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Cartography of pathways: A new model for environmental policy assessments

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ABSTRACT

How can assessments of environmental policy issues be policy-relevant without being policy-prescriptive? The predominant technocratic and decisionist responses to this question misleadingly assume that value-neutral scientific recommendations for public policy means, or even objectives, are possible. On the other end of the spectrum, the literature on democratic and pragmatic models of expertise in policy often does not satisfactorily explain what researchers can contribute to public discourses surrounding disputed, value-laden policy objectives and means. Building on John Dewey's philosophy, this article develops the "pragmatic-enlightened model" (PEM) of assessment making, which refines the existing pragmatic models. It is used to some extent by Working Group III of the Intergovernmental Panel on Climate Change. According to the PEM's policy assessment methodology, policy objectives and their means can only be evaluated in light of the practical consequences of the means. Learning about the secondary effects, side effects and synergies of the best means may require a revaluation of the policy objectives, for instance, regarding the use of bioenergy for climate mitigation. Following the PEM, assessments would—based on a thorough problem analysis—explore alternative policy pathways, including their diverse practical consequences, overlaps and trade-offs, in cooperation with stakeholders. Such an arduous interdisciplinary cartography of multiple objectives, multi-functional policy means and the broad range of their quantitative and qualitative practical consequences may face considerable practical challenges and uncertainty. Yet, it could make assessments more policy-relevant and less prescriptive, and could effectively support a learning process about the political solution space.

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1. Introduction: environmental assessments require a refined orientation

For the guidance of global, large-scale scientific assessments of complex environmental issues, such as, for instance, the assessments by the Intergovernmental Panel on Climate Change (IPCC) and the Global Environment Outlook (GEO) series by the United Nations Environment Programme, the criteria of policy-relevance, legitimacy and credibility seem widely accepted. However, these criteria are hard to achieve in practice, at least simultaneously; this is due to the many significant trade-offs and challenges that hamper successful assessment making (Cash et al., 2003; see supplementary material A.1 for more detail). For example, controversial yet socially highly relevant aspects of the issues at stake are sometimes watered down or avoided in assessments (Siebenhüner, 2003). This can considerably reduce the policy-relevance of the assessments. On the other hand, policy-relevant studies or reports are sometimes criticized for being strongly biased from a social and political perspective.

In the end, proposals for the very specific institutional arrangements of assessment bodies are required to reduce or even overcome these trade-offs. However, there is a lack of adequate guidance for the large-scale environmental assessments even on a fundamental and strategic level. This is particularly valid for assessments that also focus on—often highly disputed and strongly value-laden—policy solutions, i.e., specific response options, rather than on natural scientific problem analyses only. The main reason for the lack of appropriate guidance for these assessments is that the general and predominant models of the roles and responsibilities of scientific expertise in policy are flawed, as confirmed by many observers (including, for instance, Pielke, 2007; Brown, 2009; Hulme, 2009; Kitcher, 2011; Sarewitz, 2011). The weaknesses of these models are mainly due to the underestimated philosophical challenges regarding implied value judgments and the objectivity issue in assessments, as this article will argue (see also Putnam, 2004; Douglas, 2009). The supplementary material (A.2) explains the three models that are still predominant in our view: the technocratic, decisionist and pragmatic models.

Critics, apologists and practitioners of assessment institutions usually work with such general models in mind.[2] These general, normative models inter alia guide the institutional arrangements and procedures of environmental assessments, as well as the concrete practices within those arrangements. In this action-guiding function, the models contribute considerably to the quality and effectiveness of assessments (Hulme, 2009; Pielke, 2007).

The main critique in the literature points out that, in practice, the most predominant model, i.e., the technocratic model with its clear-cut policy recommendations, is often turned into a symbolic legitimation model (Jasanoff, 1990; Sarewitz, 2004). This means that certain political standpoints in scientific studies (i.e., the proposed objectives and means) are allegedly justified by referring to a consensus; however, these are in fact strongly biased towards certain disputed political or social standpoints in a non-transparent manner (e.g., by concealing their value judgments or uncertainties). If one-sided value assumptions in assessments are not sufficiently made transparent, researchers can become, deliberately or unintentionally, "stealth issue advocates" through their reports (Pielke, 2007). There is also some demand by policymakers for this kind of report in order to create legitimacy for their policy narratives by making use of scientific authority (e.g., Pielke, 2007).

Yet, also assessments that follow the so called decisionist model that avoids any recommendations on policy *objectives* can become value-laden and policy-prescriptive because their assumption that researchers can provide sound science without implying disputed value judgments in their scientific justifications is misleading (Putnam, 2004; Hands, 2001; Douglas, 2009). Facts and values are always entangled in scientific research (Dewey, 1986). All scientific statements at least imply cognitive values (such as consistency, coherence or objectivity, see Douglas, 2009) that have, however, the same fundamental characteristics as ethical value judgments (Putnam, 2004). Furthermore, some predominant cognitive values in scientific research are built on ethical values (Douglas, 2009). Additionally, value-laden "thick ethical concepts" (i.e., descriptive concepts with strong normative-ethical connotations) are often used in assessments, including those for framing the problems (Putnam, 2004). Examples include "efficiency," "vulnerability," "risk" and "development." The widespread, mistaken belief in value-free science opens the door wide for the deliberate misuse or unintentionally misguided use of expertise in policy—notably for policy-prescriptive assessments through implied ethical judgments already at the level of problem framing (Skodvin, 2000; Hulme, 2009). Moreover, assessments that follow the decisionist model are often significantly less policy-relevant in a substantial sense, as there is no role for research regarding the critical discussion of policy objectives, such as the 2 °C goal.

A large number of more promising approaches, here summarized as the "pragmatic model," have been developed in recent years; and some of these ideas have already been applied in assessments. This pragmatic model envisages cooperative knowledge production and a role for mutual learning between experts and decision makers in environmental policy. It more or less accepts the value-ladenness of scientific knowledge production, yet allows for a scientific contribution to the discussion of disputed, value-laden environmental policy issues. The major challenge of the pragmatic model is to specify this potential contribution and to show how value-laden research can still be sound and reliable. Yet, many existing variants of the pragmatic model that generally highlights the procedural and institutional aspects fail to respond to this philosophical challenge in a satisfactory manner. Often, like the technocratic and decisionist models, these model variants fail to take the key interdependency of policy objectives and means fully into account.

Consequently, this article aims to provide a refined model, i.e., a framework and strategic orientation, specifically aimed at large-scale assessments of long-term environmental problems and specific policy response options in light of the complexity, uncertainty and multiple policy objectives

[2] Often, these science-policy models are neither made explicit, nor are they necessarily comprehensive and consistent.