



OFFICE OF THE PRIME MINISTER'S CHIEF SCIENCE ADVISOR

Professor Sir Peter Gluckman, KNZM FRSNZ FMedSci FRS
Chief Science Advisor

SCIENCE ADVICE TO GOVERNMENTS – MULTIPLE MODALITIES, CONSISTENT PRINCIPLES

Sir Peter Gluckman's Presentation to the American Association for the Advancement of Science (AAAS) session on "integrating Science into Policy"

14 Feb 2016

Let me start by making a couple of what might seem like semantic points.

'Science policy' is a term that can mean different things to different people. Policy for science and science for policy are not the same; yes they intersect and overlap but the considerations are quite different. This talk is focused on science and evidence for policy.

Secondly it might be useful to distinguish between science advice and scientific advice; the former is about the technical input of science into the policy process; the latter is about enabling and promoting the use of science in the policy process and brokering between the science community and the policy system.

These are important nuances in understanding the many challenges in providing useful and effective science and scientific advice in complex areas. There is inevitably a complex set of interactions between science, society, policy and the political process. Certainly, these are closely intertwined because policy is almost never made on the basis of science alone; rather policy is ultimately made on the basis of multiple inputs including public opinion, the electoral process and contract, ideology, fiscal priority, diplomatic aspirations, among other considerations. All of these are very values based domains and the issue of how science might affect the decisions that are made – which involve complex trade-offs – is at the core of the interaction between science and policy.

Therefore, central to an effective science/policy interface is a sensitivity and attentiveness to the science/society relationship more generally, and to the qualitative shift that has occurred in this interaction in the past few decades.

Advice is most effective when its limits and its place are understood and there is no attempt to usurp the role of the policy-maker who must decide amongst options, all of which involve trade-offs. Indeed, the issues that science is now called upon to address have strong post-normal elements and yet these are the very issues for which governments most need advice.

For this reason I prefer to talk about evidence-informed policy rather than evidence-based policy. This, I think, avoids the danger of scientific hubris which doesn't often sit well with policy makers, who have to think about all these other domains in policy decisions.

While it might seem somewhat utopian, it would be desirable that science is understood as the uncontested platform of knowledge on which the other values based elements are overlaid. But it is not like that for several reasons. First the policy cycle itself is not logical and linear, starting from a robust knowledge base – nor are policy and politics always so neatly separated. Second, the science

in which we are most interested for policy relevance is itself not uncontested. By its very nature modern science, in so far as it interacts with core areas of government policy, from terrorism to environmental protection and climate change, is dealing with complex systems, with many uncertainties and unknowns. Added to this is the fact that there can be significant and often disputed elements in the evaluation of the evidence and the conclusions reached. That is the inferential gap between what we know and what we conclude. These issues in turn have a very deep intersection with the reality that different people and different publics will bring different worldviews and cognitive biases – Science is not and never will be an ultimate arbiter.

Another issue that emerges is that science can be co-opted and misused as the basis of debates that are really debates in a values domain – this issue of science being a proxy for deeper debate about, say, economic issues is real and critical and can undermine trust in the role of evidence in decision making.

Certainly science itself is not entirely values-free, and there will never be universal agreement on either its translation or its application. But nevertheless science remains the only set of processes we have to gain relatively reliable information about the world around us and within us. The key role of the broker or brokering mechanism at the interface between science and policy fields is to act as a translator in such a way that any values-based filters are made explicit and ideally minimized. To do so requires that the practice of science advice be based on well-developed principles to serve society better.

When thinking about principles for science advice and scientific advice, one needs to think both form and functions. I will say more about the multiple functions in a moment, as a complete science advisory system must deal with five different types of advice and input. But the interface is also affected by structural and governance arrangements - for example in most countries which have science advisors or equivalent, a particular role for an academy head or a council (as has been established in the EU) is apolitical and independent of the political cycle. This is so in the UK, Ireland, Australia, NZ and so forth.

Turning now from form to function:

In this, most attention has focused on the needs of national governments where there are generally five necessary modalities of science advice. How they have evolved depends on history, culture and processes of public reason in different societies.

Let me quickly go through my working taxonomy of science and scientific advice:

First, there is the need for technical advice in ministries is generally appreciated but issues of quality control and separation from political input can occur.

Regulatory science is distinct where policies and actions are determined by agencies heavily dependent on science and where political processes are largely but not always kept separate (eg drug safety, food safety, environmental regulation). Again how this boundary is managed may affect the integrity of the decisions made.

Science advice in and around emergencies has been recognized internationally as a priority; such advice has distinct characteristics and requires preformed systems that remain rather patchily developed. Here the boundary between advice and decision-making is blurred.

But most media and critical attention has focused on the relationship between science and national policy-making. Here I see two types of advice and their roles and shape are quite distinct and their audience may vary according to the particular governance arrangements.

Deliberative advice is where a panel of experts, often an academy, takes time to explore an issue. Again how these operate varies. There can be a mismatch between the question asked and the answers provided. Academies may proffer deliberative reports unasked which are generally less impactful. Some of the issues that emerge include whether deliberative advice is timely, directed at the issues the policy makers need asked or whether the primary answer is “more research (and funds) are needed” – which does not help the policy maker. There also is a danger that policy makers expect a degree of certainty that science cannot provide and – whether through hubris or pressure – scientists sometimes respond without regard for the true boundaries of their knowledge. Formal boundary processes can assist. In my view the American academies have a great record in demonstrating how this can be done well.

Informal advice is a qualitatively different type of advice to the others I have mentioned, and is generally scientific advice rather than science advice. Often governments want essentially instant inputs – especially early in policy exploration. It ensures that science influences the policy process such that science is used effectively in exploring options. It can also allow advice throughout the policy cycle and ensure that the science base is preserved. Such advice depends on a very trusted relationship that generally relies on individuals in key positions. This however does not make it unaccountable. In my view its independence is important.

Let me make some final remarks - The key issue for science and scientific advice is that of maintaining trust with the policy makers, rather than being seen as a well-placed lobby for science. This is generally done through maintaining the integrity of both the form and the function of advice. Indeed the issue of sustaining trust across various stakeholders – the politician, policy maker, public, media and the science community - is the core challenge, made more difficult by differing expectations and the nature of post-normal science. It is also made more difficult when roles are confused or conflated.

The clearer the boundary role and structure is, the more effective translation is likely to be. But this does always require clarity about what is known, what is not known, what is the consensus and what are the levels of certainty, and the consequence of any inferential gap on the decisions that must be made, based on the available evidence

Those scientists from outside the formal advisory system clearly can have a lot of impact, but with that, we are dealing with quite a different set of issues about how science is communicated and the responsibilities of professional scientists to society. This is a major discussion in its own right.

None of this is easy and it is all very nuanced. But we must continue to find ways to enhance the use of good science in policy formation and to confront its misuse and ignorance. In the end this requires multiple advice modalities but all require confidence in the boundary roles. Training in these boundary roles is urgent. There is no single best way to do it and no unitary system. Strong academies are important, so are effective trusted providers of informal advice.

A set of guiding principles are needed and INGSA will be focusing on these in its international meeting in Brussels on 29-30 September 2016 (see www.globalscienceadvice.org – soon to be www.ingsa.org)