

# MERLIN

## Upscaling River and Peatland Restoration for Resilient Landscapes Symposium Report

11<sup>th</sup> December 2025 v2.0

Authors: Noah Kelly<sup>1</sup>, Alhassan Ibrahim<sup>1</sup>, Esther Carmen<sup>1</sup>, Charlotte Neary<sup>2</sup>, Justyna Olszewska<sup>3</sup> and Kirsty Blackstock<sup>1</sup>

Contributors: Niall Provan<sup>2</sup>, Lawrence Carvalho<sup>4</sup>, Ewan Lawrie<sup>5</sup>, Keith Matthews<sup>1</sup>, Amelia Heath<sup>2</sup>, Peter Phillips<sup>6</sup>.

(Affiliations: 1: James Hutton Institute, 2: Forth Rivers Trust, 3: UK Centre for Ecology and Hydrology, 4: Norwegian Institute for Water Research, 5: NatureScot, 6: Scottish Government)



The MERLIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036337.

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# MERLIN

## Key messages:

- A symposium and field visit was held to share knowledge and experience of upscaling peatland and river-related restoration as Nature-based Solutions.
- Nature based Solutions (NbS) are “actions aimed at protecting, conserving, restoring, and sustainably managing natural or modified terrestrial, freshwater, coastal, and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits” (United Nations Environment Programme, 2025)<sup>1</sup>.
- Communication about NbS must always be targeted for the intended purpose – whether for different stakeholder groups, different NbS measures, or different objectives.
- Further consideration of how to define and measure the values and benefits from NbS for land management or wider society is needed. This must include recognition of non-monetary benefits.
- Larger scale NbS initiatives may be more effective for increasing stakeholder support, attracting investment, and enabling knowledge sharing, as well as addressing climate and biodiversity challenges.
- There is a need to harness grassroots community interest to increase wider societal support for NbS.
- Planning and policy instruments must be used to encourage nature restoration and NbS when possible.
- The use of ‘blended finance’ – using public funding to leverage private investment can be particularly effective for the financing of nature restoration projects.
- There are two main incentives for private investment in NbS – a cost-benefit approach, and a revenue-based approach. There has been an increased interest in the cost-benefit approach as businesses recognise the increased threats posed by extreme weather events and climate change.
- It is important that businesses feel that costs are being shared fairly – blended finance and larger scale projects with multiple funders can help with this.
- There is a need to increase investor confidence in NbS because it requires a long-term commitment.
- Relatedly, there is a need for policy stability to improve confidence for investors and land managers.
- Agricultural support payments must reward environmental benefits, and perverse incentives must be removed.
- The diversity of land managers’ motivations to implement NbS must be recognised.
- Funding must enable long-term collaboration, creating networks and allowing interaction between initiatives.

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<sup>1</sup> United Nations Environment Programme. (2025). Nature-based solutions. Retrieved from <https://www.unepfi.org/nature/nature/nature-based-solutions/>



# MERLIN

## Introduction:

A symposium and field visit, held on 26th September 2025, was attended by around 30 participants coming from Scottish Government, Agencies, Non-Government Organisations and Academia. The symposium provided **an opportunity to explore the progress of restoration work in the Forth Catchment, to discuss opportunities and challenges for upscaling peatland and river-related restoration using a Nature-based Solutions philosophy.** It allowed for a structured discussion of key issues of policy alignment, blending funding and finance, and coordinating upscaling.

The day began with a field visit to the Allan Water – near Blackford, Perthshire – to see instream and floodplain reconnection measures and learn about the monitoring process. Afterwards, participants returned to Edinburgh for presentations (see Annex for slides) on:

- The MERLIN project
- Lessons for upscaling from the Regional Scalability Plan
- Public funding for the environment
- Insights for enrolling private sector funding based on MERLIN
- Agricultural policy as a challenge and as an enabler

Following these presentations, breakout discussions were facilitated to allow participants to share their experiences and expertise. Participants moved around a ‘carousel’ to ensure that they each got a chance to discuss:

- Upscaling: from projects to mainstream
- Funding and financing restoration
- Land use and agricultural policy to support restoration

The event allowed experts on freshwater (river and peatlands) restoration and Nature-based solutions (NbS) to share knowledge about the ways in which we can transform individual projects and site interventions to a more strategic approach to delivering benefits for both nature and people. The discussions were not limited to the MERLIN interventions but allowed people to share experiences from across Scotland. Please note the following points are not attributed to a specific participant or author and do not suggest a consensus among the participants. Participants were given the opportunity to comment on the report before it was finalised and shared publicly.

## Resources

[MERLIN Project](#)

[Freshwater blog: how do ecosystem restoration and nature-based solutions differ, and why does it matter?](#)



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# MERLIN

## Field Visit: Restoration measures along the Allan Water

Much of the restoration work at Allan Water is focussed on re-naturalising the river, which was heavily modified by straightening the river channel to make building the railway line easier in the 1800s. The Forth Rivers Trust (FRT) have been working to restore the river to a more natural state, with the aim of increasing biodiversity, stabilising the riverbanks, and reducing the risk of flooding downstream. This work has included:

- **Installing large woody structures in the channel to encourage sinuosity and create instream habitat.** These have been used to encourage movement of the channel and provide more diverse instream habitat structure – supporting Invertebrates, fish, otters and birds
- **Riparian planting of over 2000 broadleaf trees** to stabilise the riverbanks and provide riparian habitats and shading. However, without grazing control it is hard to get the trees established, so FRT has carried out yearly maintenance with volunteers to increase tree survival rate.
- **Reconnecting the river to its floodplain** by creating three linear scrapes in an area where the embankment was naturally low to allow the river to spill out onto the floodplain when discharge is high. This will boost wetlands locally and will increase storage of water – thereby reducing the risk of flooding downstream.

There is also peatland restoration work in the upper catchment, but this was not discussed as part of the field visit.

### Resources

[MERLIN Case-Study portal](#)

## Field Visit: Monitoring outcomes of measures within the Allan Water

There was no baseline data available for the restoration site, so the partners have used an upstream control site to enable monitoring of progress from the river restoration work. UKCEH and FRT have used a suite of indicators, which were part of the monitoring framework developed by the MERLIN team, to match the sustainability objectives of the European Green Deal. Many of the broader indicators have shown little change from the control site, and it has been recognised that some of the observed variations between the intervention and control sites might be a result of seasonal and interannual variations. It has been acknowledged that the monitoring has covered early stages post restoration and more time is required to assess the effects of the restoration measures, especially responses of biota to changes in the habitat. In conjunction with MERLIN, BEPREP (a sister EU Project) have also undertaken pathogen and vector sampling, which is currently being analysed and will form a part of a pan-EU database on the effects of rewetting landscapes on biodiversity vector / pathogen pathways.

**FRT and UKCEH staff discussed how important long-term monitoring can be for funding of their restoration work**, particularly as it may take many years for the full outcomes of interventions to be observed. Not only do many funders increasingly require monitoring, but it provides the FRT with evidence of their successes when applying for future funding. New technologies are providing new ways of monitoring change: for example, drone footage can be an inexpensive way to capture morphological change over time, and Q-LIDAR remote sensing data can be used to provide highly accurate baseline data. Feeding these data into long term data sets that help illustrate change is also important for upscaling nature-based solutions.

### Resources

[MERLIN deliverable D1.6 Manuscript and policy briefing evaluating success of large landscape-scale restoration](#)

[Forth Case study from BEPREP Project](#)



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## Symposium Discussion: Upscaling: from Sites to Landscapes

A significant challenge for bringing NbS into the mainstream is that many stakeholders currently have limited knowledge of what NbS are, and what the benefits of NbS might be for them. To overcome this, participants discussed several strategies for improving stakeholder support. Firstly, **the language used when explaining NbS should be clearer and assume less prior knowledge**, to make information about NbS more accessible to non-technical audiences. Concrete examples should be used to demonstrate methods whenever possible, as this can make NbS more relatable. Following on from this, there was a discussion about the fact that some of the benefits of NbS may be somewhat intangible and/or not relevant to some stakeholders - therefore communication must be better targeted to specific audiences to ensure that the benefits discussed are relevant to them. For example, if speaking to farmers it might be less relevant to discuss the fact that NbS can have benefits for community health and wellbeing, because communities might not benefit if the measures are on the private land of a farm. Instead, talking about how NbS can improve water resilience – thereby saving the farmer money long-term (both by reducing the risk of flooding, and by improving water storage for use during dry periods) might be far more persuasive. Linked to a need for benefits to be targeted when communicating with stakeholders is a **need for further consideration of how values and benefits are defined and measured. It is essential that non-monetary benefits are also recognised**, and these should also be incorporated in the measurement of ecosystem health – for example, water bodies are currently classified according to the level of degradation, but adding a measurement of lost social benefits could provide additional impetus for action.

Methods for upscaling NbS must not only be targeted to specific stakeholders, but also to the various NbS measures being used. For example, riparian tree planting on council owned land may require different upscaling processes than re-meandering river channels on privately owned farmland.

Also, water bodies are classified by SEPA as part of River Basin Management Planning and therefore **NbS could be targeted at the most degraded and where NbS measures could address the underlying pressures**. This can help upscaling and prioritisation.

Another suggestion was that **large-scale NbS projects would be more effective for increasing stakeholder support**. This is because large-scale projects might have clearer, and potentially more impressive impacts and benefits – thereby making them more attractive to policymakers and investors. Achieving this goal of having larger scale projects could be done by joining up existing initiatives.

**A deeper understanding of people's relationships with the land and nature is required to be able to create support for NbS in local places** – the power of people to bring about change is sometimes overlooked but can be a very important part of upscaling. These grass-roots place-based projects, combined with societal care for nature, can provide the impetus for landscape scale initiatives.

