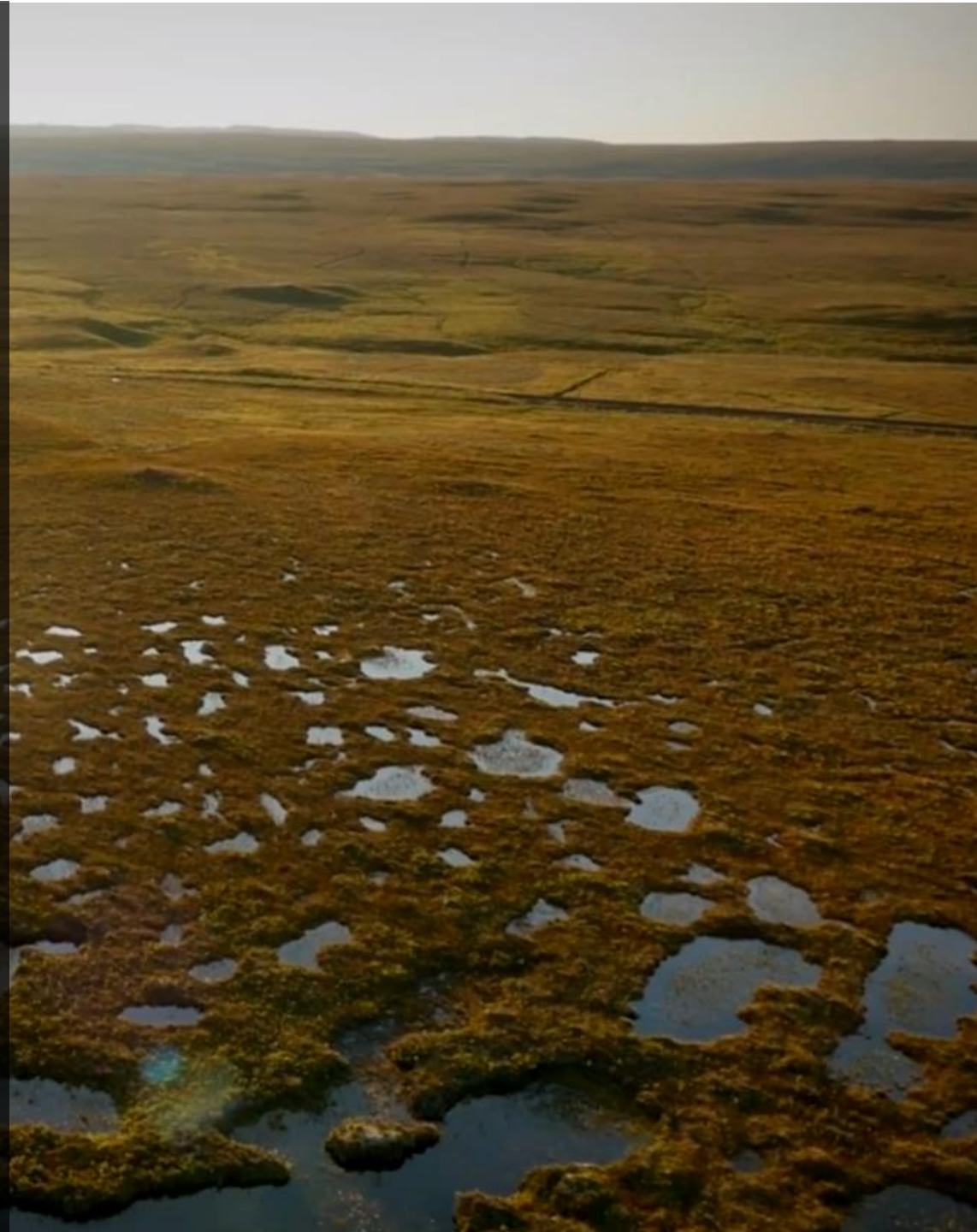
Peat, soil and sea: Managing carbon in Scotland

Scotland is a peatland nation. So much so that our unique partnership approach is attracting interest from across the world.

To coincide with COP25 held in Madrid in December 2019, the Scottish Government and ClimateXChange held an event to celebrate innovative and inspirational initiatives aiming to preserve and enhance the climate benefits we get from peat, soil and sea.

