



The use of evidence in Riverwoods: what we found from talking with key stakeholders

Keith Marshall, Tami Wooldridge & Kerry Waylen
December 2024



The James
Hutton
Institute

Who are we and what have we been doing?

- We are carrying out research exploring the role that evidence, and knowledge more broadly, plays in enabling ‘Nature-based Solutions’ (NbS)



Keith
Marshall



Tami
Wooldridge



Kerry
Waylen



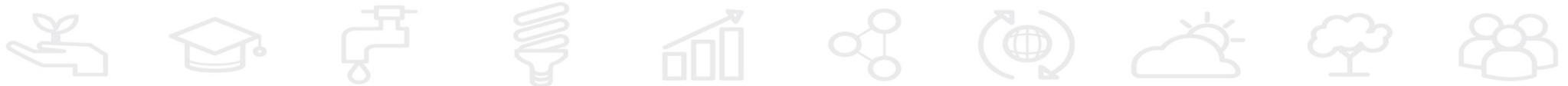
- We are part of a research project called Achieving Multi-purpose Nature-Based Solutions, project JHI-D2-2 in the 2022-2027 RESAS strategic research programme <https://www.hutton.ac.uk/project/achieving-multi-purpose-nature-based-solutions/> This document corresponds with Milestone M4c within WP4 of that project, which explores the roles of stakeholders in catchment-related NbS.



Why look at Riverwoods?

- Nature-Based Solutions (NbS) are “actions to protect, sustainably manage, and restore natural & modified ecosystems that address societal challenges effectively & adaptively, simultaneously benefiting people and nature” ([IUCN NbS definition](#)).
 - They are vital to achieving sustainable outcomes for people and nature
- Riverwoods works with stakeholders from a range of sectors to develop ways to increase the pace and scale of riparian woodland restoration across Scotland ([Riverwoods](#))
- It seeks to demonstrate the multiple-benefits provided by riparian woodland, and support and enhance their restoration across Scotland.
 - Riverwoods' approach and aims can be understood as working towards Nature-Based Solutions.
 - Riverwoods published an Evidence Review (2022) ([Evidence Review](#)) that collated the available evidence for the multiple benefits that river woodlands might provide. As such it formed the starting point for our research on evidence use to support the implementation of nature-based solutions.

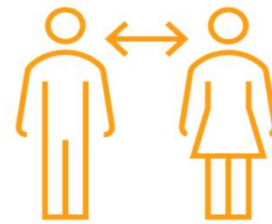
Riverwoods provides us with a unique opportunity to (co)-learn about evidence use and knowledge sharing in NbS.



Why are we doing this work?



To test assumptions about how NbS might be enabled to help address urgent societal challenges including the degradation of nature, climate change mitigation and adaptation, and management of scarce resources



Specifically, to better understand the use of knowledge (evidence-based and more broadly) in enabling NbS e.g.:

The usefulness of evidence, such as a compilation of scientific information, as a tool to assist problem-solving

The need for tailored and reflexive approaches to using evidence and sharing knowledge

The extent to which knowledge use is dependent on the social processes involved, not simply the sources of evidence on which an actor's knowledge is based

What are we considering in relation to evidence and knowledge use?

Our expectations are based on current academic concepts:

- Knowledge is complex (e.g. Raymond, 2010, <http://dx.doi.org/10.1016/j.jenvman.2010.03.023>)
 - Lots of different ‘knowledges’ - sources, subjects, types...
- Knowledge *use* is complex (e.g. Arnott & Lemos, 2021, <https://doi.org/10.1016/j.envsci.2021.02.016>)
 - Affected by how it is acquired, communicated, and received, not just its content
 - Lots of different types of ‘use’ e.g. conceptual, strategic, problem-solving, decision-making
 - Knowledge is processed via facilitated interactions including, shared learning (e.g. workshops, webinars), and using M&E processes to inform future actions
- Considering the Riverwoods Evidence Review as a ‘boundary object’
 - The credibility, relevance, and legitimacy of a boundary object arises from both the product, and the process, through which it came about (Cash, 2003, <https://doi.org/10.1073/pnas.1231332100>)
 - A boundary object creates a common point of reference for stakeholders, and can be used in different ways depending on stage of a process, type of stakeholder involvement, etc.