Finally, the planning system could be used more effectively, by using stricter regulations to 'push' stakeholders towards taking action. For example, local authorities can use planning gain to require developers to fund nature restoration as part of granting planning permission.

### Resources

[Forth Catchment Regional Scalability Plan](#)



## Symposium Discussion: Funding and Financing Restoration

Maximising the funding and finance available for restoration is a priority for restoration organisations such as the FRT, but also for the Scottish Government. To do this, there is a **strong focus on utilising ‘blended finance’ – using public funding to leverage private funding, thereby maximising the value of public spending**. Although much of the discussion detailed below was focused on encouraging private sector investment into nature restoration, it is important to acknowledge the key role that public funding continues to play in enabling the development of many projects. The restoration work at Allan water is a good example of this – it has primarily been funded by grants from the Scottish Government and the European Commission, but more recently the project has also won grants from Network Rail and the Scottish and Southern Energy Network.

In the afternoon discussion, participants discussed two overarching approaches to engaging private sector funding in freshwater restoration, which offer different incentives for businesses to get involved:

A **cost–benefit** approach focuses on the social and economic benefits for business resulting from restoration. This is often linked to protecting the business from environmental risks (such as funding river restoration to reduce the risk of flood damage), which can have economic benefits such as increased operational and supply-chain resilience. Restoration can also have social benefits including fulfilling corporate social responsibility and improving consumer perceptions of the company.

A **revenue-based approach** focuses on businesses making money directly from restoration via markets – especially voluntary carbon markets, as these are the most mature. This approach is particularly relevant to investors from the finance sector, as carbon credits can be sold to other businesses seeking to voluntarily offset carbon scope 1, 2 or 3 emissions.

Participants from the private sector and from NGO’s leading restoration expressed a preference for cost-benefits approaches to engaging the private sector. The discussion therefore orientated to exploring key dimensions relating to this approach.

**An important incentive identified by participants was cost sharing**, which a blended finance model can enable. This can be further supported by working on larger scale projects that increase opportunities to access funding from multiple different sources. Working at larger spatial scales can also be more effective for meeting nature restoration goals. Participants identified several major sectors for potential private investment in large projects of this kind: finance, insurance, health, energy, and transport sectors. There were also some suggestions that businesses with a social remit, and especially publicly owned organisations, might be most likely to engage in NbS funding because they have a clearer public good remit with associated duties and targets than profit-oriented corporations.

A central challenge for the financing of NbS discussed by participants was that the long-term nature of restoration work which can be off-putting to many of the stakeholders essential to the delivery of restoration, including landowners. Furthermore, the uncertainty around agricultural and land use policy can put landowners off committing to NbS in case the funding mechanisms change – for example, the Peatland Code requires landowners to commit to a minimum of 30 years restoration. Therefore, there is a political need to provide a clear direction of travel in policy, to give stakeholders the confidence to act.

In terms of revenue-based approaches the need for long-term commitment to NbS projects is also a challenge for investors, because it can take a long time to deliver financial returns. A further challenge for investor confidence is the fact that NbS can be affected by extreme weather events. On the one hand, NbS measures are more easily replaced than grey infrastructure, but investors need to understand how to manage this risk.

However, despite challenges associated with NbS being slow to deliver, there are advantages over traditional grey infrastructure solutions that typically address a problem quickly but may not be as adaptable to changing baselines from climate change. **Understanding how to shift businesses’ thinking from a reactive to a more proactive/ anticipatory way of working is the key to unlock investment** – a research gap that needs to be explored further. One suggestion for making NbS more attractive for private investment was creating a mechanism to reduce and standardise the costs and payments for some nature restoration measures – such as tree planting, which is currently very expensive. Standardising these costs



would simplify financial planning for private sector investors and NbS teams. Exploring how such a mechanism could and should work, and the wider consequences, is therefore a research gap identified within this discussion.

## Resources

[MERLIN deliverable D3.5 Diversifying Funding for Freshwater Restoration using Nature-Based Solutions: Lessons from the MERLIN project](#)

For more information on the uptake of carbon markets in Scotland, see p6 of [Natural Capital Market Framework](#) or for a deeper dive, there is a [PhD Thesis](#) on Carbon Credit Schemes and Land Ownership in Scotland.

## Symposium Discussion: Land Use and Agriculture Policy to support Restoration

Land managers' buy-in is essential for implementing freshwater restoration. These may be a variety of types including those working on land but not farmers or owners (e.g. game keepers). Participants recognised that many land managers are farmers, and that it is necessary to consider what business pressures are likely to affect their decision making. Participants suggested that **larger scale farms might have more capacity to implement restoration measures, as they're likely to have more extensive land and to take a long-term perspective**. Policy interventions like sustainable land management plans for large estates under the Land Reform Bill<sup>2</sup> could encourage implementation. Further support is also required to mitigate differences in objectives held by landowners and tenants (particularly if owners have long term objectives and tenants are focussed on business profitability) and more attention to the specific circumstances of crofters and small holders. Land prices can have a strong influence on how land (and water) is managed, alongside support payments. These support payments include agri-environment schemes and cross-conditionality (e.g. GAEC 6 on protection of wetlands and peatlands). The proposed support payments using 'enhanced conditionality' will couple payments to most farmers with environmental stewardship activities (see below).

Farmers are increasingly aware of issues of water resilience and the threats posed by flooding and drought, potentially making them more likely to engage in NbS to mitigate these pressures. There was quite a bit of discussion of where to target interventions, including whether to focus on headwaters or lower down the catchment, which has different outcomes but also different opportunity costs from the different farming systems. **It is essential that Agricultural Policy does not act as a barrier to farmers wanting to implement NbS; it should allow farmers to continue to receive support payments for land managed for environmental and climate outcomes**. There are potential policy mechanisms being developed to recognise and reward stewardship such as in field or edge of field measures to manage soil erosion and slow the flow during flood events. Perverse incentives that continue to allow interventions that erode ecosystem function, such as drainage of past wetlands, should be stopped.

As well as the need to support farmers on an individual level, participants discussed the **importance of enabling collaboration between landowners, land managers, and other land users**. Farm clusters were discussed as a way of sharing information and best practice, as well as the fact that farmers may be more likely to engage with restoration work if they can see examples from their neighbours. Farm clusters could also enable larger scale, joined up restoration work, which can be more effective than individual projects. Past approaches to agricultural support (e.g. agri-environment schemes) have been based on individual farmer demand and lacked a systemic 'summit to sea' approach. Further additional funding and coordination are required to support the creation of farm clusters or landscape partnerships that allow those affected to be involved in designing and implementing NbS; and to see how they can sustain their livelihoods when considering land use or land management change.

<sup>2</sup> The bill was passed on 25<sup>th</sup> November 2025 but has not yet become an Act.



# MERLIN

## Resources

[MERLIN Sectoral Strategy - Agriculture Sector](#)

[MERLIN Policy Brief - Common Agricultural Policy](#)

**Contact:** Please contact Noah Kelly ([noah.kelly@hutton.ac.uk](mailto:noah.kelly@hutton.ac.uk)) if you have any questions or comments about this report.

The James Hutton Institute is supported by the Scottish Government's Rural and Environment Science and Analytical Services Division (RESAS), through grant JHI-C3-1 and JHI-D2-2.

## Annex

Please see the slides used at the MERLIN Day Symposium below.



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# M E D I S I N I

# Upscaling River and Peatland Restoration for Resilient Landscapes

National MERLIN Day

26<sup>th</sup> September 2025

# MERLIN

Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation

The James Hutton Institute is supported by the Scottish Government's Rural and Environment Science and Analytical Services Division (RESAS).



The MERLIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036337.

## Welcome and housekeeping

- Welcome to Symposium
- Fire alarms, comfort breaks, catering
- Please tell us if we speak too fast or anything is unclear
- Discussions to be noted for short report (not attributable)
- Photos to illustrate the report and for social media
- Please let us know if you wish not to be visible

# Why are we here?

- Share a desire to improve our land and water ecosystems
- Learn about the 'MERLIN Journey'
- Pool our knowledge
- Share resources



## Agenda

Time	Content
14:20-15:00	<b>Presentations:</b> Laurence Carvalho – Introduction to MERLIN Charlotte Neary – Regional Scalability Planning Ewan Lawrie – Public Funding Sources Keith Matthews – Agricultural Policy Amelia Heath – Private Finance <b>Discussant:</b> Peter Phillips (Scottish Government)
15:00- 16.15	<b>Carousel discussions:</b> - Upscaling Projects - Funding and Financing - Agriculture & Land Use
16:15-16:30	<b>Closing remarks</b>

# MERLIN

Mainstreaming Ecological Restoration  
of freshwater-related ecosystems in a Landscape  
context:

INnovation, upscaling and transformation

Laurence Carvalho

Norwegian Institute for Water Research (NIVA)

and

All the MERLIN & FutureLakes teams



Funded by the European Union under Grant Agreement Number 101036337. A Horizon 2020 Innovation Action

## MERLIN in brief

- Demonstrate best-practices and innovations in NbS implementation
- Provide evidence of systemic change – measuring impacts on environmental, social and economic policy goals.
- Co-develop win-win solutions with economic sectors
- Roadmap for upscaling restoration measures
- EU Innovation Action
- 4.5 year project
- 1st October 2021 to 31st March 2026
- 44 project partners
- 18 case-studies
- € 21 million