This is a summary of the nine presentations of leading research, policy and practice in Scotland on wetland management and the role of nature based solutions in mitigating and adapting to climate change.



climate change

Scotland's centre of expertise connecting climate change research and policy

Peatland research in Scotland: examples from the Flow Country Research Hub

The Flow Country Research Hub is a network of researchers and stakeholders interested in peatland research in the Flow Country, the vast expanse of blanket bog spreading across Caithness and Sutherland in the North of Scotland. It was established in 2012 to:

- Provide and maintain infrastructures that promote international collaborations, student placements, visiting researchers and that enable sustainable, world-class research to take place in the Flow Country.
- Improve the integration between scientists, landowners, practitioners, governance bodies and policy makers, to help deliver restoration objectives in Scotland.
- Develop a better platform for the provision of outreach and knowledge exchange activities making research accessible.

In 2016 the National Peatland Research and Monitoring Group was establish to underpin the delivery of the National Peatland Plan, provide comments and feedback on commissioned research, and feed state of research to National Peatland Group.

Together these initiatives are contributing to national and international research, practice and knowledge exchange on peatland monitoring and restoration. The work is providing evidence of for example the climate benefits of forest to bog restoration, legacy effects of forestry on biodiversity and water quality following restoration, evidence of long-term carbon losses under forestry on deep peat, and a novel monitoring tool based on remote-sensing of ground motion.

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eri environment research institute

Peatland Restoration and Management: thoughts from Land Managers

The Heather Trust works to develop and promote sustainable, resilient moorlands. Well managed moors provide public goods such as carbon storage, water management – both water quality and flood risk management, rich, diverse and unique plant and animal communities, and recreational opportunities which benefit physical and mental wellbeing.

The Trust sits on the Peatland Action Project Board, an initiative that has delivered 19,000 hectares of restoration, c.7,700 hectares of this on private land through ditch blocking, hag reprofiling and reseeding bare peat.

The Trust's work frequently focuses on delivering the latest environmental science to the land managers and landowners who are making decisions about the uplands.

Integrating the best peatland conservation techniques into existing land uses, like grouse production or agriculture, represents the cutting edge for research and development in the moorland world, and the Heather Trust is involved in several practical, hands-on projects to bring science to the people on the ground.

What we have learnt:

- The best outcomes are at a landscape scale.
- Facilitation is key, e.g. Peatland Action Officers provide expertise, co-ordination, and can oversee the quality of work.
- We need a methodology for measuring the benefits at landscape scale and covering multiple land uses to demonstrate the gains made from a programme of projects.
- Annual funding and contractor availability can be problematic.

Find out more:
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https://www.heathertrust.co.uk/

The Heather Trust
Sustainable, Resilient Moorland

Peatland Action: Making it happen!

20% of Scotland is peatland. Peatlands are one of Scotland's largest degraded ecosystems. When peatlands are degraded the benefits they bring are lost, in fact they become sources of carbon instead of sinks – contributing to climate change rather than mitigating it. Sadly, half of our peatland is damaged.

