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Understanding the Impacts of Research Synthesis

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ABSTRACT

Research synthesis is the integration of existing knowledge and research findings pertinent to an issue. The aim of synthesis is to increase the generality and applicability of those findings and to develop new knowledge through the process of integration. Synthesis is promoted as an approach that deals with the challenge of öinformation overload', delivering products that further our understanding of problems and distil relevant evidence for decision-making. However, despite the increasing prominence of synthesis efforts in the science and policy landscape, we know very little about the impacts these initiatives have on research, policy and practice and the assumptions underpinning how they will lead to change. This paper presents a framework for considering the conceptual, strategic, instrumental and network-based impacts of research synthesis on policy. This framework provides insight into the range of underlying assumptions and impacts on policy and practice from 10 case studies of research synthesis related to contemporary sustainability challenges. Findings suggest that research synthesis is having diverse impacts on research, policy and practice including creating a new understanding of problems, establishing new networks, and contributing to changes in policy and practice. These impacts emerged across a range of contexts, synthesis methods, assumptions and operating models. This suggests that there is no single öcorrect way' to design research synthesis for impact, but rather a need to tailor the approach for the context of intended use.

1. Introduction

Research or scientific synthesis is the integration and assessment of knowledge and research findings pertinent to a particular issue with the aim of increasing the generality and applicability of, and access to, those findings (Hampton & Parker 2011, Magliocca et al., 2014, Baron et al. 2017). Synthesis of existing research and case studies can also generate new knowledge. Synthesis efforts often bring together different academic and non-academic forms of knowledge and evidence.

Assumptions underpinning the value of syntheses are multiple. Synthesis is hailed as a means of taking science up an evidence hierarchy to have greater impact on policy processes (Dicks et al., 2014a,b), of addressing the challenge of 'information overload', delivering products that can help improve scientific understanding in decision-making (Hampton & Parker, 2011), and providing critical knowledge to solving environmental problems (Carpenter, 2009). The production of 'summaries for policy-makers' is indicative of a drive to tailor scientific information for decision- makers' needs. Studies have shown that synthesis contributes to the scientific community through initiating new collaborations and producing new knowledge (Hampton & Parker,

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2011; Baron et al., 2017).

Yet the impact of synthesis on policy and practice, and the validity of the assumptions underpinning impact have rarely been examined empirically. Concerns have been raised about the marginal influence of large, costly assessments on the complex world of global policy (Pahl-Wostl, 2015). Those searching for a simple linear translation of 'sound science' to 'evidence-based policy' in global processes like the Intergovernmental Panel on Climate Change (IPCC) assessments or the Millennium Ecosystem Assessment (MA) will be disappointed. The archetypal experience of the IPCC shows that greater rates of scientific certainty do not correlate simply with policy action. However, there is growing evidence to suggest that global assessments have had a profound, if hard-to-measure impact, on policy agendas at different scales (Beck, 2015; Riousset et al., 2017).

With the growing prominence of synthesis initiatives in the science-policy landscape (Baron et al., 2017; Specht et al., 2015), it is important to ask what assumptions are guiding these initiatives, what types of impact they have had, and under what conditions they are most likely to lead to impact, by which we mean significant changes in research, policy or practice. This paper presents findings of an exploratory review conducted to understand the rationale, approaches to, underlying assumptions and impact of synthesis initiatives.

Below we present our methods and conceptual framework used to support analysis. We present summary data from 10 case studies and arrange review findings under five headline insights. The discussion reflects on these findings and other emergent observations. As an exploratory review, the findings should be taken as hypotheses to be tested or further explored. We conclude by discussing implications and areas for future work.

2. Methodology and methods

Assessing research impact is a complex but growing field, and empirical examination of the impacts of synthesis published in the academic literature is limited. Consequently, this review draws on both published and grey literature, and in particular on case studies for which the authors acted as programme designers, facilitators, or analysts. The primary focus is biodiversity conservation and natural resource management. While the review initially focused on impacts on policy, impacts on practice and research also emerged.