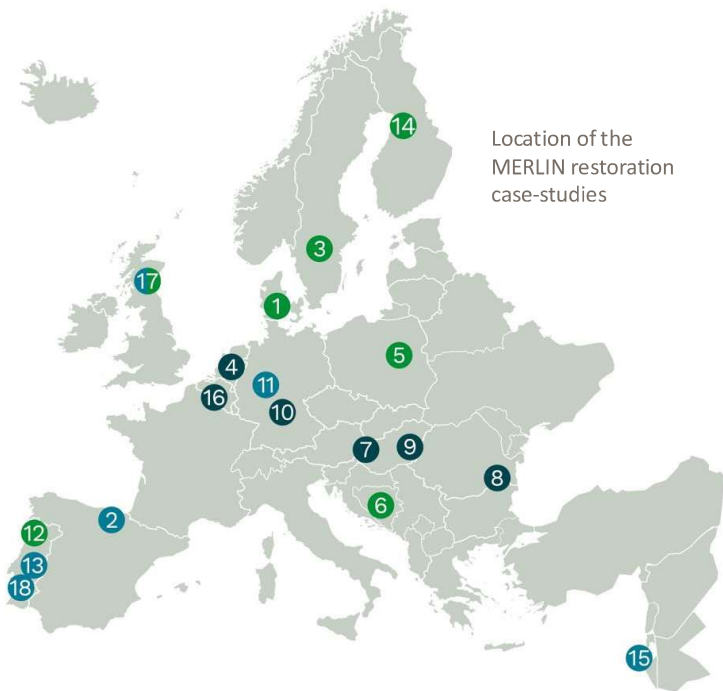


**Sebastian Birk**

University of  
Duisburg-Essen (DE)

*Project Co-coordinator*

# 18 Restoration Case-studies



**PEATLANDS AND WETLANDS**



**SMALL STREAMS AND BASINS**



**LARGE TRANS-BOUNDARY RIVERS**

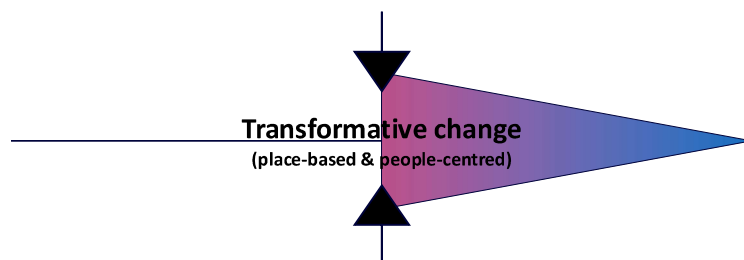
## Transformation in theory

### Barriers & Enablers

Technologies (not implemented)	Technology	Technologies applied and TRL 9
Limited water literacy & engagement	Engagement	Engaged & literate public
Fragmented governance	Governance	Collaborative and inclusive governance
Conflicting policies	Policies	Policy cohesion
Reliance on public financing	Financing	Bundled financing (public-private)

### Current River Basin Management

varies from bad to good practice / systems

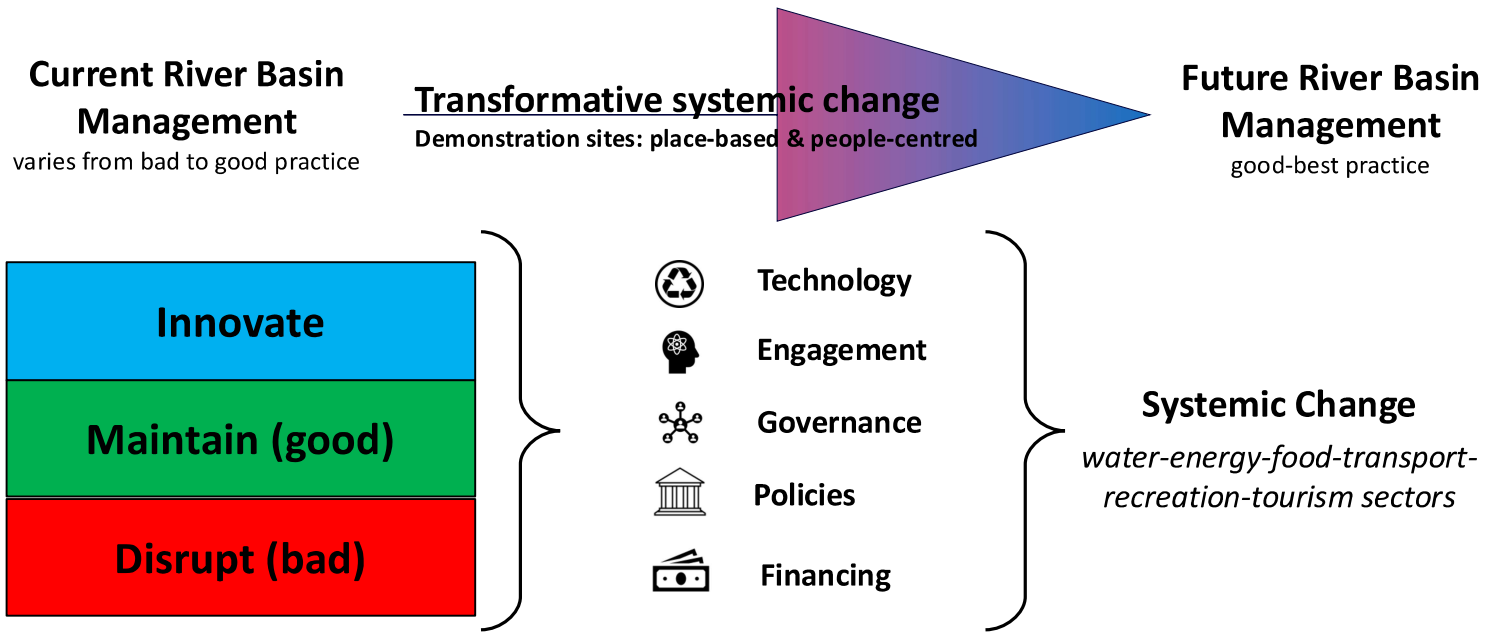


### Future River Basin Management

good-best practice / systems

### Innovation (NbS)

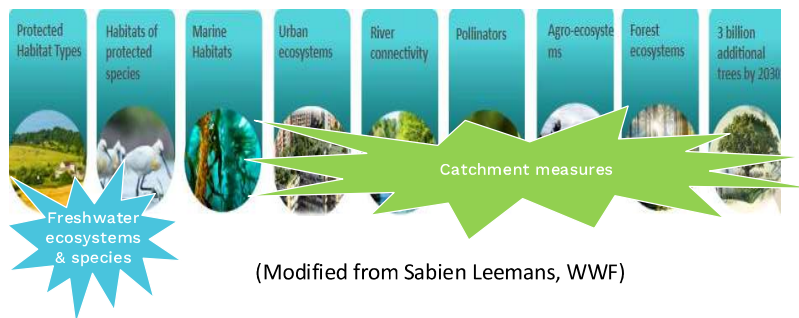
# Three approaches to Transformation



Need to innovate but also maintain the good and disrupt the bad

## Changing EU Policy Landscape

### EU Nature Restoration Regulation



### National Restoration Plans (NRPs)

- **Policy coherence:** synergies with climate change mitigation and adaptation (e.g. NbS for flood mitigation), CAP.
- **Optimise ecological, economic and social functions of ecosystems** – i.e. sustainable development of regions

## EU Water Resilience Strategy



**Governance and Community of Practice:** Toolbox to reduce nutrient pollution and exchanges of best practices on “sponge landscapes”

**Financing for upscaling restoration:** Roadmap for Nature Credits and incentivise the scale-up of these markets, particularly with farmers.

# Changing Scottish Policy Landscape

Need coherent policies to mitigate pressures, reverse damage and restore functions under a changing climate:

Water Environment and Water Services (Scotland) Act & regulations – RBMPs, FRMPs and Water Scarcity Plan (2020)

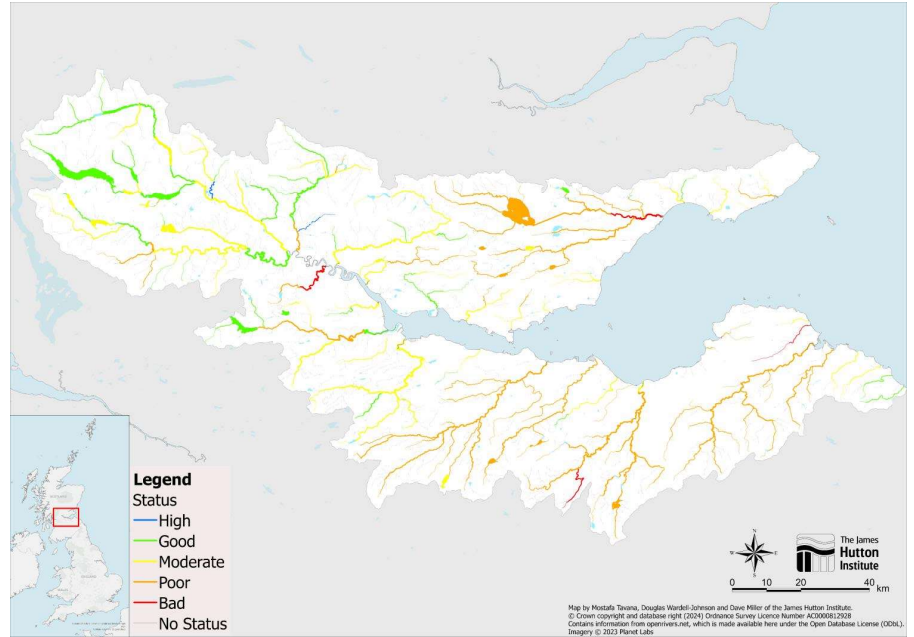
Biodiversity Strategy (2022-2045) - Natural Environment (Scotland) Bill