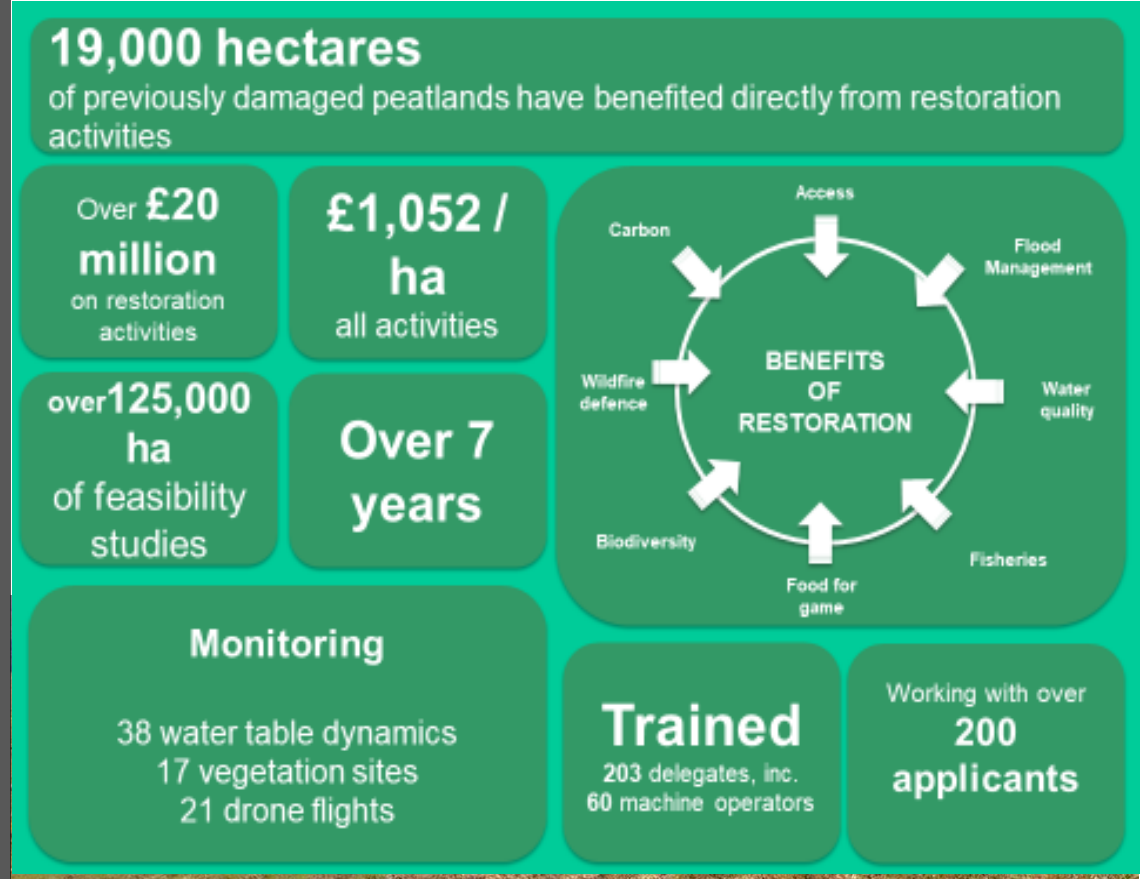
Peatland ACTION is the project helping to restore damaged peatlands in Scotland. Since 2012, over 19,000 hectares have been put on the road to recovery.

Peatland Action Project Officers have played a pivotal role in the success of the project, many having now been in-post for several years and have developed substantial expertise in advising on peatland restoration. Feedback from grant recipients praised the independent and expert advice from Project Officers, who are based around Scotland.

They key to our success:

- Simple application process
- Dedicated Project Officers
- Multiple benefits for land managers
- Quick turnaround payments
- Responsibility & Stewardship
- Build relationships, flexibility and trust
- No blame….get it sorted!

Find out more:
PeatlandAction@snh.gov.uk
www.nature.scot/peatlandaction
www.nature.scot/climate-change/taking-action/peatland-action



Blue carbon:
Scotland's Blue Carbon Resources

The Blue Carbon Forum is a research programme to measure the ability of Scotland's marine environment to store carbon dioxide and mitigate against the effects of climate change.

More than 80% of the global carbon is circulated through the oceans. Coastal habitats are particularly important in storing carbon.

We are working in partnership with a large team of volunteer citizen scientists to quantify the carbon stocks in saltmarsh habitats around the UK coastline. These stocks can be improved through appropriate management and protecting our vulnerable coastal environments.

These carbon benefits are in addition to the value coastal habitats have in supporting biodiversity and protecting out coastline from erosion.

The outcomes of our work will provide practical guidance for coastal managers and inform shoreline policy to safeguard carbon storage in the intertidal zone.

Find out more:
wena@st-andrews.ac.uk
www.c-side.org/

SCOTTISH BLUE CARBON FORUM

DEEP: The native oyster and carbon deposition

The Dornoch Environmental Enhancement Project (DEEP) is a groundbreaking initiative aiming to restore Native European oysters to the Dornoch Firth. It is a pioneering partnership between Glenmorangie, Heriot-Watt University and the Marine Conservation Society.

Extensive fishing during the 1800's are thought to have decimated oyster populations in the Dornoch Firth, as they did throughout Europe.

The primary aim of DEEP is to reintroduce oysters to the area – in order to both protect and enhance the Dornoch: Native oysters filter-feed and so remove material from the water column as they feed. The sediments deposited to the seabed store carbon.

