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Adding ‘iterativity’ to the credibility, relevance, legitimacy: A novel scheme to highlight dynamic aspects of science–policy interfaces

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ABSTRACT

Credibility, relevance and legitimacy (CRELE) of knowledge are widely recognized as key attributes of effective science–policy interfaces (SPIs). Yet, notwithstanding efforts to enhance the CRELE attributes of an SPI, it may still lack impact or be dismissed as not being credible, legitimate or relevant both inside, and outside the SPI. We introduce ‘iterativity’ as an additional attribute to the CRELE framework to better capture dynamic, continuous and multi-directional interactions between science, policy and society related to SPIs. Iterativity is understood in the context of an important shift in perspective by which SPIs are viewed as dynamic, evolving processes rather than linear processes or isolated events. Based on empirical material on biodiversity-related SPIs, we identify 14 features and lessons learned that explain the outcomes of SPIs regarding their participants and external audiences, and examine how SPIs’ structures, objectives, processes and outputs help to build CRELE and iterativity (CRELE + IT). The four attributes of CRELE + IT and results related

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to the features explaining outcomes of SPIs also provide useful practical tools for the design, implementation and revision of effective science–policy interfaces. These lessons regarding CRELE + IT help us understand both when and why SPIs are able to contribute to the pressing social and ecological need to halt biodiversity loss and the further deterioration of ecosystem services.

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1. Introduction

There is an urgent need to bridge the gap between science and policy to enhance the use of scientific knowledge as a basis for environmental decision-making (Brundtland, 1997). This is particularly the case if we are to halt the loss of biodiversity and to ensure sustainable use of ecosystem services (e.g. MA, 2005; GBO 3, 2010). Various environment-related science–policy interfaces (SPIs) have been established to improve the connections between science, policy and other stakeholders, such as the Intergovernmental Panel on Climate Change (IPCC), the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES). We define SPIs as organizations, initiatives or projects that work at the boundary of science, policy and society to enrich decision making, shape their participants' and audiences' understandings of problems, and so produce outcomes regarding decisions and behaviours. We define outcomes as the impacts produced by SPIs on science, policy and on the actors within and beyond the SPI.

SPIs should facilitate multi-directional relationships between science, policy and society in order to promote their outcomes (e.g. van den Hove, 2007; Young et al., 2014). However, in practice science–policy interaction mechanisms are still often based on one-way linear knowledge transfer models that often fail to influence policy makers' or public behaviours (van Kerkhoff and Lebel, 2006; Watson, 2005). The persistence of such linear models may be due to a still tenacious view that science and knowledge should be speaking 'truth' to 'power' (Wynne et al., 2007). This model, whilst certainly true for some ways in which science is communicated and used currently as part of complex and multi-directional interactions, oversimplifies the blurred and complex multi-directional relationships that determine the outcomes of SPIs and further use of produced knowledge (Engels, 2005; Lövbrand, 2011; Neßhöver et al., 2013; Owens et al., 2006; Weingart, 1999). When uncertainty is high and values are contested, as with many current environmental problems, SPIs are likely to have more outcomes, when they facilitate iterative multi-directional dialogues between science, policy and stakeholders that contribute to enriching decision making, and induce real changes in the understanding or decisions of policy makers and publics (Pielke, 2007; van den Hove, 2007; Young et al., 2014). As a consequence, when seeking to understand and assess SPIs, it is not just the end product of synthesised knowledge that should be considered, but also the SPIs' processes and interactions.

Some authors (e.g. Cash et al., 2003; Farrell et al., 2006) have argued that three attributes of knowledge production and

exchange – credibility, relevance⁸ⁱ and legitimacy, abbreviated here as 'CRELE' – together promote effectivity and explain outcomes regarding production and communication of knowledge between science, policy and other stakeholders. Perceptions of CRELE attributes are a result of interactions within the SPI among multiple participants and between SPIs and stakeholders located in wider contexts (c.f. White et al., 2010). Perceptions of the CRELE attributes depend on the SPIs, but are co-determined according to characteristics of the knowledge itself (e.g. verified by peer-review; knowledge supplied by economic interest groups) and of the stakeholders participating within and outside of the SPIs (see Cash et al., 2002; Tuinstra et al., 2006). For example, climate sceptics aim to challenge the CRELE of the IPCC and to strategically use IPCC knowledge for their own ends. Such tactics have cast doubt amongst the public as to the credibility of the IPCC. IPCC has responded by trying to increase its credibility for example through robust peer review processes (Beck, 2012). Such vested interests, sometimes supported by some media, might use scientific uncertainty on problems and their potential solutions as a means to discredit scientific messages as presented by the IPCC (e.g. Michaels, 2008; Oreskes and Conway, 2010), instead focusing selectively on one view for strategic reasons (Sarkki and Karjalainen, 2012). Thus, SPIs can lose control of their message(s). This highlights a serious problem for SPIs: while they can make efforts to enhance their CRELE, they may still end up lacking influence or be dismissed as not being credible, legitimate or relevant.

This leads to our approach for this paper: our view is that the literature on credibility, relevance and legitimacy of science–policy interfaces does not provide sufficient practical advice how SPIs can more actively influence the perception of their CRELE by participants and external audiences. Our hypothesis is that SPI performance can be better assessed and improved by focusing on CRELE of the SPI and its processes and operations, rather than by focusing on the CRELE of knowledge itself. Therefore, the objective of this paper is to identify key design features explaining SPIs' successes and failures to produce outcomes, and to explore linkages of these features to CRELE attributes. The aim is to not to go into depths regarding single case studies, but synthesize insights from various environmental SPIs and tease out the underpinning explanatory features informing design of SPIs in environmental sector and beyond.

⁸ⁱ We use 'relevance' here rather than 'salience', mostly for linguistic reasons – the former is more widely understood. The information which is salient has to be new to a user while relevant information might not be known but would still useful for understanding or solving an issue.

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