Climate Change Plan (2018) & Adaptation Plan (2024) – Peatland Plan (2015)

National Planning Framework 4 & Land Use Strategy (2026 – 2031)

Agriculture Reform Programme (2026 - )

Source: [https://project-merlin.eu/files/merlin/rsp/CS17\\_Forth\\_UK\\_RSP.pdf](https://project-merlin.eu/files/merlin/rsp/CS17_Forth_UK_RSP.pdf)



# Demonstrate Innovations in NbS



# Evaluating Systemic Impacts of Restoration



MERLIN Monitoring & Evaluation Framework  
<https://project-merlin.eu/deliverables/articles/deliverable-d1-2.html>

Case study	Environmental	Climate			Social		Economic Sectors			Economy		
	Biodiversity Net Gain	Zero Pollution	Climate Regulation	Flood Resilience	Drought Resilience	Inclusive participation	Health & Well-Being	Farm to Fork	Sustainable Energy	Sustainable Transport	Circular Economy	Green Growth
Kampinos wetland PL	😊	😊	😊	😊	😊	😊	😊	NA	NA	NA	NA	😊
Lima floodplain, PT	😊	😞	😊	😊	😊	😊	😊	😞	😊	NA	😊	😊
Deba barrier removal ES	😊	😊	😊	😊	😊	NA	😊	NA	😊	NA	NA	NA
Emscher basin DE	😊	😊	😊	😊	😊	😊	😊	NA	😊	NA	NA	😊
Sorraia river PT	😊	NA	😊	😊	😊	😊	😊	NA	NA	NA	😊	😊
Upper Scheldt BE	😊	😊	😊	😊	😊	😊	😊	😊	😊	NA	😊	😊
Forth basin UK	😊	NA	😊	😊	😊	😊	😊	😊	NA	😊	NA	😊
Room for the Rhine NL	😊	😊	😊	NA	NA	NA	NA	😊	NA	NA	NA	NA
Danube floodplain AT	😊	NA	😊	😊	😊	😊	NA	NA	NA	NA	NA	😊
Danube reconnect HU	😊	NA	😊	😊	😊	NA	NA	😊	NA	NA	NA	😊
Tisza floodplain HU	😊	NA	😊	😊	😊	NA	😊	😞	NA	NA	😊	😊

**Environmental** – positive for biodiversity (some initial pollution)

**Climate** – positive for flood/drought resilience

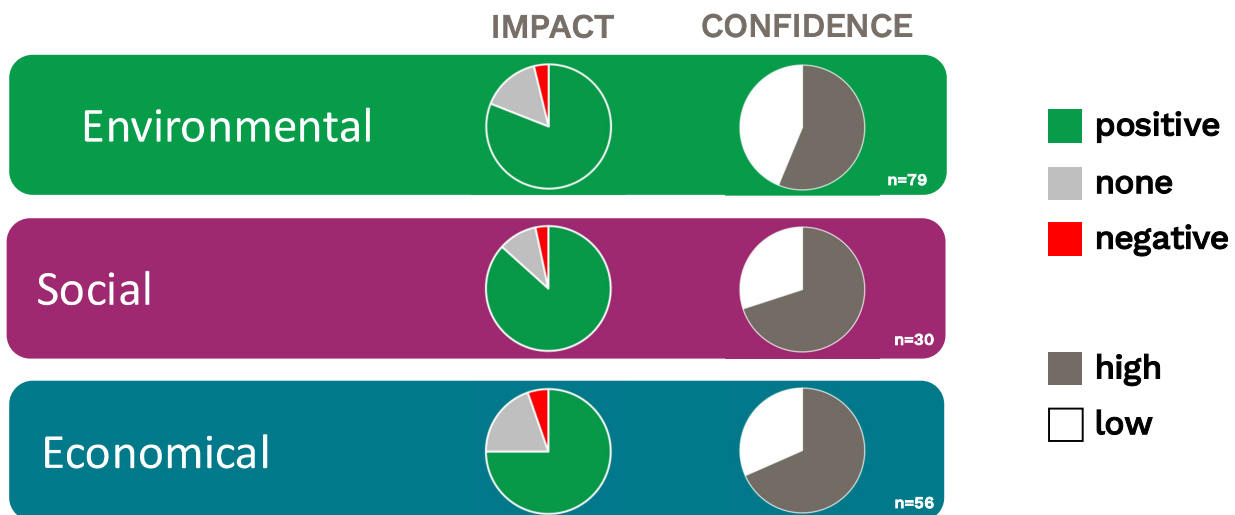
**Social** - positive or no change

**Economic sectors** – stable or negative impacts for farming

**Economic growth** – positive for green growth

Axel Schwerk et al. (2025) <https://project-merlin.eu/deliverables/articles/deliverable-d1-6.html>

## Summary of Systemic Impacts & Data Confidence



# Innovation: Financing & Policy Cohesion



#1: Donation-based crowdfunding



#2: Corporate donations



#3: Tourism and agriculture activities



#4: Debt instruments



#5: Credit Guarantees



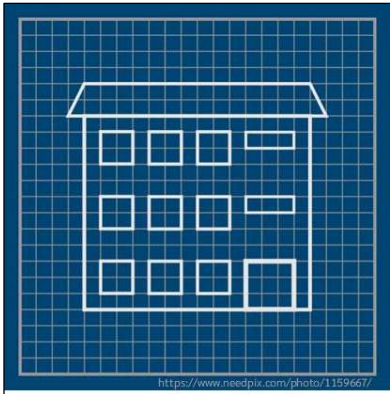
#6: Public-Private Partnerships

## Carbon markets – C sequestration & emission reductions

### Nature credits (Farming)



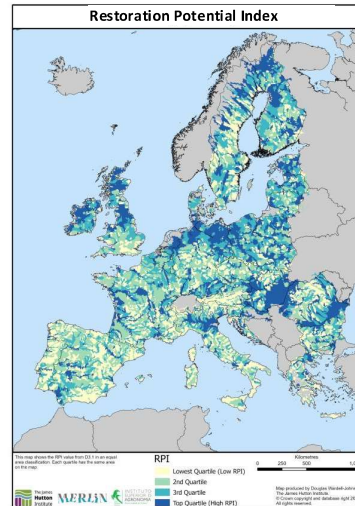
# Scaling-up Restoration



Knowledge on the building blocks for successful restoration



Education & Training



Mapping tools on Restoration Potential

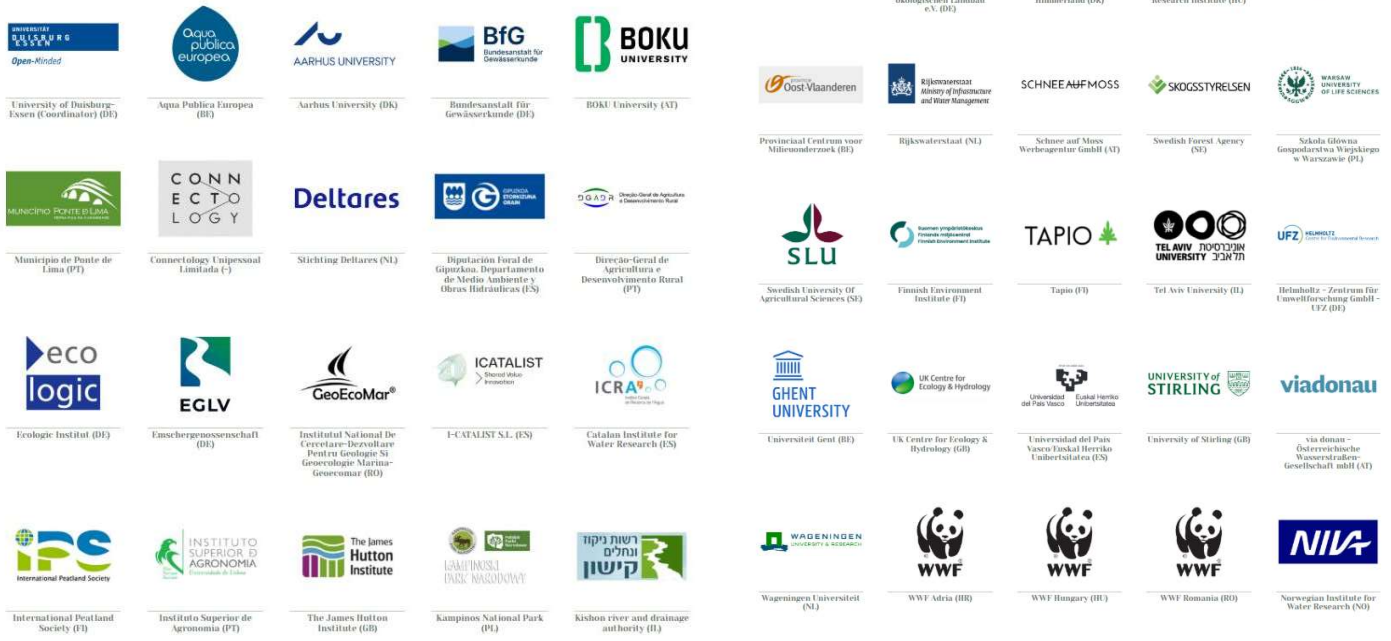


Communities of Practice



Regional & Sectoral Plans

# Thanks!



[www.project-merlin.eu/](http://www.project-merlin.eu/)

# MERLIN



[laurence.carvalho@niva.no](mailto:laurence.carvalho@niva.no)



[laurence-carvalho](#)

**Business as usual**  
**Working with rivers**

## Vision for European rivers

Nature-based solutions are actions to protect, sustainably manage and restore ecosystems. In European rivers they are ...