Our research questions



1. What types of evidence and knowledge influence support and action for NbS?



2. How does knowledge come to be shared and used?

Observe use of evidence across Riverwoods exploring when, how, why, and to what effect.
What governance processes help with knowledge sharing across sectors?



3. What other key factors shape or constrain knowledge use?

To what extent does the available knowledge meet stakeholders' knowledge needs?
Is there evidence of learning via knowledge sharing processes?



How did we look at evidence and knowledge use in Riverwoods?

Data collection:

- Background: Collation of background information associated with Riverwoods and observation of selected meetings (Science Group in relation to the Evidence Review, webinar in relation to NbS financing)
- Semi-structured interviews during 2023 with 10 individuals from across the Riverwoods Science, Finance, and Delivery groups www.riverwoods.org.uk/groups/

Data analysis:

- The research team carried out a thematic analysis of the interview transcripts (2023-early 2024)
While we talked to a cross section of stakeholders, we appreciate that others involved would have their own views on evidence use, and that people's experience may influence these as Riverwoods continue

Feedback to Riverwoods:

- A prior version of this Powerpoint report was presented to and discussed with Riverwoods' coordinator in July 2024, and shared so that it could be used internally with others involved in Riverwoods.

Topics we discussed with the interviewees

- Their background, knowledge, and experience.
- What knowledge do other stakeholders bring, and what other types of experience or expertise do they think would be useful?
- How are different types of knowledge used in Riverwoods, and how might these be captured, shared and used to increase NbS uptake?
- What knowledge gaps do they consider as hindering river woodland projects at scale, and restricting cross-sectoral involvement in NbS?
- What additional challenges are encountered when seeking to realise the multiple-benefits of river woodlands and wider NbS?
- What other external or contextual issues influence Riverwoods' development and achievements?
- **Not every topic was discussed to the same extent by everyone: differences in focus and opinion depended on individuals' varied experience and interests.**



What evidence or knowledge influences support and action for NbS? The role of the Evidence Review – part 1

- The Evidence Review (ER) was recognised as a repository of primarily biophysical empirical data on the multiple-benefits of river woodlands (with evidence gaps noted). However, it was acknowledged that its contents do not on their own remove barriers to enabling river woodlands.
- The ER was not reported as having been actively used at the time of interviews, including in the Investment Readiness Pioneers phase of Riverwoods. Reasons included:
 - There was uncertainty in how to understand and make use of the information as packaged
 - It was repeatedly noted that the information contained would be more useful if packaged or signposted to be appropriate for different users and their respective needs
 - Its relevance to investors, project managers, and experienced practitioners was unclear



What evidence or knowledge influences support and action for NbS? The role of the Evidence Review – part 2

- Many interviewees thought that the ER could be useful in subsequent activities e.g. providing context for engagement, visioning, and informing narratives around restoration, use as a common reference point in cross-sectoral discussions (as a boundary object), and advocacy for restoration.
 - The co-production of the ER was generally agreed to have been a valuable and important knowledge sharing exercise.
- **The ER is valued but its format means that many stakeholders have yet to use it. It has potential to inform decision-making, particularly if the information can be packaged to satisfy the user's needs.**



What evidence or knowledge influences support and action for NbS? Looking beyond the Evidence Review

- Across the range of interviewees different knowledge types were discussed including empirical, experiential ‘on the ground’ knowledge, professional expertise (e.g. financial, planning), relational knowledge (stakeholder networks, communication), understanding of process (e.g. governance, planning), narratives, local and social knowledge.
 - Those involved shared a longer-term vision for river woodlands, but they also perceived and identified different challenges to achieving this (often beyond evidence needs).
 - Interviewees reported a willingness to both learn and develop knowledge, and while there were examples of this occurring several felt that this potential strength could be more effectively harnessed.
- **A mix of different knowledges need to be valued, and shared or combined, and appropriate opportunities to do so encouraged.**



