techniques to **quantify** the well-being derived from ecosystem services
- Based on the (mainstream) **neoclassical economics** paradigm:
 - Humans behave **rationally** making choices that maximize their utility (well-being)
 - Social well-being is the **sum of individual** well being (benefits to society)

Monetising values

- There are no **universal** units of human well-being
- **Money** used instead
- In markets, good and services are traded in monetary units
- Consumers behave rationally maximising their utility:
 - We **make the choice to** buy something as long as the well-being that it provides is worth price
 - **Willingness to pay** (WTP) is a measure of the well-being (value)



Monetising values

- **If else remains the same**, having more money increases our well-being and having less money decreases it



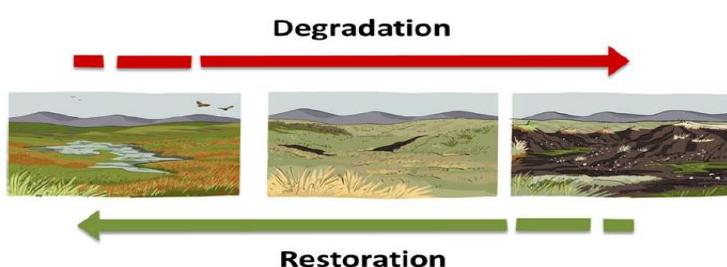
WTP as a way of measuring well-being

Monetising values

- Willingness to pay (WTP) is an 'exchange value'
- You pay to get something in exchange



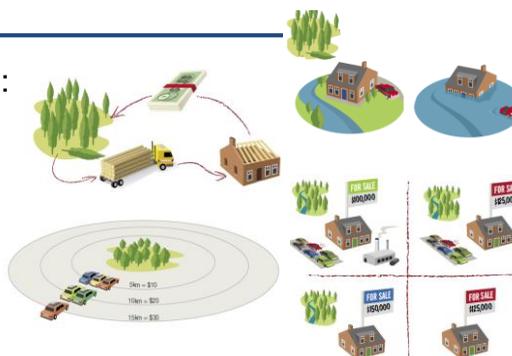
Applied to ecosystems: change in the ecosystem:
willingness to pay for restoration



Monetary valuation methods

ES exchanged in markets:
market prices, avoided costs, replacement costs

ES not exchanged in markets but value can be **revealed** through **other markets**: travel cost, hedonic pricing



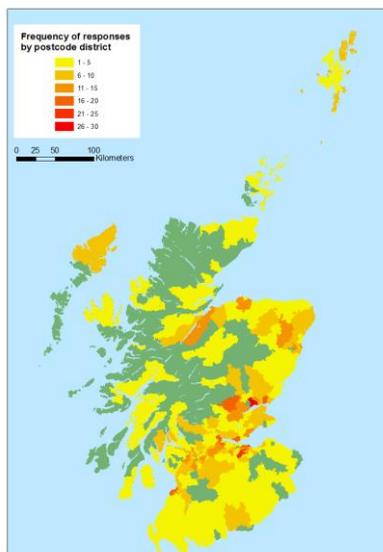
ES not exchanged in markets, for which values (WTP) can only be **stated** (in **surveys**)

Valuation survey for peatland restoration

Representative sample of
Scottish population,
N~<2,000

General **perceptions** about
peatlands and **support** (or not)
for restoration

& **Monetary estimates** of the
values (perceived benefits) (WTP
in **£/hectare**)



Results

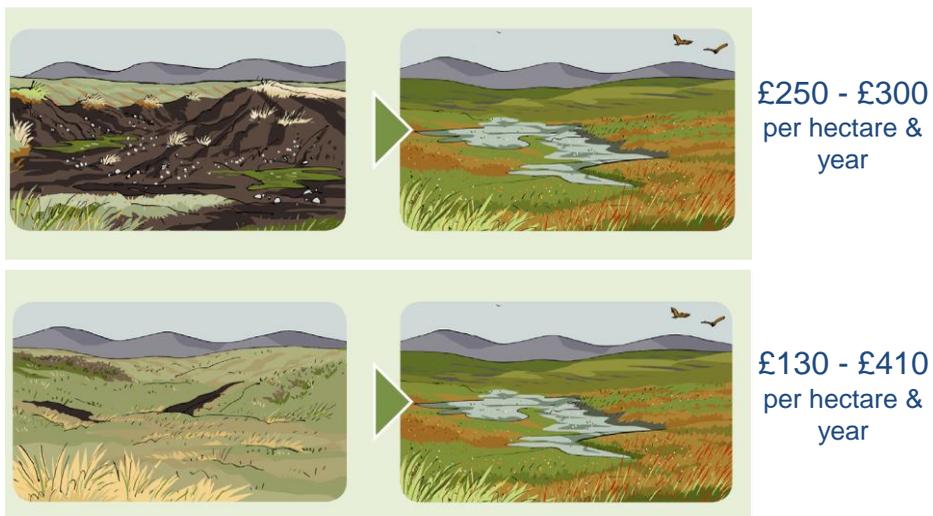


>90% willing to support at least
one restoration option (WTP)

But preferences are complex:

- **Heterogeneity** and **ambiguity**
- What people perceive as **‘natural’** not always aligned with conservation targets
- Strong importance of **Scotland’s identity** underlining values (often associated with use)

Benefits estimates (2016 till 2030)



Example Benefit-Cost Analysis

Restoration action at a cost



Climate Change Action plan (2017): 15 years horizon

	Net benefits	B/C ratio
Capital costs (£830/ha) + Recurring Costs £100 ha/yr	£ 80 million £336 million	1.15 2.30

There is also a cost on delaying restoration action

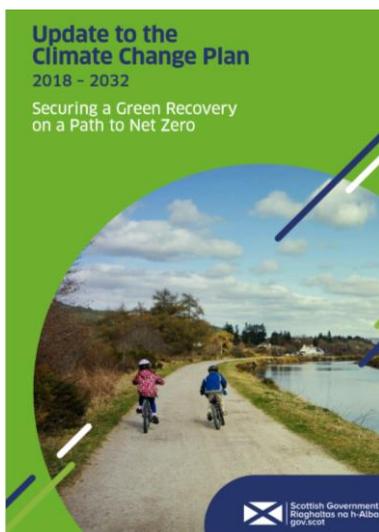
- Restoring later means :
 - Lower resilience of peatlands to climate change
 - enjoying ecosystem service benefits later
- Opportunity cost of restoring by 2050 rather than by 2030: **£190m/year (lost benefit)**



What does all this mean?

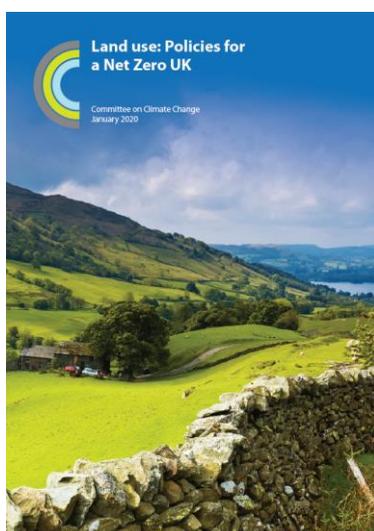
- Economic arguments for restoring Scottish peatlands
- Benefits of peatland restoration exceed costs
- Delaying restoration action has a cost to society: urgency to act
- But public preferences are heterogeneous and complex (consider in restoration agendas)
- Other challenges (economic implications of upscaling, fragmented data on costs)

Public policy impact



Scotland's £250 million ten-year funding package to support restoration of 250,000 hectares of degraded peat by 2030

Public policy impact



UK Climate Change Committee Land Use report

- 35,000ha targeted
- £50 million investment

Public policy impact



Yorkshire Peatland Partnership business case

- £80,000 pilot case

Private funding of restoration

**PEATLAND
CODE** 

voluntary certification standard to
market the climate benefits of
peatland restoration (e.g. CRS)

Media attention; public & political awareness

The screenshot shows the BBC News website. The main headline reads: "Restoring UK's peatlands offer 'largest economic benefit'". Below this, it says "UK's heavily degraded peatlands could be worth £1.5bn a year". The article is by Daisy Dunne. A red navigation bar at the bottom of the screenshot lists various news categories: Home, Coronavirus, Climate, UK, World, Business, Politics, Tech, Science. Below this, regional news links are shown: Scotland, Scotland Politics, Scotland Business, Edinburgh, Fife & East, Glasgow, NE, Orkney & Shetland, South, Tayside & Central, Alba, Local News. The main article title is "Scotland's peatlands 'have been undervalued for years'".



Risk of commodification of nature

This block contains a collage of news articles and a map of Scotland. On the left, there is a screenshot of a news article from "THE SCOTSMAN" titled "Insight: Scotland's great Net Zero land grab". The article is by Dani Garavelli, dated Sunday, 17th April 2022, 4:55 am. The text of the article begins: "When it first became clear that Scotland's vast swathes of peatlands, once considered a wasteland - could play a vital role in tackling climate change, there were high hopes Highland communities would benefit from the...". In the center, there is a small image of a landscape with the word "REVERE" overlaid. On the right, there is another screenshot of a news article from "THE SCOTSMAN" titled "£7.5m of shares sold as investors buy into new 'mass-ownership' rewilding firm in Highlands". The article is by Ilena Amos, dated Saturday, 9th April 2022, 6:55 am. The text of the article begins: "A ground-breaking new rewilding company has secured £7.5 million in its opening funding round, allowing the purchase and management of more than 1,600 acres of land in the north of Scotland." Below these articles is a map of Scotland with several dots indicating locations. To the right of the map is the "National Parks" logo. Below the map, there is a section titled "Who We Are" which states: "Revere is delivered through a partnership between Palladium and the UK National Parks. We catalyse private finance to restore the UK's 15 National Parks at the scale and pace needed to tackle the climate emergency and biodiversity crisis." The Palladium logo is also present.

Let's discuss...

- Usefulness and limitations of valuation methodologies
- Should we be doing monetary valuation at all?
- The risks of commodification
- Should we be approaching public values of nature completely differently? (ecosystem services is an anthropocentric and instrumental approach)
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Acknowledgements

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