- addressing societal challenges effectively and adaptively, **benefiting people**
- enhancing ecosystem functions, **benefiting nature**

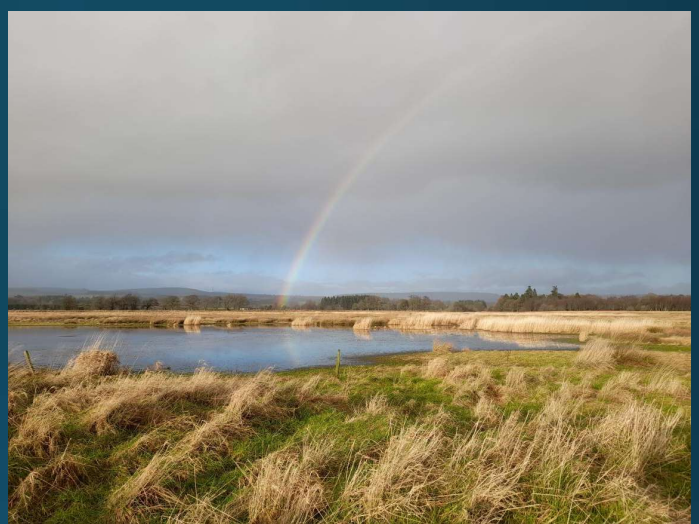
### Measures

- floodplain reconnection / re-meandering rivers (1)
- wetland restoration (2)
- river bank restoration (3)
- dam removal (4)
- increase of water infiltration (5)

### Benefits for both people and nature

- reduced downstream flood risk (A)
- less pollution / clean drinking water (B)
- recreation & enjoyment (C)
- drought resilience & carbon storage (D)
- wetland habitats (E)
- biodiversity (F)
- safeguarding natural water weeds (G)

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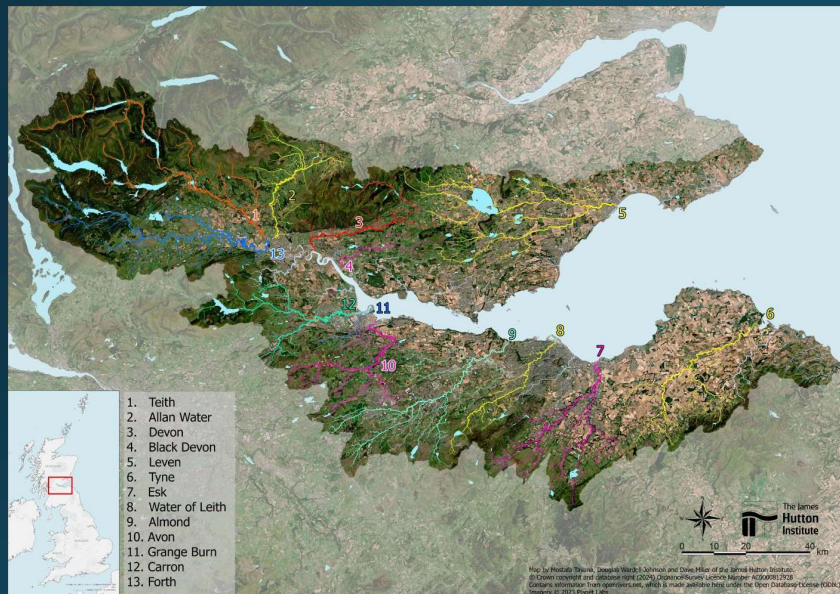


# MERLIN Symposium 2025

## The Forth Catchment Regional Scalability Plan



# Upscaling River and Peatland Restoration



A plan to enable landscape-scale change to improve biodiversity, natural flood management and climate resilience measures across the Forth Region by 2050, while allowing stakeholders the means to live, work and thrive on the land

The main pressures to overcome;

Poor water quality

Barriers to fish passage,

Poor natural river / peatland function

Habitat decline

Invasive non-native species.



# Stakeholder Engagement



One to One Discussions



Small Sectorial Meetings



Round Table Meeting

Local Authorities

Local Communities

Land Managers

Government Bodies

Non-Government Bodies

Research Institutes



# Forth Region Primary Goals



Biodiversity

Climate Regulation



Flood and Drought Resilience

Zero pollution



Inclusivity

Green Growth



# Forth Region Secondary Goals



Knowledge – Monitoring

Sustainable Transport Goals

Sustainable Energy Goals

Health and wellbeing

Sustainable food system goals



# The Role of the NGO



Mobilising Communities

Facilitating Funding and Investment

Networking and collaboration

Scaling up solutions

Bridge the gap between Implementation and policy

Advocacy and Awareness

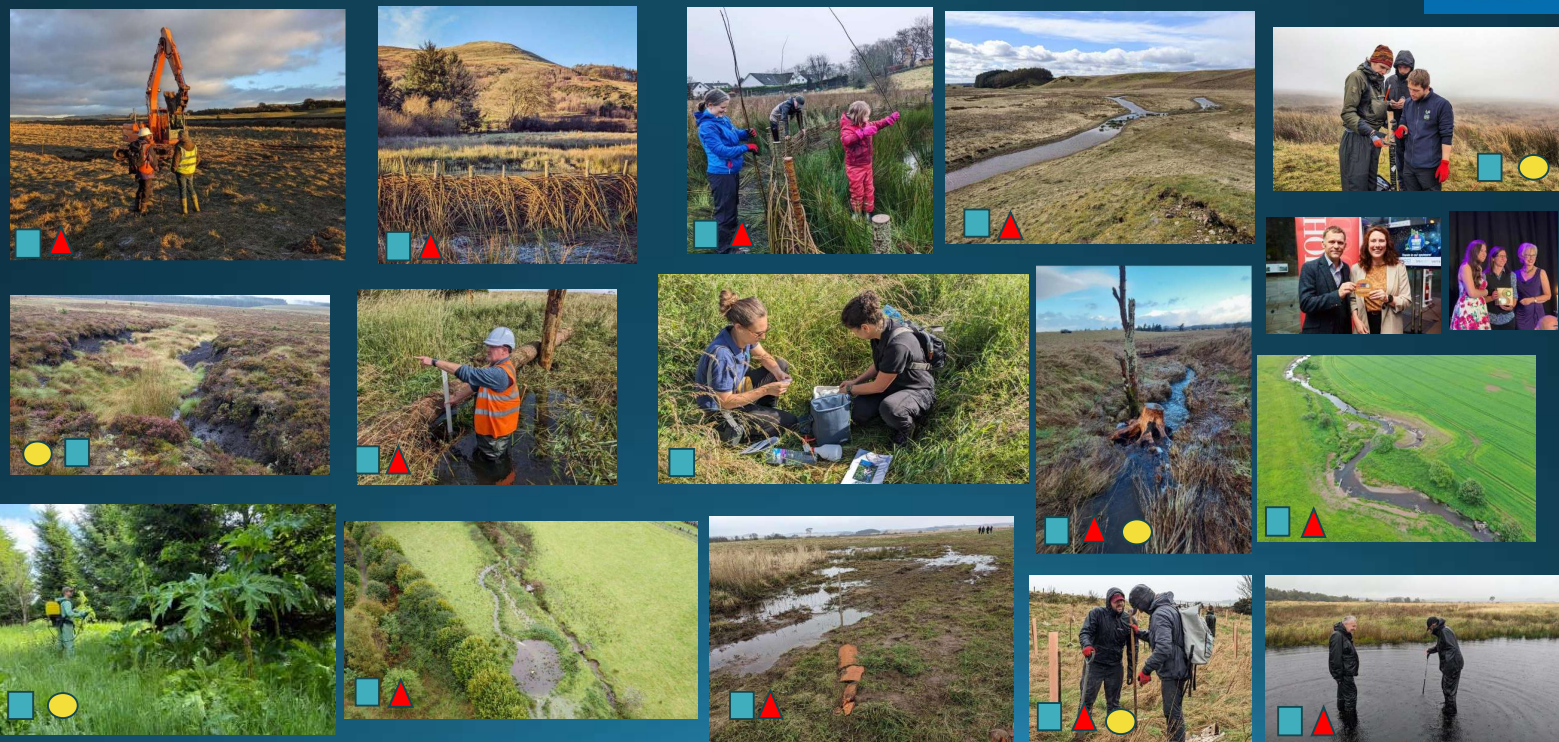
Providing technical expertise

Adapting strategies



# Thanks for Listening

MERLIN  
Government Funding  
Business Funding



# MERLIN Symposium

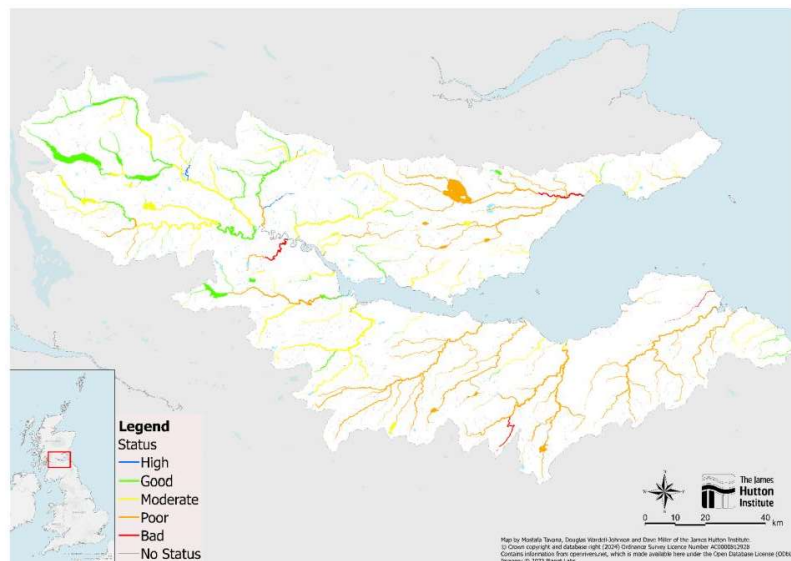
Upscaling River & Peatland Restoration for Resilient Landscapes

