

**Comment on:**  
**Funke N and Nienaber S (2012)**  
**Promoting uptake and use of conservation science in South Africa by government**  
**(Water SA 38 (1) 105-113)**

**by M Ngcobo<sup>1</sup> and MC Mlambo<sup>2\*</sup>**

<sup>1</sup>*Discipline of Occupational and Environmental Health, School of Nursing and Public Health, University of KwaZulu-Natal, Howard College Campus, Durban, South Africa*

<sup>2</sup>*Department of Biology, University of Oulu, PO Box 3000, 90014 Oulu, Finland*

(\*To whom all correspondence should be addressed; e-mail: [musa.mlambo@gmail.com](mailto:musa.mlambo@gmail.com))

### Why not 'from policy to science'?

We challenge the unidirectional idea, implied in Funke and Nienaber (2012), that science (and science alone) should always inform policy; instead we argue that, if anything, this must be a bidirectional discourse, with more emphasis also on policy informing applied scientific research. The scientific literature is replete with papers that are, rightly, arguing for the better integration and consideration of science in guiding policy directives (Funke and Nienaber 2012, and references therein). However, due to differences in culture, priorities, and philosophical underpinnings between science and policy/politics (Pielke 2002; Lackey 2007), the relationship between the two is fraught with great skepticism. What is so interesting and novel about this paper by Funke and Nienaber (2012) is that it identified 3 reasons – using people with knowledge of the inner workings of government policy formulation and implementation – as to why the uptake and use of science is not happening the way scientists want it to. These reasons are: 1) mismatch in priorities, 2) vague legislation, and 3) lack of capacity. However, it is strange that, even armed with this crucial information, the authors still advocate for the continuing or cosmetic modification of the status quo, without any serious pivoting. For us, reading the first identified problem was reason enough to conclude that science-policy debate cannot continue to be unidirectional (i.e. from science to policy). As such, the focus of our argument against Funke and Nienaber's (2012) approach is based mainly on the problem of priority mismatch between science and government policy. We feel that the other two identified problems are general and not uniquely associated with science-policy debate.

The mismatch in priorities is a big stumbling block in the science-policy discourse. The authors (Funke and Nienaber, 2012 p. 109) correctly point out that 'The South African Government, in particular, tends to prioritise development (e.g. water service delivery, mining and tourism) over conservation.' This is exactly what politicians are elected for, to enhance the development and wellbeing of the citizenry, which is why the South African Government, as with many other developing countries, views the issues of biodiversity conservation, for example, primarily from the prism of development and poverty eradication (Cadman et al. 2010). However, it needs

to be noted, that this is radically different from the general scientific viewpoint, which emphasis the environment first, rightly so, and then the benefits to human welfare, which come in as a by-product of achieving environmental sustainability. Consequently, there have been calls for more integration of human wellbeing elements into biodiversity research, in order to harmonise scientific and policy priorities (Mlambo, 2012).

We feel, however, that the insistency on science being the only guide to policy making, without even any mention of the significance of this process happening in reverse (i.e. applied science getting its directive from government policy) is not helping with regard to closing the gap in priorities. Realisation of the significance of government's view of biodiversity as a developmental issue first, should be revelational to scientists, in that, when it comes to policy formulation, scientific inputs are surely not going to be the only ones to consider, but compete with social, civil and economic inputs. This point tends to be underappreciated by the proponents of the unidirectional influence of science in policy. Funke and Nienaber (2012 p. 105) aim to encourage science uptake to be manifested by the 'use of scientific products (including journal articles, scientific reports, tools, expertise, knowledge, etc.)'. On the contrary, we argue that, if the scientific community expects government policy personnel to do this, the scientific community – which has more flexibility and potential – should first show the way by paying more particular attention to the documents produced by government.

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**Response to comments made by M Ngcobo and MC Mlambo on:  
Funke N and Nienaber S (2012)  
Promoting uptake and use of conservation science in South Africa by government  
(Water SA 38 (1) 105-113)**

**by S Nienaber\* and N Funke**

*Natural Resources and Environment, Council for Scientific and Industrial Research,  
PO Box 395, Pretoria 0001, South Africa*

(\*To whom all correspondence should be addressed; e-mail: [shanna.nienaber@hotmail.com](mailto:shanna.nienaber@hotmail.com))

**Complex interactions between policy-makers and scientists**

The paper under analysis is influenced by two main sources of interest. Firstly, it is part of a broader body of work that the authors are engaged in that looks at the issue of the science-policy gap and how to ensure more effective uptake and use of scientific knowledge in support of policy-making processes. Major focal points for the authors in this regard have been to consider the differences between scientists and policy-makers, and why there is not always effective communication between them (Strydom et al., 2010). They have also looked at the contextual complexity at play in policy-making that can hinder science uptake and use, such as the broad range of government and non-government actors that engage, collaborate and compete in policy-making processes, where scientists and the science they produce form only one actor in this context. This research also involves understanding the specific political, cultural and historical context of South Africa and how this impacts on policy-making in the country (Funke et al., 2011).

