Policy windows for the environment: Tips for improving the uptake of scientific knowledge

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ABSTRACT

Scientific knowledge is considered to be an important factor (alongside others) in environmental policy-making. However, the opportunity for environmentalists to influence policy can often occur within short, discrete time windows. Therefore, a piece of research may have a negligible or transformative policy influence depending on when it is presented. These 'policy windows' are sometimes predictable, such as those dealing with conventions or legislation with a defined renewal period, but are often hard to anticipate. We describe four ways that environmentalists can respond to policy windows and increase the likelihood of knowledge uptake: 1) *foresee (and create)* emergent windows, 2) *respond* quickly to opening windows, 3) *frame* research in line with appropriate windows, and 4) *persevere* in closed windows. These categories are closely linked; efforts to enhance the incorporation of scientific knowledge into policy need to harness mechanisms within each. We illustrate the main points with reference to nature conservation, but the principles apply widely.

1. Introduction

Describing and understanding the ways in which scientific knowledge is, or should be, used in policy-making is a challenging endeavour. Critics of a linear relationship between science and policy point to the manifold roles individuals can play in evidence-informed policy-making, and highlight the need to understand the interrelations between science and policy as complex processes (e.g. Owens, 2015; Rose, 2014a). This is particularly true in areas, such as biodiversity conservation and sustainability, where different forms of knowledge compete for legitimacy and authority within and beyond institutionalised "science-policy interfaces" (e.g. Cook et al., 2013; Rose et al., 2016; Vadrot, 2014a, 2014b; Young et al., 2014). Existing studies have illustrated that lack of knowledge is rarely the limiting factor preventing evidence-informed policy-making (Rose et al., 2014b). Instead, competing and conflicting values, worldviews and interests are often important, further challenging the implementation and practicality of conservation policies (Rose, 2014b). However, given that scientific knowledge is considered to be an important part of policy-making (OECD, 2015), particularly in areas related to environmental issues

characterised by a high degree of complexity, more emphasis should be placed on the conditions for integrating scientific knowledge into formal policy-making processes and institutions.

A number of studies have offered advice for increasing the efficiency and effectiveness of environmental science-policy interfaces. These typically note that science and policy are very different, sometimes even contrary, co-evolving activities (e.g. Cook et al., 2013; Cvitanovic et al., 2015; Young et al., 2014). They suggest strategies for overcoming related complexities and communication gaps. The strategies include (i) training scientists and policy-makers via joint research projects (Bainbridge et al., 2011), (ii) making better use of knowledge brokerage systems including boundary organisations e.g. the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and individuals (Brooke, 2008; Neßhöver et al., 2016; Young et al., 2014), and (iii) telling appropriate policy-relevant narratives (e.g. Cook et al., 2013; Rose, 2015; Sarkki et al., 2014).

There has however been limited constructive engagement with temporal aspects of institutionalised policy-making and how these affect the likeliness of scientific knowledge being taken into account at different stages of agenda-setting. Moreover, the timing of a scientific

publication can influence whether it is used in policy, a scenario that is already widely discussed (e.g. Reed et al., 2014). Whilst noting that the relationship between science and policy is rarely linear, it is the case that specific moments exist in which the ground is fertile for the uptake of scientific knowledge into policy.

To develop this idea further, this paper focuses on the concept of 'policy windows' (Kingdon, 2003). When policy windows are discussed in environmental science, they are usually recognised as a serendipitous problem, rather than something that can be harnessed for the benefit of evidence-informed policy (e.g. Reed et al., 2014). However, a practical and applied understanding of policy windows may provide opportunities for the uptake of scientific knowledge, a process that may otherwise fail or take longer outside these windows.

In this paper, we focus on formal politics and decision making at a "stage in the political process during which actors, operating under set institutional constraints, choose binding outcomes or identify preferred options", and focus less on informal arenas, characterised by informal rules, restricted participation and unofficially drawn boundaries (Reh et al., 2013, 1115). Even though a separation between formal and informal decision making is not always clear cut, particularly with regard to the role of science-policy interfaces, we prefer – for the purpose of this article – to exclude from our study informal ways by which scientific knowledge can contribute to agenda setting more broadly (e.g. through protest, social movements, (social) media, clientelism etc.).

We begin with a brief explanation of policy windows. This is followed by insights into how policy windows can influence the uptake of scientific knowledge and a discussion of the existing literature on techniques for approaching policy windows. Finally, we present a fourfold conceptual framework that can be used by environmentalists[1] (e.g. scientists, NGO staff, individuals in conservation policy roles) to respond to policy windows in a more differentiated and appropriate way. The framework points to four capacities: foresee (even create), respond, frame, and persevere. It is based on case studies and success stories that we use as reference points for demonstrating how policy windows have been used in the past to increase the likelihood that knowledge is used in policy making. Examples are from the field of conservation science, but the principles apply to other areas of environmental science, and more widely. We conclude that more awareness of the four capacities we have identified could improve the likelihood of scientific knowledge uptake at environmental science-policy interfaces.