Ewan Lawrie  
Freshwater Advisor – NatureScot

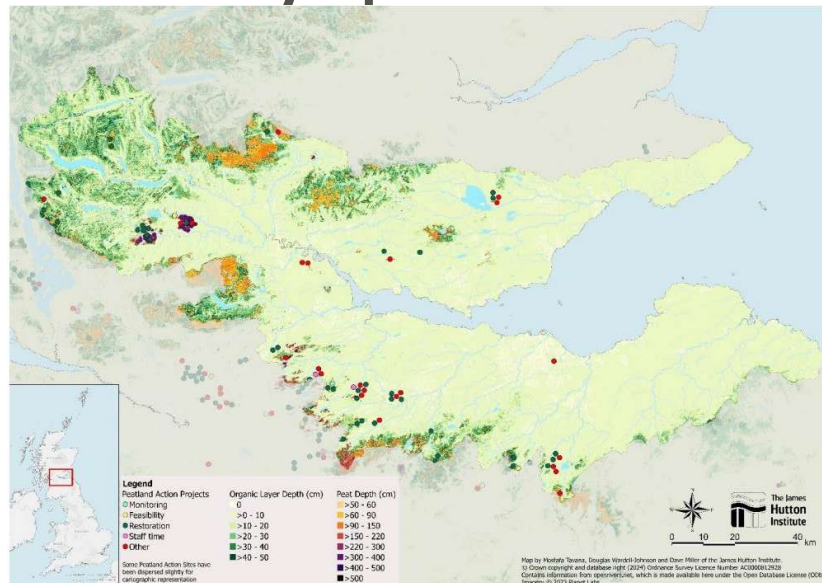
26 September 2025



## MERLIN Symposium



# MERLIN Symposium



# MERLIN

# MERLIN Symposium

## Upscaling River & Peatland Restoration for Resilient Landscapes

- Government Policy
- Improving The Way We Manage Waters
- Direct Support for Action
- Empowering Action
- Changes to Land Management

# MERLIN

# MERLIN Symposium



## River Basin Management Plan

This river basin management plan (RBMP) sets out a framework for protecting and improving the benefits provided by the water environment across Scotland. The Scottish Government, Scottish Environment Protection Agency (SEPA), responsible authorities and all of Scotland's other public bodies – are responsible for developing and delivering the RBMP actions



# MERLIN

# MERLIN Symposium



## River Basin Management Plan

- Currently on RBMP 3 2021-2027
- Shortly start drafting RBMP 4



# MERLIN

# MERLIN Symposium



Scottish Water is a publicly owned, independently regulated and commercially run organisation

Answerable to the Scottish Parliament through Scottish Ministers

It supplies water and wastewater services to households and businesses



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- Improve water quality (to support Scotland's RBMP objectives)
- Increase monitoring and reporting to cover all combined sewer overflows (CSOs) that discharge into the highest priority waters.
- Significantly reduce sewer-related debris in the environment
- Reduce spills from the sewer network



# MERLIN

# MERLIN Symposium

## The Water Environment Fund



- Improving Fish Migration Past Redundant Structures
- Improving River Corridors
- Invasive non-native species (INNS)



MERLIN

# MERLIN Symposium

## The Water Environment Fund



- Administered by SEPA
- Currently Focused on More Urban Areas
- Not currently funding Invasive non-native species (INNS)
- Works in partnership with Local Authorities.



MERLIN

# MERLIN Symposium



The strategic goal of the Nature Restoration Fund (NRF) is to catalyse action at scale to **protect and restore Scotland's biodiversity on land and sea**

The NRF is one of the main delivery mechanisms of the Scottish Biodiversity Strategy



# MERLIN

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**Habitat and species** restoration: Management for enhancement and connectivity.

**Freshwater** restoration, including restoration of natural flows in rural catchments.

**Coastal and marine** initiatives which promote restoration, recovery, enhancement or resilience of nature.

Control of **invasive non-native species** (INNS) impacting on nature.

**Urban**: Enhancing and connecting nature across, and between, towns and cities.



# MERLIN

# MERLIN Symposium



- Competitive Fund Administered by NatureScot
- Two-Stage Application Process EoI and Full Application
- Supports Development and Delivery Projects
- Favours Landscape Scale Projects
- Often used in combination with other funding
- Separate Funding Stream also SG Funded administered by Local Authorities



MERLIN

# MERLIN Symposium

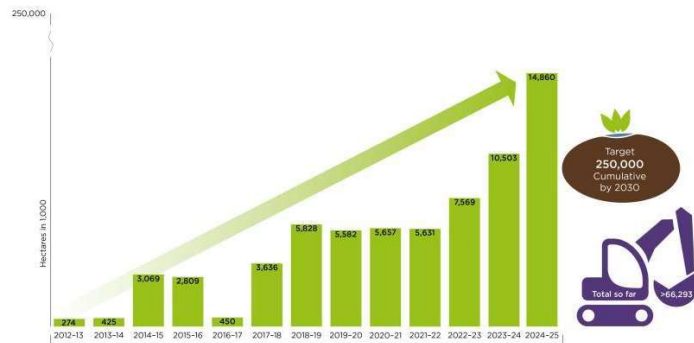


Peatland ACTION funding - from Scottish Government - primarily supports on-the-ground peatland restoration activities and is open for applications from eligible land managers who have peatlands that would benefit from restoration. There are no geographical restrictions or target areas for Peatland ACTION funding.



MERLIN

# MERLIN Symposium



Hectares delivered by the Peatland ACTION Programme. Published July 2025.  
Data is subject to change as projects are completed and verified.



# MERLIN Symposium



- Led by NatureScot
- Funding Committed until 2030
- Two-Stage Application Process EoI and Full Application
- Favours Large projects that cover the whole hydrological unit
- Often used in combination with other funding
- Three key constraints – to increase demand, streamline and improve design, and increase capacity and skills to deliver
- IUCN Peatland Code



# MERLIN Symposium

## FIRNS The Facility for Investment Ready Nature in Scotland Fund

(FIRNS) is a collaborative initiative led by the Scottish Government, NatureScot, and the National Lottery Heritage Fund. It supports the development of environmental projects that attract responsible private investment in Scotland's natural capital. It aims to

- Attract more high-integrity private investment in Scotland's natural capital
- Achieve or enable the aims of Scotland's Natural Capital Framework
- Grow the number, scale and diversity of projects that seek to attract private investment in natural capital restoration.
- Support Scotland's land managers in accessing Natural Capital Markets.
- Strengthen market demand.

The logo for the MERLIN Symposium, featuring the word "MERLIN" in a stylized, blue, serif font with a slight shadow effect.

# MERLIN Symposium



## Investing in nature: a plan to support investment in biodiversity and climate adaptation in Scotland

A plan of action to support the creation of a nature finance system that enables funding and finance to flow into high integrity biodiversity outcomes, supporting our Strategic Biodiversity Framework.

### Starting with map the opportunity

We will develop a **nature investment prospectus** that highlights the larger-scale opportunities for different sources of finance to enhance biodiversity.

The logo for the MERLIN Symposium, featuring the word "MERLIN" in a stylized, blue, serif font with a slight shadow effect.

# MERLIN Symposium



The Agri-Environment Climate Scheme (AECS) promotes land management practices which protect and enhance Scotland's magnificent natural heritage, improve water quality, manage flood risk, preserve historic sites and mitigate and adapt to climate change.



# MERLIN

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- Capital and Management Payments
- Multi-year contract
- Maintenance period
- Mostly Fixed Costs



# MERLIN



# The role for Agriculture Policy in Mainstreaming Aquatic Restoration

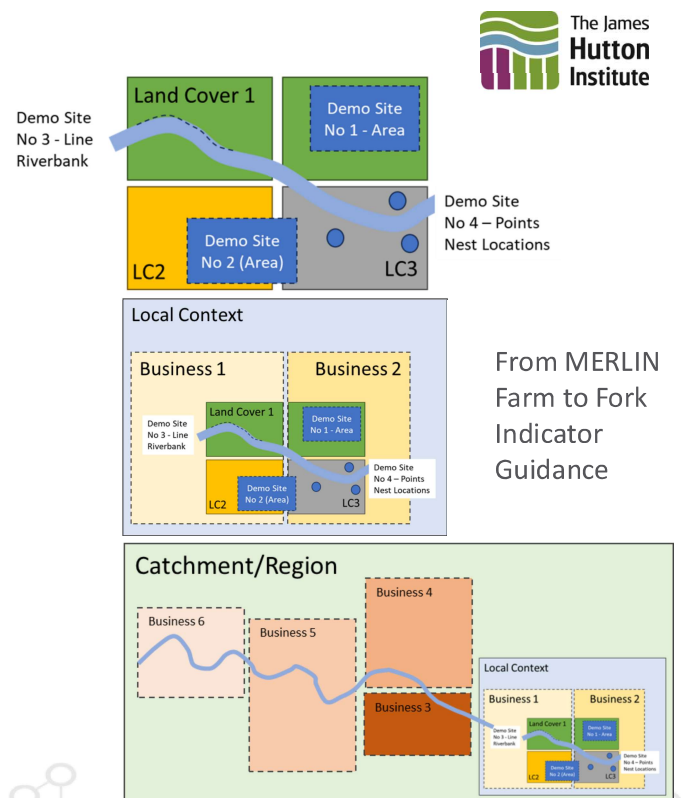
Keith Matthews, Doug Wardell-Johnson, Dave Miller, Kirsty Blackstock  
September 2025



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## Key Messages

- Why agriculture matters for aquatic restoration
  - Context for rivers and wetlands
  - Sites, businesses, catchments ↻
- Merlin EU – Ag. Sector Strategy
  - Summary of high-level messages
- Role for agriculture in a regional scalability plan
  - Using Forth Basin example.
- Architecture of agriculture policy in Scotland.
- Agriculture Policy choices that will matter.