For the purposes of this review, research synthesis is conceptualised as a process of reviewing, assessing and synthesising existing literature or data to produce a series of outputs (products and services). Synthesis is often conducted by academic disciplinary experts, but can involve inter- or transdisciplinary working groups drawing on knowledge from across academia and beyond. Policy is defined as a formal decision or an outline of an overarching plan made by groups seeking to implement these decisions to achieve a particular goal (Richards and Smith, 2002). Such groups include local governments, non-government organisations (NGOs), corporations and community groups, as well as nation states and international bodies. Following Game et al. (2015), practice is considered as the actual application of methods that lead to the design, implementation, management and monitoring of projects or programmes. Impact is understood broadly as a range of the positive and negative, primary and secondary, direct or indirect, or intended or unintended effects of a programme or initiative (see Hearn and Buffardi, 2016).

2.1. Conceptual framework

Synthesis initiatives and associated impacts cannot be understood in isolation of their current and historical context, or of the processes used to conduct synthesis (see Fig. 1). The enabling environment in which the synthesis is situated includes the policy context; the governance of the initiative itself; and the capacities of individuals (from both science and policy) to undertake synthesis and act on findings; and the sources of funding (Clark et al., 2006; Clark et al., 2016). Other contextual factors that can influence the synthesis process itself and its impacts, include the political contentiousness of an issue, legacy of past decisions or actions, and the scale of a problem or initiative. While knowledge products are often the focus of synthesis, the synthesis processes itself can be a vehicle of change, and the governance and process itself is a key determinant of policy impact (Clark et al., 2006).

2.2. Case studies

The processes, assumptions and institutional arrangements supporting research synthesis are many and diverse. The review set out to explore this diversity, considering a number of approaches and institutional contexts, including global assessments, specialist centres of synthesis and analysis, thematic assessments and ecosystem service assessments. As a result, some of the cases considered are time-bound initiatives, others are ongoing; some cases consider the synthesis initiative itself, while others are organisations or initiatives that support or conduct synthesis.

10 case studies were identified through a selective sampling strategy to encompass a range of types and approaches to synthesis, across a diversity of scales and contexts. Data was compiled by the authors based on their involvement in the design, research or implementation of these initiatives, drawing on the authors' experiential knowledge as well as project plans, outputs and other relevant material.

Case study data was compiled using a template that considered the following:

- **Aims and objectives**: audience; assumptions underpinning impact pathway; and definition of impact.
- **Context**: scale (global, national, local); focus; history; size and drivers of the initiative.
- **Governance**: public, private, or NGO; funding sources and budget; presence or absence of a policy mandate; partners.
- **Methodology**: nature of partnership and collaboration; type of synthesis; types of knowledge accepted as evidence.
- **Outputs and impacts**: types of products; identification of impacts; scale and timeframe of influence.
- **Reflections by the authors**: strengths and weaknesses of approach; achievement of desired impact; key lessons learned.

While we noted the synthesis methods used, we have not focused in detail on these, nor on the questions and data analysis techniques. Rather, our analysis considered the broader context in which synthesis takes place within the landscape of research, policy and practice, the assumptions underpinning initiatives and what impacts it has had in these domains. The review did not set out to systematically collect information on questions of independence, susceptibility to bias, transparency, rigour or reliability (primarily because of the broad range of methods considered in the case studies). However, insights on these issues emerged through the analysis and are referred to below.

2.3. Literature review

A literature review was conducted to complement and support case study analysis. This review was used to identifying the state of current knowledge (and knowledge gaps) on the impact of research synthesis and to inform the development of the conceptual framework. Within the thematic subject areas and specific synthesis categories, the review used the following search terms:

- synthesis research; research synthesis; interdisciplinary research; transdisciplinary research;
- AND policy impact; research impact; impact; knowledge transfer; knowledge exchange.