The 4 million oysters planned to be re-introduced to the Dornoch could help deposit as much carbon as the emissions from heating 2.5 3-bedroom semi-detached Scottish homes.

The findings and lessons from DEEP can be used in global efforts to restore shellfish populations.

Find out more:
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marinescotland · The Scottish Government · The Glenmorangie Company · Edinburgh Napier University · St Abbs Marine Station · Scottish Natural Heritage Dualchas Nàdair na h-Alba nature.scot · Scottish Blue Carbon Forum · Heriot Watt University

Dynamic Coast: Supporting innovation & adaptation options for our future coast

Climate change is already having an effect. The Dynamic Coast project shows how Nature Based Solutions offer more than mitigation by protecting coastal assets and reducing erosion.

What we do:

- Modelling Climate Change impacts
- Identifying future vegetation edges and high-water marks (2050 & 2100)
- Developed automated satellite analysis to ID low-water mark changes in real time. (deemed too expensive to investigate)
- Automated analysis of big data to ID natural flood protection features (where to target effort)
- Developing Resilience & Adaptation Options at Super Sites (Bay of Skaill & St Andrews etc)

So far, we have analysed 3,800 km of shoreline change, supporting national and local analysis, Local Authority Shoreline Management plans and community decision making.

Our methodology has sparked international interest with ca. 50,000 website hits from 99 countries around the world!

Find our more:
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Dynamic Coast
DynamicCoast.com @DynamicCoasts

Below the Blanket and other stories about engaging people with the Flow Country

The Flow Country is one of the world's last wild places, stretching across Caithness and Sutherland in the far north of Scotland.

This vast expanse of blanket bog is a vital defence against the effects of climate change: storing about 400 million tonnes of carbon – more than double the amount in all of Britain's woodlands.

The ambitious Flows to the Future project restored areas of blanket bog in the heart of the Flow Country that had been damaged by forestry planting. It also involved and connected people everywhere with this precious habitat, delivering real economic benefits for one of the least densely populated areas in Scotland.

We have built a viewing tower – the Flows Lookout – and boardwalk on the existing Dubh-lochain Trail at Forsinard.

We have also used cultural community events to engage people with the Flow Country.

THE FLOW COUNTRY

THE PEATLANDS PARTNERSHIP

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Engaging with the Scottish public on coastal wetlands and nature based climate change mitigation solutions

Coastal management in the UK is facing the challenge of planning for sea level rise. How we meet this challenge is in no small part dependent on how the public feel about management and funding options.

This research project looks at how people value the different benefits from coastal management options.

In focus groups we discussed the different benefits from well-managed saltmarshes – biodiversity, flood defences, carbon storage and recreation. How do people value them relative to each other?

What people think (so far):

- should be national priority, but perceived lack of money for positive action/management
- importance of local protection and management: people protecting the environment close to home
- centralised management can also work (e.g. SEPA regulations farm run-off)
- the public should pay, not individuals
- people who gain a value from saltmarshes should contribute to management costs (e.g. farmers, grazing)
- no blanket solution
- mixture of local and centralised management

Find out more:
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University of St Andrews

Peatland Code:
An opportunity

The UK has a target of restoring and sustainably managing two million hectares of peatland. This is no small tasks as 90% of UK peatlands are currently in damaged condition.

With the majority of the UK's peatland, Scotland was ahead of the curve and published its National Peatland Plan in 2015. It sets out aspirations for the future of peatlands in terms of improvements to protection and condition.

On the ground, the Peatland Action model has been running since 2012, and has successfully delivered over 150 restoration projects in Scotland.

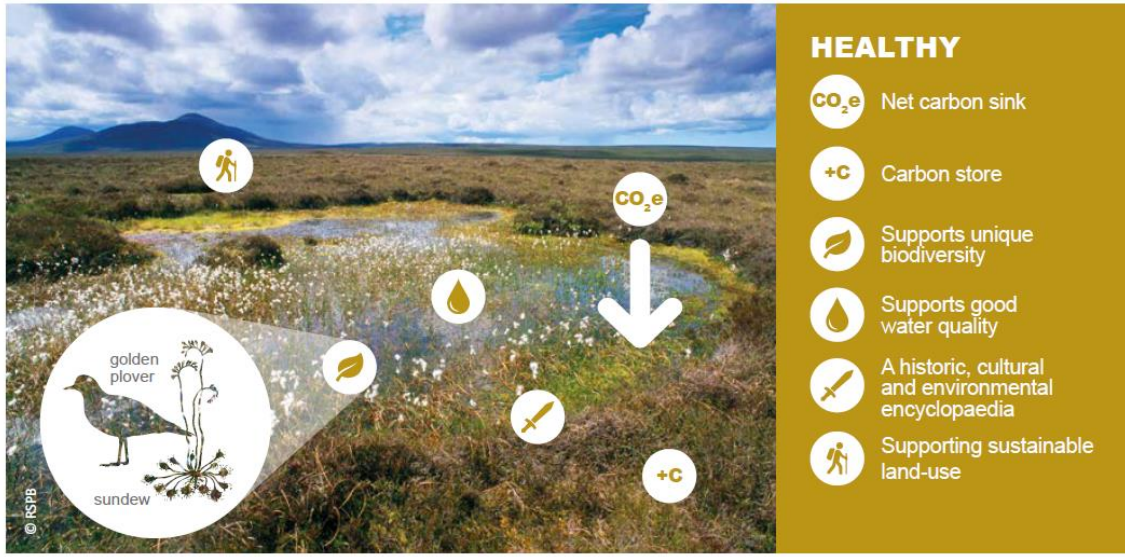
How do we fund the massive restoration task going forward:

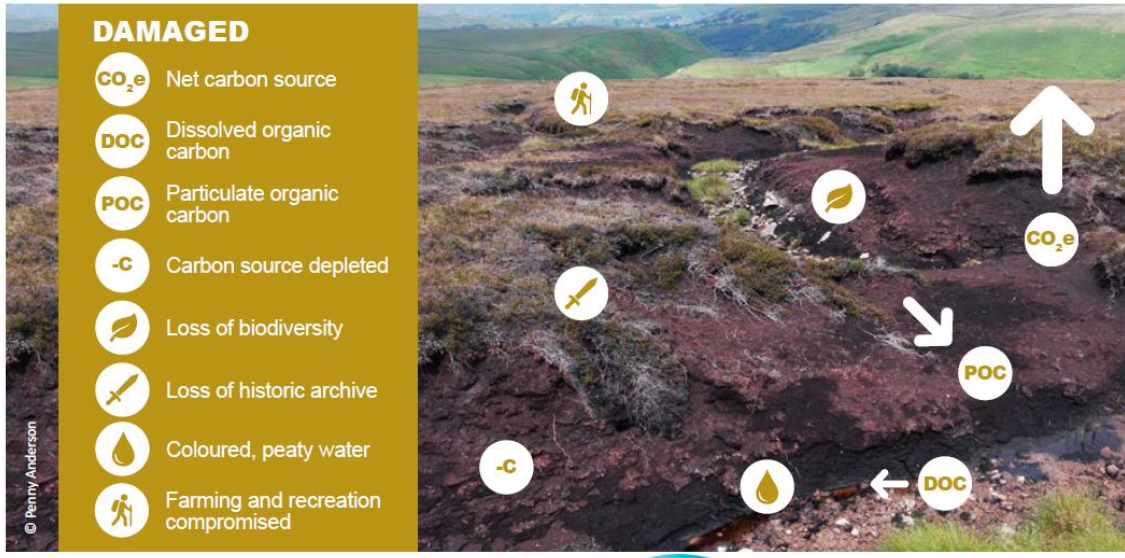
- Public funding via grants and agri-environment payments?
- Private finance via 'Payments for Ecosystem Service' (PES) mechanisms?
- Blended finance initiatives?

Peatland Code is a voluntary certification standard to attract private funding for peatland restoration projects in exchange for climate benefits by providing assurance to buyers. It involves payments to the managers of land in exchange for the provision of specified ecosystem services over and above what would otherwise be provided. It is voluntary and market based.

The Peatland Code is an opportunity to:

- Generate a new funding stream
- Create a lasting legacy for future generations
- Contribute to tackling climate change and habitat loss





IUCN | National Committee United Kingdom

Peatland Programme

Find out more:
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www.iucn-uk-peatlandprogramme.org

climate change

Scotland's centre of expertise connecting climate change research and policy

See a short film about the projects here
www.climatexchange.org.uk/blog/peat-soil-and-sea

Follow us @climatexchange_