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# Why agriculture (policy) matters

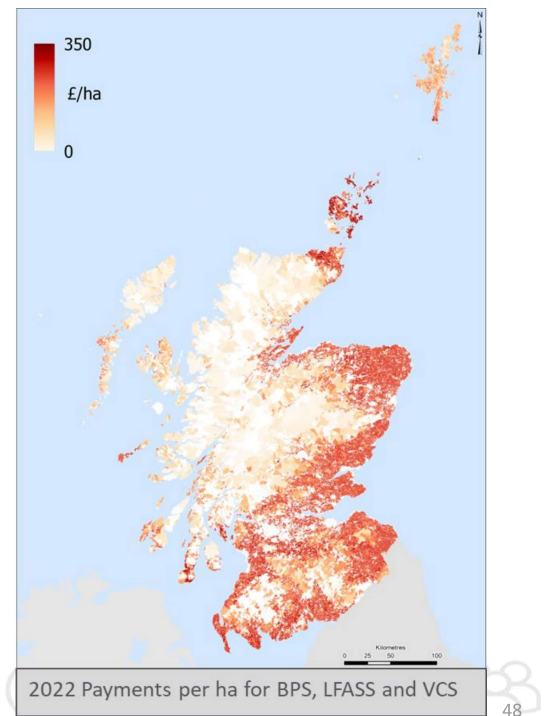
## Physical Context for rivers and wetlands – Area

	Note	Area (M ha)	%
Scotland	all land	7.7	
Mapped in LPIS*		6.5	84%
Single Application Form	land use	5.4	70%
Basic Payment Scheme	active	4.1	53%
Payment Region-1		1.9	25%

## Agricultural Management – shapes states, pressures and impacts, but is also responses

## Agricultural Policy

- Funding (2022)** – Overall **£587M**, direct - £419M → agri-environment **~£65M** per annum\*\*
- Regulation** – shaping management via Statutory Management Requirements, Cross-Compliance, GEAC, Whole Farm Plans, scheme guidance.



\*Land Parcel Identification System  
 \*\*This value is averaged 2016-2022

# Merlin Ag Sector Strategy

## Agriculture Sectoral Strategy

Read the strategy here →

**KNOWLEDGE**

**FINANCE & POLICY MECHANISMS**

**NbS in this context**

- Interventions on agricultural lands that benefit agricultural practices and improve freshwater ecosystems to increase the provision of multiple ecosystem services.
- Increase resource use efficiency to cut pollutant emissions and reduce water abstraction.
- Optimize soil, crop, and livestock management to enhance soil functions, nutrient cycling, and water retention.
- Restore catchment hydrology to support nutrient recycling, pollutant breakdown, and water storage.

**Action B** Sharing knowledge public support mainstream

**Action C** Reforming to rebalance up environ broaden the

**Action F** Strengthen that reward the investm transition to

**VISION**

A transformed Agriculture Sector mainstreams NbS into its practices, fostering resilient, appropriately productive, sustainable, and interconnected farming systems.

The NbS are implemented at:

- Field and farm
- Stream (sub-catchment)
- Floodplains (large catchments)

www.project-merlin.eu freshwaterblog.net  
merlin-project merlin-eu MERLINproject.eu

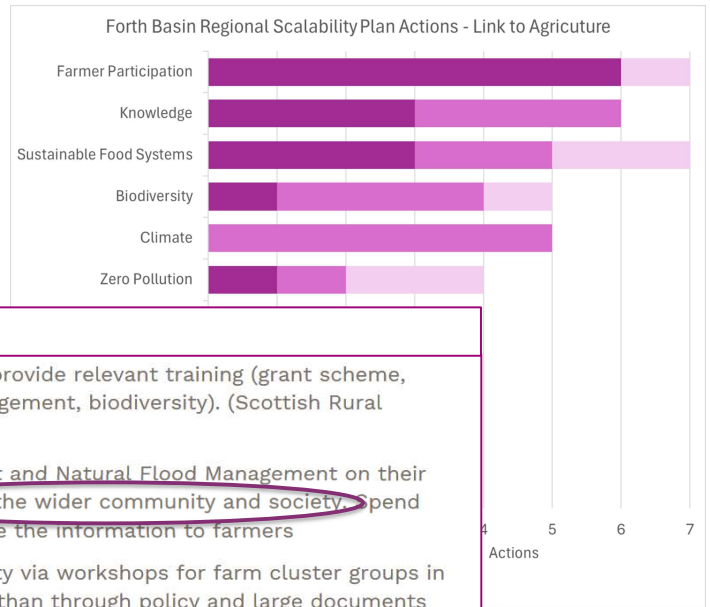
The MERLIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036337.

# Forth Regional Scalability Plan (RSP)

RSP addresses:

- a wide range of actions (42)
- unified by expectations of mainstreaming and transformation

Agriculture often a key part (18)



## Example - Farmer Participation Actions

**Action 4** - Regard land managers as **active conservation agents** and provide relevant training (grant scheme, green finance, offsetting, nature based solutions, natural flood management, biodiversity). (Scottish Rural Agricultural College)

**Action 5** - Give farmers feedback regarding biodiversity enhancement and Natural Flood Management on their land after restoration (survey results), allow them to **gain pride from the wider community and society**, spend money on tools and staff time for restoration practitioners to provide the information to farmers

**Action 6** - Communicate effectively with land management community via workshops for farm cluster groups in each catchment, farm visits and local social media platforms rather than through policy and large documents that they have not got the time to consult with.

**Action 7** - Engage **the community in their catchments** through events, citizen science and / or volunteering

# Vision for Agriculture Support beyond 2025

From the Agriculture (Scotland) Act 2022

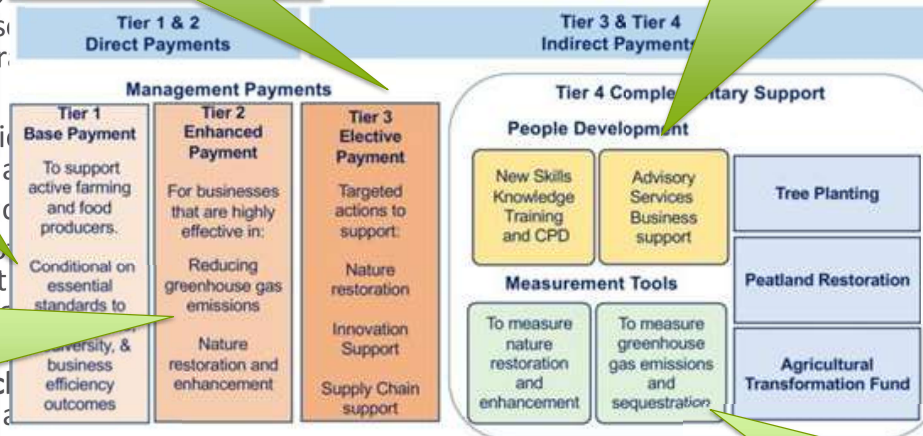
"CAP Pillar 2" – Agri-environment, but also business/supply chain actions – NbS as business opportunity.

Investing in people – as agents of change  
New skills, business (re)development.  
Roles for peer-to-peer and NGO facilitation.

1 Overarching objective

Business Viability – but also levelling up environmental performance.

Mainstreaming Agri-environment Actions  
New requirements linked to payments, menu of options.

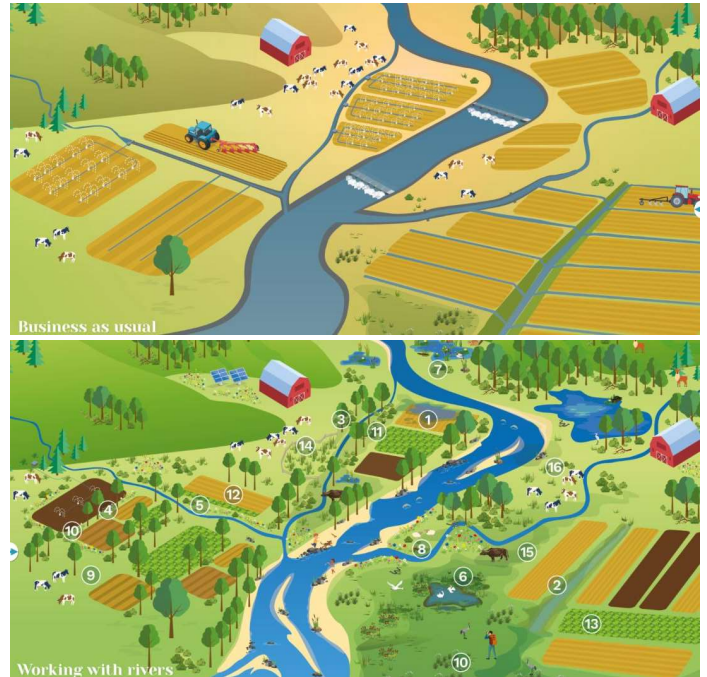


Wider System  
Trees – often multifunctional.  
Peatlands – separate funds.  
Transformation – need vs. funding.

Measuring what we value – reducing uncertainty on long term outcomes.

