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## The epistemic authority of solution-oriented global environmental assessments

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#### ABSTRACT

The effectiveness and influence of solutions oriented global environmental assessments (SOAs) rests on their legitimacy. Based on the GEA literature this piece reviews the legitimacy of GEAs and discusses its implications, and challenges and for the legitimacy of SOAs. This article is part of a special issue on solution-oriented GEAs.

#### 1. Introduction

Solutions oriented global environmental assessments (SOAs) are a new breed of boundary organizations that perform global environmental assessments (Edenhofer and Kowarsch, 2015; Kowarsch et al., 2016). Like GEAs they aspire to contribute to better informed policy debates between states and within countries by providing authoritative state of the art assessments to various audiences. As such they deliver advice to which states defer, as well as promoting public debates about the appropriate ways to govern such global environmental issues as global warming and biodiversity.

The GEA literature as written by practitioners (Watson and Gitay, 2004; Watson, 2005; Leemans, 2008; OECD, 2015; United Nations, 2015; ch 2; Reid and Mooney, 2016) and scholars (Cash et al., 2003; Haas, 2004, 2017; Mitchell et al., 2006; Haas and Stevens, 2011; Andresen, 2014; Gupta, 2014) has largely focused on the design properties of GEAs in order to account for the variation in their effectiveness and influence.

Unlike GEAs, SOAs are different in two ways. SOAs involve integrative assessments which require explicit deliberation about values and goals as well as technical policy responses to given issues. In this sense they are more directly political, and understood as being political, than GEAs. SOAs also require a broader array of experts and stakeholders than do GEAs because of their broader scope and deliberative focus.

The underlying question about GEAs, and by extension SOAs, is really why do states and other target audiences willingly defer to their advice in the absence of material capabilities to compel or induce behavior? This question reorients attention to their legitimacy away

from their formal properties. Here I focus primarily on the features which will enhance SOAs legitimacy in the eyes of states, because states are the primary intended audiences for SOAs' studies, and because states fund and design the GEAs. Seen through a principal-agent lens (Hawkins et al., 2006), states are the primary principals who must be satisfied in order to create and heed the SOA agents.

In the absence of conventional material capabilities for inducing or compelling others to adhere to their analyses, GEAs, and by extension SOAs must rely on willing deference by their audiences to them. They are powerful to the extent that they enjoy legitimacy. Scientific "power" rests on scientists' authority, and the willingness of principles – be they states, IOs or firms – to willingly defer to their claims. Steven Bernstein writes that "legitimacy is the glue that links authority and power" (Bernstein, 2011, 20). Scientists enjoy epistemic authority for expertise in global environmental issues. In the environmental domain they enjoy what Max Weber called Legal-Rational authority (Weber, 1958). Such authority rests on the perceived legitimacy of the experts, as they possess neither charisma for the ability to compel behavior. Science enjoins willing compliance with scientific or bureaucratic dictates because of the perceived impartiality and reason of the source. Their authority and influence ultimately rests on their legitimacy.

Practitioners reflecting on the science-policy interface recognize the need for the legitimacy of GEAs, which they commonly ascribe to a combination of satisfying the demands of the member states, and providing authoritative and valid policy advice.

#### 2. Legitimacy

The nature of legitimacy is contested (Hurrell, 2005). Indeed Steven

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http://dx.doi.org/10.1016/j.envsci.2017.03.013 Received 3 March 2017; Accepted 30 March 2017 1462-9011/ © 2017 Elsevier Ltd. All rights reserved. Bernstein writes that "there are no universally shared criteria of legitimacy in global governance" (Bernstein, 2011, 22). While criteria of scientific legitimacy appear to vary by groups conferring it (Borzel and Risse, 2005; Zurn et al., 2012, 75 ff; Karlsson-Vinkhuyzen, 2013; Kanie et al., 2014, 16-17, 211-214; Nasiritousi et al., 2016; Rittberger and Schoeer, 2016), here I focus on scientific legitimacy in the eyes of states

Many criteria for legitimacy are invoked; many from democratic theory and normative theory. Legitimacy has been most widely studied in the EU and, more generally applied to global governance by David Held and Koenig-Archibugi's edited work on global governance more generally (Held and Koenig-Archibugi, 2005). The terms "authority" and "legitimacy" tend to be used interchangeably. Below I distinguish between input, process, and outcome criteria of legitimacy. This taxonomy is informed by Fritz Sharpf's study of the legitimacy of the EU (Scharpf, 1999, 2009) and of climate change governance (Karlsson-Vinkhuyzen, 2013).

Since "legitimacy" is itself contested, and there are many plausible criteria for legitimacy, I here provide a number of them which states are likely to apply to measure the legitimacy of scientific institutions. In practice, institutions are likely to be regarded as legitimate if they conform to many (or more) criteria (Fung, 2006). Usable knowledge (Cash et al., 2003; Haas, 2004; Mitchell, et al., 2006; Haas and Stevens, 2011)— knowledge which is credible, salient, and legitimate <sup>1</sup>— is an example of multiple legitimacy criteria which span input and process measures of legitimacy.

