

Impact and Collaboration in Environmental Research

Moving universities from evidence
producers to co-producers

Summary Paper
The Agile Initiative
June 2024

This document is a summary of a discussion document that explores the relationship between environmental research and policy, the role of universities, and the emergence of co-production. It provides a set of provocative discussion questions to help funders, policy makers, practitioners, and researchers engage with these topics. The report was launched in June 2024, a recording of the launch webinar can be found on the Agile website.

The Authors

Mattia Troiano
Nick Sidwell
Joseph Boyle
Molly James
Grace Wright
Dr Peter Barbrook-Johnson
Dr Mark Hirons

The Agile Initiative

The world's researchers have been working to understand and solve societal challenges such as biodiversity loss and climate change for decades. However, decision makers in government, NGOs and business need to have this information available to them in the format they need and at the moment that they are making critical policy choices.

The Agile Initiative at the Oxford Martin School aims to put this essential knowledge in their hands, and revolutionise how world-class, high-impact research supports policymaking. It responds to specific social and environmental policy questions with fast-paced solution-focused 'Sprints' that deliver demand-led new research precisely when it's needed. In these Sprints, new interdisciplinary research teams drawn from across Oxford work with partners to feed evidence into the policy cycle in real-time.

www.agile-initiative.ox.ac.uk



Impact and Collaboration in Environmental Research: Moving universities from evidence producers to co-producers

Summary Document

What is the ‘knowledge-action gap’?

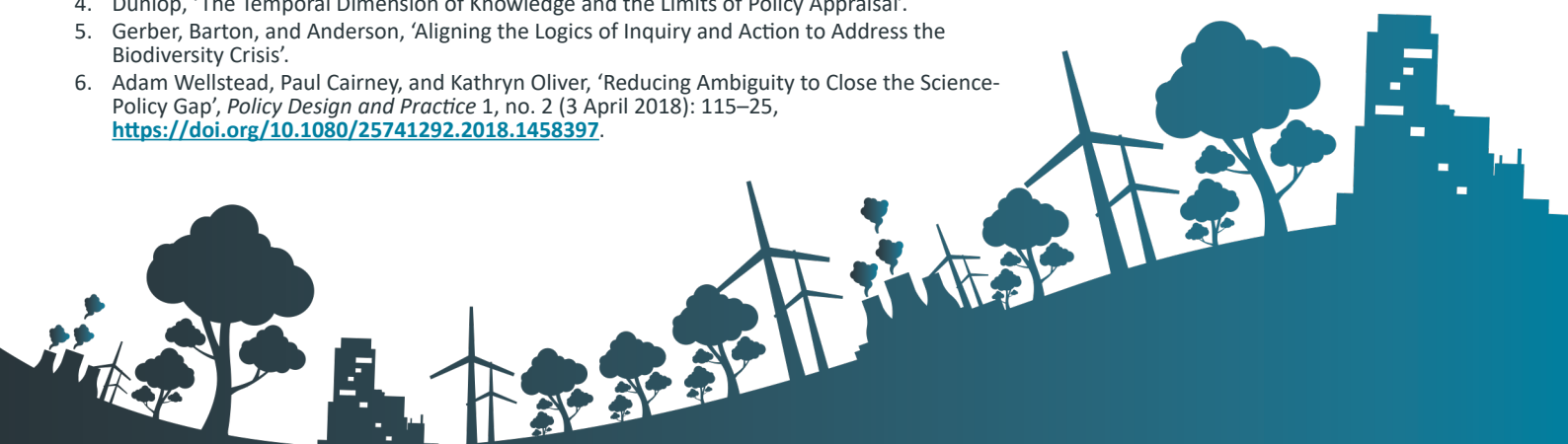
The problem of the ‘knowledge-action gap’ is part of a general sense that the knowledge produced by environmental researchers somehow fails to deliver on its full potential for use by policy makers. The gap has many contributing factors, with prominent ones including *structural and institutional differences* between governments and academia;¹ the *incompatible timeframes* of much research and policy;² and *cultural barriers* between academics and policy makers.³

The gap matters because it influences science-policy interactions. The slow pace of research production can add to tensions among researchers and policy makers.⁴ Such tensions make it difficult to reconcile the different objectives, requirements, and practices of policy and research.⁵ Overall, the gap between research and policy does little to turn knowledge into action on environmental concerns.

Why do attempts to bridge the gap fall short?

Efforts to bridge the gap are often limited by a tendency to focus on improving the dissemination of evidence or developing greater scientific literacy in government.⁶ While this is an intuitive response to the problem gap, it overlooks how knowledge is produced in the first place and how evidence is subsequently used in policy. Understanding the context in which environmental knowledge is produced and used is essential for maximising its use in policy.

1. Olivia Pearman and Amanda E. Cravens, ‘Institutional Barriers to Actionable Science: Perspectives from Decision Support Tool Creators’, *Environmental Science & Policy* 128 (1 February 2022): 317–25, <https://doi.org/10.1016/j.envsci.2021.12.004>.
2. Claire A. Dunlop, ‘The Temporal Dimension of Knowledge and the Limits of Policy Appraisal: Biofuels Policy in the UK’, *Policy Sciences* 43, no. 4 (1 December 2010): 343–63, <https://doi.org/10.1007/s11077-009-9101-7>.
3. L.R. Gerber, C.J. Barton, and D.M. Anderson, ‘Aligning the Logics of Inquiry and Action to Address the Biodiversity Crisis’, *Conservation Biology* 37, no. 5 (2023), <https://doi.org/10.1111/cobi.14128>.
4. Dunlop, ‘The Temporal Dimension of Knowledge and the Limits of Policy Appraisal’.
5. Gerber, Barton, and Anderson, ‘Aligning the Logics of Inquiry and Action to Address the Biodiversity Crisis’.
6. Adam Wellstead, Paul Cairney, and Kathryn Oliver, ‘Reducing Ambiguity to Close the Science-Policy Gap’, *Policy Design and Practice* 1, no. 2 (3 April 2018): 115–25, <https://doi.org/10.1080/25741292.2018.1458397>.



Falling short 1: The politics of evidence

There is no linear path from objective science to rational policy. Producing knowledge and turning it into policy-relevant information is a subjective practice, which occurs in a wider social context.⁷ Along with the inherent complexity of many environmental issues⁸ and the varying priorities of different areas of research and policy making, such as climate and biodiversity,⁹ this political context must be taken into account when seeking to maximise the use of science in environmental policy.

Falling short 2: The actual use of research in policy

Scientific evidence is one of many factors influencing policy decisions and its relevance varies across different phases of the policy process.¹⁰ The view that research is rationally applied to policy has given way to theories that argue research is more likely to be used when policy makers find it meaningful – that is, where it offers a new perspective, or extends or changes a narrative.¹¹ Meaning can be highly contextual, and is shaped by the institutional and policy contexts, as well as the relationships between scientists and policy makers.¹²

7. Sheila Jasanoff, ed., *States of Knowledge: The Co-Production of Science and the Social Order*, 1st ed (Abingdon, Oxon: Taylor and Francis, 2004).
8. M. Brugnach and H. Ingram, 'Ambiguity: The Challenge of Knowing and Deciding Together', *Environmental Science & Policy* 15, no. 1 (1 January 2012): 60–71, <https://doi.org/10.1016/j.envsci.2011.10.005>.
9. Esther Turnhout, Art Dewulf, and Mike Hulme, 'What Does Policy-Relevant Global Environmental Knowledge Do? The Cases of Climate and Biodiversity', *Current Opinion in Environmental Sustainability* 18 (February 2016): 65–72, <https://doi.org/10.1016/j.cosust.2015.09.004>.
10. Paul Cairney and Kathryn Oliver, 'Evidence-Based Policymaking Is Not like Evidence-Based Medicine, so How Far Should You Go to Bridge the Divide between Evidence and Policy?', *Health Research Policy and Systems* 15, no. 1 (26 April 2017): 35, <https://doi.org/10.1186/s12961-017-0192-x>.
11. Nabil Amara, Mathieu Ouimet, and Réjean Landry, 'New Evidence on Instrumental, Conceptual, and Symbolic Utilization of University Research in Government Agencies', *Science Communication* 26, no. 1 (September 2004): 75–106, <https://doi.org/10.1177/1075547004267491>; Art Dewulf et al., 'Usable Environmental Knowledge from the Perspective of Decision-Making: The Logics of Consequentiality, Appropriateness, and Meaningfulness', *Current Opinion in Environmental Sustainability*, Advancing the science of actionable knowledge for sustainability, 42 (1 February 2020): 1–6, <https://doi.org/10.1016/j.cosust.2019.10.003>.
12. Timo Y. Maas, Annet Pauwelussen, and Esther Turnhout, 'Co-Producing the Science–Policy Interface: Towards Common but Differentiated Responsibilities', *Humanities and Social Sciences Communications* 9, no. 1 (23 March 2022): 1–11, <https://doi.org/10.1057/s41599-022-01108-5>.



What role can universities play in maximising the use of research in environmental policy?

Universities are highly influential actors within the science-policy ecosystem. To align university outputs to the needs of policy, university research is evaluated for impact.¹³ Making impact a central purpose for universities and researchers gives them a stake in the outcome of policy decisions. This raises one of the ethical dilemmas of knowledge brokerage – how far should a broker go to convince policy makers to act on their advice?¹⁴ When the broker is incentivised to achieve impact, this dilemma is not easily resolved.

A productive way forward is to look beyond the honest broker model, where researchers present information on policy alternatives while remaining disengaged from policy decisions, to more participatory and collaborative approaches.¹⁵ Within the environmental sciences, the co-production of knowledge by researchers and policy makers is seen as a way of maximising the use of science in environmental policy.¹⁶ The co-production practices discussed below also offer alternatives to the transactional and patron-client model of consultants and NGOs.

The benefits and modes of knowledge co-production

Co-production is a participatory collaboration model that has gained momentum both among researchers and practitioners. Advocates of co-production point out how it can link research and practice to create a shared problem-driven and user-targeted research approach. Its potential benefits include:

- facilitating more holistic research, including the representation of different knowledge systems
- bringing greater accountability of publicly funded research
- building trust between researchers, policy makers, and other stakeholders

Co-productive practices can vary significantly in their rationale and design. In Table 1 we cover the different modes of co-production and their key features.¹⁷

-
13. Alis Oancea, 'Research Assessment as Governance Technology in the United Kingdom: Findings from a Survey of RAE 2008 Impacts', *Zeitschrift Für Erziehungswissenschaft* 17, no. 6 (1 November 2014): 83–110, <https://doi.org/10.1007/s11618-014-0575-5>.
14. Cairney and Oliver, 'Evidence-Based Policymaking Is Not like Evidence-Based Medicine, so ow Far Should You Go to Bridge the Divide between Evidence and Policy?'
15. Esther Turnhout et al., 'New Roles of Science in Society: Different Repertoires of Knowledge Brokering', *Science and Public Policy* 40, no. 3 (1 June 2013): 354–65, <https://doi.org/10.1093/scipol/scs114>.
16. Katharine J Mach et al., 'Actionable Knowledge and the Art of Engagement', *Current Opinion in Environmental Sustainability*, Advancing the science of actionable knowledge for sustainability, 42 (1 February 2020): 30–37, <https://doi.org/10.1016/j.cosust.2020.01.002>.
17. Josephine M. Chambers et al., 'Six Modes of Co-Production for Sustainability', *Nature Sustainability* 4, no. 11 (November 2021): 983–96, <https://doi.org/10.1038/s41893-021-00755-x>.



Mode of co-production	Features
1. Researching solutions	Involves high-level policy makers and technical scientists grounded in scientific knowledge and realist methodological approaches.* Key benefit: production of scientific knowledge for existing knowledge-policy regime.
2. Empowering voices	Involves local & regional governments and communities, and interdisciplinary scientists leveraging social diversity and knowledge pluralism. Key benefit: creation of local solutions.
3. Brokering power	Involves powerful actors with high-level decision-making influence and technical scientists grounded in scientific knowledge and realist methodological approaches. Key benefit: development of policy action-oriented knowledge rather than knowledge <i>per se</i> .
4. Reframing power	Involves actors at all levels, from the most powerful to most marginal and localised ones. Researchers are grounded in relativist** approaches and methodological pluralism. Key benefit: shifting power from high-level to marginal and local actors.
5. Navigating differences	Involves actors at all levels. Researchers focus on social diversity and knowledge pluralism. Key benefit: creation of a safe and non-hierarchical space for co-creation.
6. Reframing agency	Involves actors at all levels. Researchers use system thinking and relativist approaches promoting knowledge as context-relevant and not aggregable in global-scale efforts. Key benefit: re-localisation of power and agency.

Table 1: Six modes of co-production for environmental science-policy. Based on Chambers *et al.* (2021).

* Realist researchers seek to explain the underlying 'cause' or mechanisms that generate observed phenomenon.

** The relativistic perspective views science as constructing various views of reality.



The risks of co-production and the need for a reflective approach

Despite the potential of co-production to increase research impact and distribute policy influence more fairly, it is not a guaranteed path towards positive social transformations. Failing to take a reflective approach to its implementation can replicate the risks found in wider science-policy collaboration.¹⁸ These include:

- Knowledge flowing from science to others as knowledge recipients rather than co-producers, creating an “expectation gap” between rhetoric and practice.
- Mis- or uneven representation of less powerful actors and their values, knowledge systems, perceptions, and their trade-offs, limiting knowledge and value pluralism.
- Uneven policy outcomes based on a superficial or tokenistic consideration of the marginalised, with their contributions seen as less “scientifically valid”.
- “Expert”-led solutions that either overlook relevant local actors, social and cultural factors, or exacerbate tensions across scales.

What next? Building capacity for successful knowledge co-production

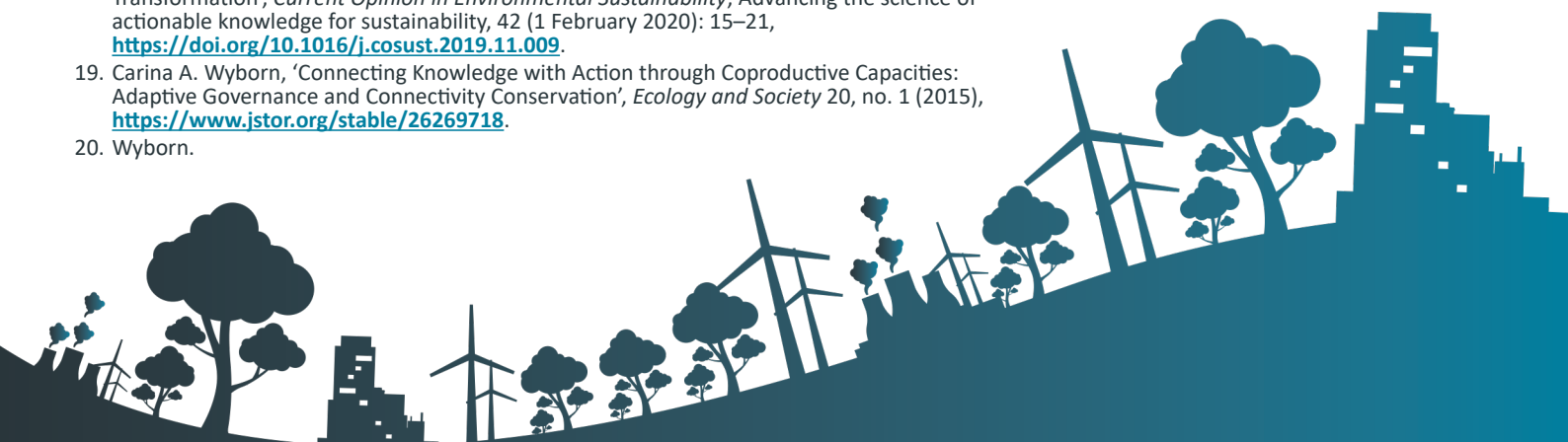
Co-productive capacity addresses the institutional structures, resourcing, and social dimensions that support successful knowledge co-production.¹⁹ Due to the variable nature of co-production and the range of contexts in which it takes place, it is capacity building, rather than attempts to define process best-practices, that gives researchers a productive way forward.²⁰ We conclude with five suggestions of varying levels for universities and researchers exploring environmental knowledge co-production:

1. Design organisational structures so that they can support the practice and governance of co-production.
2. Establish or join a community of practice to promote shared reflection and iterative improvements.
3. Engage with funders early on to ensure that co-production can be funded in a flexible manner.
4. Create opportunities and allow time for researchers to build relationships with policy makers and other stakeholders.
5. Incentivise and promote activities relevant to co-production in job descriptions and management practice.

18. Esther Turnhout et al., ‘The Politics of Co-Production: Participation, Power, and Transformation’, *Current Opinion in Environmental Sustainability*, Advancing the science of actionable knowledge for sustainability, 42 (1 February 2020): 15–21, <https://doi.org/10.1016/j.cosust.2019.11.009>.

19. Carina A. Wyborn, ‘Connecting Knowledge with Action through Coproductive Capacities: Adaptive Governance and Connectivity Conservation’, *Ecology and Society* 20, no. 1 (2015), <https://www.jstor.org/stable/26269718>.

20. Wyborn.



Discussion questions

Here, we outline a set of discussion and provocation questions which cover the themes in this report. They are intended to help readers engage with these themes and think through their relation to them.

For research funders, policy makers and practitioners

1. Do you see the outputs and processes of co-production as any more or less *credible* and *legitimate* than other forms of environmental science advice? Do you expect this view to be shared by others around you?
2. Do you favour certain modes of co-production over others? If so, what are the key benefits of specific modes of co-production to your practice?
3. Is it reasonable to expect co-production to lead to more useful outputs than other forms of environmental research? Does this view vary across the different stages of assessment and decision making relevant to your work?
4. Do you currently employ or encourage the use of co-production, or would you consider doing so if it is not currently used? Are there safeguards in place against the risks associated with co-production discussed in this document?

For researchers

1. In what ways do ideas of the 'knowledge-action gap' or incentives to achieve impact shape your approach to research?
2. Do you think that co-production could help your work achieve greater impact?
3. How comfortable are you with the idea of knowledge pluralism, i.e. different approaches to, and forms of, knowledge should be more equally valued?
4. To what extent are you ready to give over control in the form of expertise when engaging in co-production?

For the Agile Initiative

1. What does a strategic approach to co-production look like for Agile? Which actors does Agile look to co-produce with and are there risks in co-production that Agile needs to actively mitigate?
2. How might the positionality and processes of a Sprint team affect approaches to knowledge co-production? Are there tensions between the emerging sprint model and co-production?
3. How should Agile position itself in relation to government commissioned research, consultancies, and think tanks?
4. How does Agile support and engage with related initiatives for high-impact co-produced rapid research?

Authors

Dr Peter Barbrook-Johnson

Senior Research Associate, Deputy Director of the Agile Initiative and Departmental Research Lecturer in the Economics of Environmental Change

Joseph Boyle

Research Assistant, University of Oxford

Dr Mark Hiron

Senior Researcher, Researcher and Management Group Member for the Agile Initiative and Research Fellow in Environmental Social Science

Molly James

Research Assistant, University of Oxford

Nick Sidwell

Research Assistant, University of Bristol

Mattia Troiano

Research Assistant, University of Oxford

Grace Wright

Research Assistant, University of Oxford

Mattia Troiano, Nick Sidwell, Joseph Boyle, Dr Peter Barbrook-Johnson and Dr Mark Hiron developed the original idea with conceptual inputs from all authors. Mattia Troiano, Nick Sidwell, Joseph Boyle led the writing of the manuscript with input on drafts from all authors. All authors approved the final version of the summary paper.

For More Information



Peter Barbrook-Johnson peter.barbrook-johnson@ouce.ox.ac.uk

Mark Hiron mark.hiron@ouce.ox.ac.uk

The Agile Initiative agile@oxfordmartin.ox.ac.uk



www.agile-initiative.ox.ac.uk



[@oxmartinschool](https://twitter.com/oxmartinschool)



Natural
Environment
Research Council

The Agile Initiative is supported by the Natural Environment Research Council as part of the Changing the Environment Programme – NERC grant reference number NE/W004976/1



The Agile Initiative,
Oxford Martin School,
34 Broad Street,
Oxford, OX1 3BD, United Kingdom