# Agriculture Policy - Choices that matter

- **Agriculture Support Plan** – from the Act.
  - Balance between the components (Tiers) – budgets and kinds of finance:
    - Revenue - maintenance
    - Capital/Loans - creation
    - Transformation (e.g. organic conversion)
- **Getting the “credit” for existing measures**
  - On “exclusions” (~0.8M ha) – e.g. riverbanks
- **Identifying space where restoration can occur?**
  - More NbS activity on the “unclaimed” land (~1.4M ha).
- **Advice and Evaluation** as a “knowledge system”:
  - Right measures, right place, done right;
  - Convincing, grounded, open data;
  - Facilitating peer-to-peer mainstreaming.



Source for the graphic – [CAP Policy Working Paper](#) 52



# MERLIN Symposium 2025

The Role of Private Finance in Upscaling Restoration



# The Challenges

Moving beyond the known...



The concept-practice gap

Carbon and Nature market shortfalls

Public funding and policy alignment

Mechanisms, governance and legal frameworks

Who owns these solutions?

Risk, efficacy and scale in return-based funding models

Adapting funding schemes and blended models

Integrating Biodiversity Strategy priorities



Model	Funding type	Market type	Example	FRT Experience during MERLIN period	Project/Private Funder/ Amount
Cost-benefit	Process	Voluntary	Regenerative agriculture programmes (e.g. Farm clusters, Landscape Enterprise Networks)	Success in recruiting landowners and funders  Ongoing wider successes in integrating community benefits	Leven LENS – Diageo, SSEN ~£200k in year 1 Leven LENS – Diageo, SSEN + - £350k in year 2  <b>Farm cluster models – in development</b>
Cost-benefit	Outcome	Voluntary	BNG / BNG-type outcomes	Success in recruiting landowners and funders	<b>Knoxfauld Peatland – Network Rail £150k pending for delivery</b>  <b>Tracks to Tribes – Network Rail ~15k development</b>  <b>Danny Burn tree planting - Network Rail ~£99k delivery</b>  Devon Restoration - SPEN ~£10k (development); ~£400k pending for delivery  Midlothian Esks – SPEN ~£11k (development)
ROI	Outcome	Voluntary	Wyre NFM	No experience	N/A
ROI	Outcome	Regulated	Peatland Code Woodland Carbon Code	Failure to recruit landowners into Peatland Code projects	None



## I. The Challenges



## II. The Opportunities



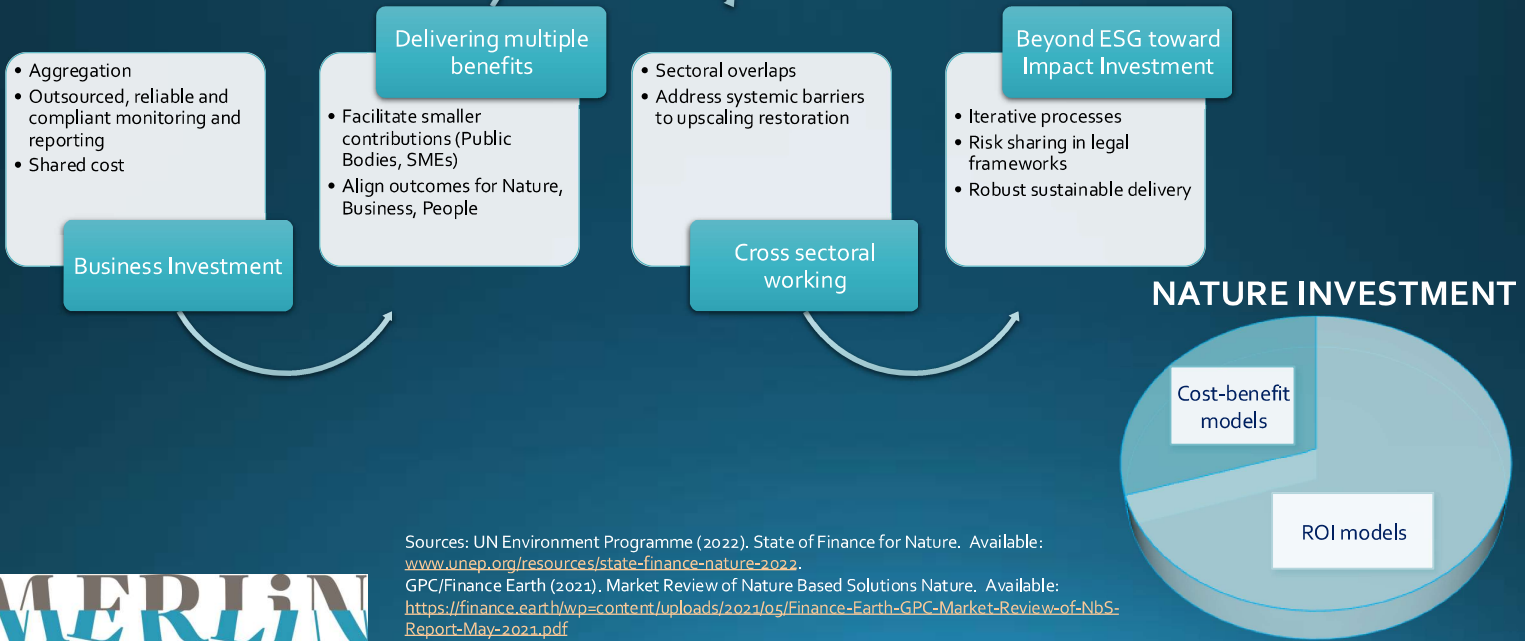
## III. The Vision



# The Opportunities

Path of Opportunity in the Forth: Cost-benefit funding types

~£1m commitment so far in cost-benefit funding



# The Vision: Holistic Landscape Finance



## Natural capital markets in Scotland: Objectives and recent developments

**Dr Peter Phillips, Head of Natural Capital Land  
Management Policy**

In the service  
**of Scotland**



Scottish Government  
Riaghaltas na h-Alba

## Scottish context

- Part of a broad, long-term natural capital approach
- Investing in nature for economic, social and environmental policy outcomes
- Greater emphasis – in a UK context – on land reform and community development
- SG aims to secure the opportunities and manage the risks from nature markets
- Principles for responsible investment in natural capital

## Actions

### 2024 Natural Capital Market Framework

- Ecosystem Restoration Code
- Carbon Contracts – blended finance for peatland restoration
- Investment Prospectus
- FIRNS grant funding for investment readiness projects
- Alignment with UK and International developments (e.g. BSI programme)

# Blended finance

Working definition of blended finance policy intent from SG perspective:

*Maximise the value of public spending and support increased nature restoration activity by “crowding-in” responsible private investment.*

*This could mean delivering more activity by unit area and / or more, better or different outcomes with the same or less public expenditure.*

## Some reflections...

**Contact** – Keith Matthews, The James Hutton Institute, Aberdeen, AB15 8QH,  
Tel - +44 (0)1224 395271, Email – [keith.matthews@hutton.ac.uk](mailto:keith.matthews@hutton.ac.uk)

Further research in the RESAS Strategic Research Programme 2022-27, in the [Land Use Transformations](#) (C3-JHI-1) and [Land Reform](#) (E3-JHI-1) projects.

Land Use Transformations - [Storymaps Collection](#), with [Land Use Change Scenarios](#), [Adding Farm Structure to Land Use Change](#), [Peatlands and Payments](#), [Updating Peatland Condition Mapping](#), [Updating Land Capability for Agriculture](#) and [Climatic Water Balance in Scotland](#).

Website for [Agrometeorological Indicators](#) across the UK under current and future conditions.

The [Review of Land Ownership Data in Scotland](#).

Previous related analyses are from the Hutton Land Systems Research Team website - <https://ics.hutton.ac.uk/research/land-systems-research-team/>

The sets of slides and maps generated in Agriculture Policy analysis from 2010 onwards are available from - <https://ics.hutton.ac.uk/research/land-systems-research-team/cap-analysis/>

For woodland expansion analysis see - [online mapping](#) and [paper](#).

The James Hutton Institute is supported by the Scottish Government's Rural and Environment Science and Analytical Services Division (RESAS)



## Carousel to discuss three main issues

Participants move around all three stations.

30 minutes for first session; then 20 minutes each for next sessions.

- Upscaling Projects – Group 1
  - Charlotte & Hassan
- Finance & Funding – Group 2
  - Amelia, Ewan, Esther
- Agriculture & Land Use – Group 3
  - Keith, Kirsty



## Next Steps

- Reflections from each carousel station
- Any remaining questions or comments
- Feedback – post-it notes or email your thoughts



## Next Steps

- Project funding ends March 2026 but work continues....
  - FRT portfolio of activities
  - NatureScot/Peatland Action funding and support to policy
  - UKCEH & University of Stirling work on monitoring and digital twins
  - JHI support to Agricultural policy; NbS & Natural Capital research
- Send draft report for comment by end of October
- Please add any relevant links or reflections by end of November
- Finalise and upload report on website by end of December 2025

# Thank you!

Contact:

[kirsty.blackstock@hutton.ac.uk](mailto:kirsty.blackstock@hutton.ac.uk) for information on the workshop content & next steps  
[C.Neary@forthriverstrust.org](mailto:C.Neary@forthriverstrust.org) and [Ewan.Lawrie@nature.scot](mailto:Ewan.Lawrie@nature.scot) for information on the measures  
[Keith.Matthews@hutton.ac.uk](mailto:Keith.Matthews@hutton.ac.uk) and [a.heath@forthriverstrust.org](mailto:a.heath@forthriverstrust.org) for policy/finance

Further reading:

- Deliverables: <https://project-merlin.eu/deliverables.html>
- Resources: [MERLIN Academy - MERLIN project](#)
- Interested in working with other businesses - check out <https://merlin.market/>



The MERLIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036337.

Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation 