

# The science-policy interface: A tale of interesting bedfellows

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**Abstract:** Simulation models have much to offer the decision making process. In the realm of natural resource and environmental management, models summarise a number of dynamic interactions between natural and physical processes, anthropogenic interventions of changed management, and in some cases, social disruptions. Models also provide tools for generating information that can be used to test ‘what-if’ scenarios or can be linked to multiple criteria decision support systems to identify preferred management systems in consideration of biophysical, economic and social factors.

In an ideal world, a policy practitioner or regulatory advisor armed with this information can explore opportunities and manage risks in developing a policy to achieve the desired outcome. However, when one thinks of policy designs, it is not uncommon to reflect on episodes of ‘The Hollow Men’ or ‘Yes, Minister’ to have a cynical perspective of the operations of government. And yet the role of public policy sets directions, implements regulations and meets national and international obligations on behalf of the community. In this context, what are the roles of models and modellers in the process of evidence-based policies, particularly when faced with ‘wicked’ environmental problems? Symbiotically, where are the intervention points in the policy making cycle that embrace scientific information and knowledge to craft good policy? And finally, at this interface between science and policy, how does each discipline contribute value to the other?

This paper will provide some insights to the opportunities and benefits for physically-based models to play in the policy space. It will draw on several case studies where the outputs and strategic application of models have demonstrated a structural underpinning to government policy. One recognised example is the operational use of catchment scale water quality models to inform the effectiveness of management actions for the Reef Report Card. Another is the combined use of the GRASP model and FORAGE to generate customised property scale reports to inform decision making for grazing land management. Notwithstanding the success of these, and other examples, any evaluation of model application exposes a soft underbelly of models, which includes the necessity to communicate the inherent assumptions in the model structure, the uncertainties in data over space, time and function, the dependencies on model calibration and validation, and the high level of information harmonisation that occurs in complex visualisations.

The paper will also present some principles that underpin effective processes to facilitate capacity on both the supply and demand side of the scientific advisory processes and to improve knowledge and practice at the interface of science and public policy. While the role of scientific evidence in supporting policy making is critical and timely, the pathway is neither straightforward, structured or guaranteed. These principles are focused primarily on communication and collaboration through arrangements of embedding and ‘dialogue-hubs’, and an ability to deliver ‘fit-for-purpose’ and relevant knowledge throughout the phases of policy development and implementation.

In reality, it is often less about the sophistication of the model or evidentiary information, but rather what you do with it.

**Keywords:** *Modelling tools, evidence-based policy, collaborative arrangements, Paddock to Reef, GRASP model*