2. Methods

Rose et al. (2016) investigated why the scientific knowledge contained in one scientific report (on conservation) had such an immediate impact on a government White Paper[2] in the UK. The authors conducted 38 interviews of senior policy-makers and conservation scientists, and undertook documentary analysis of key policy documents, in order to elucidate the possible reasons for the immediate impact. The opening of a policy window was found to be a key determinant of science uptake.

The project described here set out to provide a simple, but wide-ranging framework to provide advice about how to best engage with policy windows. As part of the University of Cambridge Conservation Research Institute, (a multi-disciplinary research group interested in

conservation), a multi-disciplinary team of researchers was formed. This team covered several different disciplines and contained people with specialist knowledge of working at environmental science-policy interfaces (see Appendix 1).

To develop the conceptual framework, we first conducted a structured literature review of papers relevant to conservation and the environment, which also cited Kingdon's work on policy windows (see Appendices 2, 3 and 4). We supplemented these papers with other literature suggested by reviewers and experts in the field. From this literature, we drew out key messages about how to engage constructively with policy windows, and used these to inform a simple, wide-ranging framework. Finally, we collated examples to illustrate how each 'tip' in the framework had led to knowledge uptake. The latter point was important since tangible success stories provide useful guidance for those seeking to learn how to follow the framework. From the literature review, it was clear that, while there are several existing pieces of constructive advice for environmentalists seeking to engage better with policy windows, such advice tends to be piecemeal and not joined into a wide-ranging framework.

3. Policy windows

Kingdon (2003) describes how windows of opportunity for policy change periodically create situations for the sudden uptake of knowledge, even when it has been previously ignored. These windows can open as a result of several converging 'process streams', often in combination: a *problem* may become impossible to ignore, a *policy* solution may appear that is practical to adopt, or *political* events may lead to sudden changes in a government's agenda (Fig. 1). Windows of opportunity are usually short-lived and open only occasionally (Gulbrandsson and Fossum, 2009; Solecki and Shelley, 1996).

The concept of agenda-setting, first explored by McCombs and Shaw (1972), is linked to policy windows. These authors investigated the agenda-setting power of mass media, which could raise the prominence of specific issues in the public consciousness by giving them more airtime. Thus, the media had agency to shape prominent issues on the public agenda. This concept has also been applied in the policy sphere. Downs (1972) suggests the concept of the 'issue-attention cycle' suggesting that issues rise and fall regularly from a government's agenda. Agenda-setting is often perceived to be the first stage in policy-making process, which leads us to Kingdons' question of why certain problems get more attention within formal politics and institutions than others. The question of which issue rises to the top of a policy-maker's agenda can be serendipitous, but it can also be predictable, and groups can play a role in influencing the agenda. Some windows are relatively easy to predict, such as those linked to the next round of Common Agricultural Policy reform; requests for expertise by assessment producing bodies such as IPBES; or the next Conference of the Parties to the Convention on Biological Diversity (CBD). However, others may open unexpectedly with little warning (e.g. the recent Zika virus outbreak).

3.1. How do policy windows affect knowledge uptake?

Kingdon (2003) developed his ideas in the USA in the 1980s, but his work has inspired scholars to use the idea of policy windows to explain decision-making in a variety of contexts. Kingdon identified three streams (problem stream, policy stream, and politics stream), anticipating the emergence of a policy-window when these streams joined at critical moments. Most studies drawing on Kingdon's work note that the opening of a policy window occurs as a result of interactions between process streams (e.g. Anderson and MacLean, 2015; Butler et al., 2015; Keskitalo et al., 2012; Lober, 1997), such as a pressing problem coinciding with a change in government. From our assessment of both environmental and non-environmental research that has used the idea of policy windows, two of the process streams seem particularly significant: first, the influence of crisis events (problem stream), and

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[1] We note that environmentalists may wish to use other forms of knowledge in addition to scientific knowledge when seeking to influence policy. However, for the purposes of this perspective, we focus on how environmentalists can improve the uptake of scientific knowledge. We do not focus on decision-making by other stakeholders, including business, professional organisations, or consumers.

[2] Rose et al. (2016) show how prominent the 'Lawton Review' was in the subsequent Natural Environment White Paper, which presented a firm policy position to support landscape-scale conservation (which the Lawton Review had proposed). The report was cited regularly in the White Paper and was listed as an important source in the text (see also Lawton and Rudd, 2016).