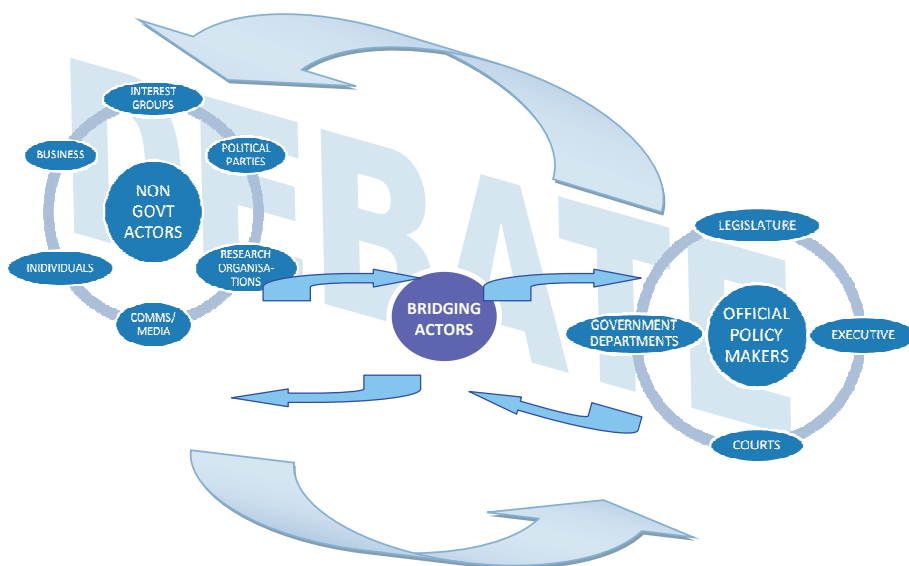
Secondly, this paper forms part of the outputs of a specific research project that the authors were part of: the National Freshwater Ecosystem Priority Areas (NFEPA) project. This project is a transdisciplinary initiative and has developed a set of strategic tools in the form of an atlas and institutional manual that aims to improve and facilitate freshwater conservation management by providing decision-makers in government and civil society with a set of clearly identified freshwater ecosystem priority areas (Nel et al., 2011a; 2011b).

This paper essentially suggests that science is an important input into policy-making processes and ‘contributes to literature around the relationship between the producers of science and the users of science in government departments, by

analysing how to encourage science uptake into decision-making, monitoring and evaluation, and existing processes or the development of new ones’ (Funke and Nienaber, 2012 p. 106). Therefore the main target audience for this paper is scientists. The advice given to scientists in the paper is however situated within a broader explanation of the multiple actors and complexities that are engaged in and form part of the policy-making context. While there are many facets to better understanding the science-policy interface, this paper focuses specifically on the role and responsibility of scientists in attempting to improve the uptake and use of the science they produce.

Ngcobo and Mlambo raise three points of critique about the paper. Firstly, they argue that Funke and Nienaber (2012) advocate a unidirectional approach in relation to the science-policy interface, suggesting that the authors of the paper focus on science as a major input to policy rather than considering ‘this process happening in reverse (i.e. applied science getting its directive form government policy)’. As such they ‘challenge the unidirectional idea ... that science (and science alone) should always inform policy ... (and) argue that, if anything, this must be a bidirectional discourse, with more emphasis also on policy informing applied scientific research.’ They emphasise, in this regard, that the scientific community should take more responsibility for science uptake by paying particular attention to government documents. They also suggest that Funke and Nienaber (2012) focus on science being the major input to policy as opposed to other influences such as civil society and the economy.

As the authors of this paper we agree that the link between science and policy is not a simple unidirectional one, where science merely feeds into policy. If the situation were this simple, there would probably not be as much of a challenge in ensuring the uptake and use of science in policy-making processes. It is



**Figure 1**  
Diagram illustrating the spectrum of actors involved in the policy-making process (from Funke and Nienaber, 2012 p. 106)

precisely because the science-policy interface is complex that we have written this paper and have emphasised the complex landscape of multiple actors and inputs that feed into policy-making processes in South Africa. Figure 1 illustrates the diverse spectrum of actors who can form coalitions to 'push' for specific policy preferences. These policy debates and resultant coalitions occur amongst official policy-makers, who are mandated to make and implement policy, and non-government actors, who influence policy (Funke and Nienaber, 2012).