How does knowledge come to be shared and used? Pt.1

- Different types of knowledge were relevant for different actors, and this also depended on the context in which it might be used.
 - Views varied on the value of different types of knowledge, and it was clear that these values interact with different knowledge needs depending on the stage of a process, such as building shared narratives, providing evidence to support costings, or delivering the restoration activity itself
 - It was felt that different sectors (e.g. land-managers, grant providers, investors, project managers) varied in their acceptance of risks and uncertainty in relation to the costs, scale, timing, and monitoring and evaluation of a project's required outcomes:
 - investors seek an understanding of the financial viability of projects and its potential outputs than biophysical evidence. Contrastingly, it was felt that buyers of services wanted to be confident about the biophysical benefits and impacts and sought credible, relevant, evidence for this
- **Learning and knowledge sharing is an inherently social process – but this doesn't mean that those involved will end up agreeing on issues, needs, or ways forward.**

How does knowledge come to be shared and used? Pt.2

- Riverwoods endeavours to promote timely interactions between relevant people with different knowledges at appropriate stages in a processes (from planning through implementation to M&E).
- Pro-active use of engagement specialists was valued by those involved in early project design phases (e.g. Investment Readiness Pioneers) and this process was evaluated to facilitate learning.
- Some noted that those whose understanding includes several types of knowledge (e.g. technical and financial, empirical and narrative) acted as important knowledge brokers between different decision-makers (e.g. funders <> land-managers). However, some pointed out that such people were often hard to find or could be involved more effectively.
- Certain stakeholders were *active* in developing their understanding through using and sharing their knowledge as part of effective engagement and decision-making processes.
- Some felt that the structure of Riverwoods provides the opportunity to adaptively manage negotiations around knowledge needs and applications, and that this should be developed further.
- **Many relevant needs, expertise, and roles are represented however some noted that there may be a dependence on a few key individuals for certain topics. Some felt that processes may benefit from involving further stakeholders to bring in additional knowledge.**



What other factors shape or constrain knowledge use? Pt.1

- People
 - Trust between those involved was considered important when sharing knowledge.
 - There was a reported lack of case study evidence from which to take generalisable lessons about NbS, and several interviewees noted the continued importance of individuals' experiential knowledge.
 - Not everyone is required to be engaged throughout but is important (and sometimes difficult) to involve the right people at the right points in the process.
 - Processes
 - Consideration needs to be given to the alignment of evidence provision with different stakeholder needs at different stages in the Riverwoods activities. The structure of Riverwoods will ideally provide the opportunity to adaptively manage such negotiations around knowledge needs and uses.
 - It was commonly felt that presenting 'facts' was not enough - communicating and receiving knowledge, and actively learning by doing, was critical. This included being strategic about how best to do this for different people and purposes and recognising that this may involve different, or interwoven narratives.
- **The 'best' way to communicate and share will vary along with the people involved, project phase and focus, and the type(s) of knowledge being used.**



What other factors shape or constrain knowledge use? Pt.2

- The knowledge discussed in interviews is filtered through the interviewees' understanding – while they may be reporting empirical or experiential evidence that they have read/heard from others, they choose whether and how to use that to inform their personal knowledge.
 - There will be differences of opinion regarding how and when to act.
 - Lack of evidence acts as barrier for some, less so for others, for instance differences of opinion about when to act (heuristics vs wait for better evidence), and urgency vs accuracy.
 - Knowledge gaps remain.
 - Most interviewees noted knowledge needs that are currently difficult to meet, or relatively untested, particularly around (hybrid) financing and policy tools to facilitate this (e.g. when to bundle/stack benefits of riparian woodland)
- **Achieving in NbS is not *just* about fixing knowledge gaps – knowledge and expertise interacts with other enabling and constraining factors.**



Summary of the key findings

A mix of different knowledges need to be valued, shared, and combined, and appropriate opportunities to do so encouraged

The 'best' way to communicate and share will vary along with the people involved, project phase and focus, and the type(s) of knowledge being used

Many relevant and diverse needs, expertise, and roles are represented however some noted that there may be a dependence on a few key individuals for certain topics. Some felt that processes may benefit from involving others to bring in additional knowledge

The ER is valued but its format means that many stakeholders have yet to use it. It has potential to inform decision-making, particularly if the information can be packaged to satisfy the user's needs

Achieving in NbS is not *just* about fixing knowledge gaps – knowledge and expertise interacts with other enabling and constraining factors

Learning and knowledge sharing is an inherently social process – but this doesn't mean that those involved will end up agreeing on issues or ways forward



Conclusions for Riverwoods and implications for similar NbS initiatives

Riverwoods as an exemplar:

- Evidence Review – both the process of compiling it, and the product, were valued.
 - Process valued for linking different scientific expertise (learning) and developing networks
 - Product valued for legitimising and strengthening the ability to advocate for river woodlands
- The potential use of the Evidence Review to leverage funding, private sector investment, or partners had not yet materialised, but may be useful in future advocacy.
- Riverwoods' focus was around engagement with individuals and growing networks with relevant expertise.
- These developing processes of engagement around evidence use and knowledge sharing may be useful to other NbS, and support development of funding and policy mechanisms to support related processes (eg. delivering a land-use strategy, natural capital projects).

Overall conclusions

- Value the process associated with evidence use.
 - Maintain and develop networking skills & capacity
 - Elements of NbS processes necessarily take time (despite the urgency to act)
- Value more than scientific ‘evidence’ - new and different knowledges are relevant.
 - Site knowledge, practical ‘know how’, interpersonal knowledge
 - Value all knowledges in their own right and help shape how the science is used
- Expect a ‘slow burn’.
 - Influence and knowledge use won’t happen instantly
 - Routinely and effectively check & reflect on knowledge use – and adapt when needed
- Acknowledge that progress isn’t just about fixing knowledge gaps.
 - Many institutional and political factors can impede change – focusing on those is required alongside filling evidence gaps

Closing points

It's not simple task to 'optimise' knowledge use to enable NbS.

- It is about more than collating scientific data (though that helps!)
- Many different knowledge types are relevant and should be included
- Vital to adopt and adapt processes for identifying, selecting, packaging, sharing, and using a range of knowledges

Future research priorities – there's more to explore!

What knowledge and knowledge use processes help **systemic** thinking and delivery of multiple benefit NbS?

How do different **stages** of NbS processes (e.g. visioning, strategizing, planning, implementing, monitoring and evaluation) affect needs for knowledge and how knowledge use should be organised?

Consider how the matter is **framed** – e.g. focusing on risk rather than benefits. How might this affect the way that sectors and stakeholders become engaged?

Contextualise knowledge so that useful **leverage points** can be identified to aid progress.

Track **future uses** and influences of Riverwoods and other processes. Are we likely to see more forms of use for the Review (e.g. during financing phase of upscaling Riverwoods beyond initial IRP "pilots").

N.B. these are not all necessarily to be addressed by us...!



Thanks for reading

- Please feel free to share any relevant insights from this work with others developing and working to promote NbS
- We'd be happy to discuss any thoughts or issues raised in this summary report. Please contact keith.marshall@hutton.ac.uk
- Acknowledgements:
 - Thanks to Scottish Government for funding project JHI-D2-2 in the 2022-2027 Strategic Research Programme www.hutton.ac.uk/project/achieving-multi-purpose-nature-based-solutions/
 - Thanks to the research colleagues and the project PI Mark Wilkinson
 - Most importantly, thanks go to those who were willing to give up their time to share their views on the use of evidence in Riverwoods



Scottish Government
Riaghaltas na h-Alba
gov.scot