#### 2.1. Inputs

Input criteria capture the functional roles played by GEAs, the background social facts they instantiate, and their affinity with broader generative norms and principles.

#### 2.1.1. Functional roles

Sociologists of science argue that science helps ameliorate risk and uncertainty, while also establishing categories to be governed and consolidating the social authority of scientists (Barnes et al., 1996; Gieryn 1999; Nowotny, 2016). Economic historians attribute its legitimacy to the instrumental value that science provides for promoting capitalist power and wealth accumulation (Mowery and Rosenberg 1989; North, 2005; Mokyr, 2016). Sociologists of knowledge attribute it to the power science grants to the state for controlling its society (Porter, 1986; Hacking, 1990). Moreover, scientists *cum* scientists have been socially recognized as possessing valuable skills in public administration and governance which politicians in the regulatory state regard as necessary (Ezrahi, 1990; Drori et al., 2003; Drori and Meyer, 2006; Lentsch and Weingart, 2011).

#### 2.1.2. Social facts

Science's legitimacy is also a social fact, in so far as the social prestige and authority of science and scientists enjoy a taken for granted aspect. Their legitimacy rests on their reputations for providing relevant expertise, and reliable and accurate information. Dan Bodansky argues that scientific expertise enjoys legitimacy in international deliberations because it confers trust in the warranted foundations of collective decisions. The professional pedigree and reputation for mastery of technical material confers legitimacy (Bodansky, 1999). Their independence from states reinforces their legitimacy.

#### 2.1.3. Norms and principles

Science's affinity with broader social norms and principles are likely to enhance its legitimacy to the extent that it explicitly articulates universal goals, or helps member states achieve those goals (Reus-Smit,

1997; 568-570; Aggarwal, 1998). A number of broad principles have been identified in the IR literature, including multilateralism (Keohane, 1990; Cox, 1992; Ruggie, 1993); embedded liberalism (Ruggie, 1983; Bernstein, 2001); state sovereignty (Biersteker and Weber, 1996), and possibly as an emergent norm, sustainable development. In a complementary manner scientific institutions must resonate with domestic norms and goals as well (Cortell and Davis, 1996).

#### 2.2. Process

A number of arguments have been presented about social processes which confer legitimacy on scientific institutions and scientists.

#### 2.2.1. Fairness

Robert Keohane (Keohane, 2001; Buchanan and Keohane, 2006) Thomas Franck, (Franck, 1990) and Oran Young (Young, 1991) speak of the need for fairness as a criterion of the legitimacy of international institutions in the eyes of states, and also presumably civil society. Fairness of course can have two senses. One is the common usage applied to outcomes, that member states are satisfied that their goals and needs are represented in the analysis. A second sense focuses on the deliberative process. A fair scientific process must provide for voicing alternative viewpoints, as well as not being biased towards privileged actors. A transparent process allows observers to understand how decisions were reached, and how experts were selected. Inclusiveness and participation are particularly valued legitimizing criteria for groups with little ability to promote input based legitimacy, and with limited ability to appraise political processes, such as developing countries, as well as non-state actors including NGOs and the private sector (Kahler, 2005; Scholte, 2005; Held, 2005).

#### 2.2.2. Deliberation and contestation

Deliberation and contestation are valued processes for science in international affairs as forms of transparency (Stevenson and Dryzek, 2014, 25, 28-29), as well as contributions to reflexivity and more effective policy and politically relevant knowledge (Stevenson, 2016; Dryzek and Pickering, 2017). Such public revelations confirm the ways in which expertise is performed and conclusive findings are warranted.

#### 2.2.3. Discursive practices

Agreement on discursive practices may also serve as a key source of legitimacy for scientific expertise (Steffek, 2003; Adler and Bernstein, 2005; Helgadottir, 2016; Adler and Pouliot, 2011; Risse, 2000, 2005). Discursive practice delimit the parameters of permissable deliberations and the legitimate forms of communication by establishing competent performance. The vocabulary which is used confers legitimacy, such as legality democracy, social justice, progress (Stephen, 2015; 778) and even sustainability. Thus in UN venues scientific experts must speak the arcane language of UN precedents as well as that of science.

#### 2.3. Outcomes

Institutions may enjoy legitimacy if they provide valuable outcomes for their constituencies, particularly the provision of global public goods (Hurd, 1999), such as global environmental protection. Under such circumstances, such as with central banks, illegitimate processes may be overlooked if the effects of the institutions are believed to work (Vibert, 2007).

Science, along with other bodies of expertise that are overtly non-political allow politicians to resolve debates without "overt expressions of interests and threats of violence." (Kennedy, 2016; 48) although Steffek suggests that functional bodies such as science panels are likely to be valued for their direct contributions more than their indirect political functions (Steffek, 2015).

<sup>&</sup>lt;sup>1</sup> Legitimacy in this context refers to input criteria.

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