To illustrate, in the paper we suggest that 'public policy-making takes place in a specific socio-political context. Its direction is shaped by multiple different actors ... who interact in a complex political landscape (Cloete and Meyer, 2006), which is characterised by dynamic processes. In any policy-making process the inputs of a variety of official, intermediary and non-government actors are critical' (Funke and Nienaber, 2012 p. 107). Therefore we argue that the inputs to policy are multidirectional and based on complex relationships and feedback loops between a range of government and non-government actors. We also suggest that science is only one actor, amongst many, in the non-government space that attempts to influence policy-making processes.

After the description of the complex, multidirectional policy terrain, the paper focuses more specifically on the role of scientists in this policy debate. This allowed us as authors to more deeply understand how scientists can take greater responsibility for ensuring the relevance and impact of their work. This focus is derived from a specific effort on behalf of the NFEPA project team to try to ensure that their final products would be relevant and useful to the government departments they were targeted at. This focus is also related to the fact that we, the authors, are part of the scientific community and therefore can only really reflect on our own experiences. We would not have been able to reflect on government officials' experiences as readily, as we are not part of government. The authors' focus therefore does not imply a unidirectional transfer of science into policy, but forms the analytical focus of this paper based on the authors' professional background and experiences.

Some of the key recommendations that we make to improve the uptake and use of science, is the need for scientists to 'understand and target the world of institutions, policies and politics ... as well as the processes of decision-making, behaviour change and value transfer' (p. 105). We also emphasise the importance of scientists building and maintaining relationships with key stakeholders in government and non-government circles. In addition, we emphasise the need for 'co-production of knowledge' between scientists and the users of science, of which government is a part. These recommendations also illustrate our complex and multidirectional approach to understanding the role of science in policy.

Ngcobo and Mlambo's second point of critique focuses on the issue of 'the mismatch in priorities (being) a big stumbling block in the science-policy discourse'. In this regard Ngcobo and Mlambo agree with the authors that the South African Government tends to prioritise development and the well-being of its citizenry and as such views environmental issues through this prism. In addition, they imply that the authors do not adequately recognise that this view is in sharp contrast to what Ngcobo and Mlambo refer to as the 'general scientific viewpoint, which emphasises the environment first'. They also suggest that the issues of lack of compliance to legislation and the limited capacity of government that Funke and Nienaber

(2012) identify as barriers to the uptake and use of science are not uniquely associated with the science-policy interface and are therefore not relevant.

In response to this critique, we reiterate the importance of needing to understand the context in which government officials operate in order to be able to understand how to best promote the uptake and use of science in government. The issue of priorities is important and the tension between development and conservation provides a considerable challenge to government officials who work in conservation-focused government departments. In addition, we argue that the issues of lack of compliance to legislation and limited government capacity cannot be discounted when considering important contextual factors in attempts to promote the uptake and use of science in government. These issues and their consequences affect the ability of government officials to take up and use new information, scientific and other, that is made available to them.

We also suggest, contrary to Ngcobo and Mlambo's view of 'the general scientific viewpoint, which emphasises the environment first', that the scientific community is increasingly recognising the need to see development and conservation in a more complex and integrated manner. Research on social-ecological systems, for instance, strongly advocates the fostering of an understanding of the environment that is embedded in a complex and value-laden social context (Audouin and Hattingh, 2008; Audouin and de Wet, 2010). Conservation science is also increasingly exploring ways to close the gap between conservation science and policy (Van Kerkhoff and Lebel, 2006). The NFEPA project itself is an example of conservation science that accepts that the environment must be used for development and thus tries to advise about how to make strategic trade-offs in this regard.

Ngcobo and Mlambo's third point of critique focuses on what they refer to as the authors' 'cosmetic modification' view of science uptake and use. We assume that this relates to our recommendations regarding the need to carefully think about how to target, package and disseminate science products so that they have maximum impact in government and broader policy debates.

We argue that these recommendations, situated within the complex policy-making terrain that we describe, are not suggestions for cosmetic modifications but rather for some practical steps that scientists and government officials can engage in to try to facilitate better exchange, communication and integration around the science-policy interface. These recommendations include how to target and communicate with government, how to package scientific findings so that they are useful to end-users and how to work with the political realities in government so that science still stands a chance of being taken up and used. These recommendations are derived from government officials themselves who have inside knowledge of processes within government. The recommendations are important as they empower the reader to act within the constraints of a complex policy-making context.

To summarise, we, the authors of this paper, do not advocate a unidirectional view of science simply feeding into policy. Instead, we see the science-policy interface as being situated within a complex, multidirectional context where multiple actors compete to influence policy-making processes. If science, as one voice in this context, hopes to have an impact on policy, scientists need to be equipped with insights about the complexity within policy-making and also need to actively engage and collaborate with a range of actors in and beyond government.

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