



Conference navigates gap between science and government

International experts on both sides share best methods for achieving evidence-informed policy

By **Michaela Jarvis**

More than 600 professionals from the worlds of science and politics converged in Brussels late last month to mine internationally accumulated expertise on how best to connect scientific evidence with government decision-making. Infectious disease outbreaks, humanitarian crises, the use of genetically modified crops, climate change, and other pressing issues will all require the input of scientists, speakers said.

“We understand now that there is no societal issue in which social and natural sciences do not have an important role to play,” Sir Peter Gluckman, chair of the International Network for Government Science Advice (INGSA), told the conference participants, who represented 72 different countries. In the opening session, Gluckman, who is the chief science adviser to the prime minister of New Zealand, defined the challenge of learning how best to “broker” the increasingly complicated evidence that science produces to meet the demands of government and society.

Allowing the exchange of best-practice principles among scientists who have provided science advice at the top levels of government around the world, the 29 to 30 September conference, organized by INGSA in partnership with the European Commission, also provided an intensive course applicable to all scientists and engineers who recognize a need to engage with decision-makers.

“The challenge of providing science advice that is relevant to public issues is the same for official science advisers or for any scientist performing his civic duty,” said AAAS Chief Executive Officer Rush Holt, who attended the event. “Clarity in explaining the technical components of an issue is only a part of what the adviser must keep in mind.”

Many of the speakers at the conference emphasized a need for researchers to immediately acknowledge that the scientific evidence they provide to government at any level—although more in demand than ever before—is just one of the ingredients that go into the messy process of policy-making. Holt, who is a physicist and served in the U.S. Congress for 16 years, said scientists providing advice

to government sometimes fail to take into account the competing interests faced by elected officials serving their constituencies.

“Naive advisers think that they need only to teach the policy-maker what the facts are, and then good solutions and good policy will follow,” said Holt, who is also the executive publisher of the *Science* family of journals. “Although science is the path to the most reliable knowledge, the public and government officials first must believe that and must trust the persons giving advice.”

The adviser must put the advice within the context of the political and ethical considerations of the issue and must know



Heather Douglas (left), Pontifical Academy of Sciences Chancellor Marcel Sánchez Sorondo, University of Aberdeen Vice-Principal for External Affairs Dame Anne Glover.

AAAS Council reminder

The next meeting of the AAAS Council will take place during the 2017 AAAS Annual Meeting in Boston, Massachusetts, and will begin at 9:00 a.m. on 19 February 2017 at the Sheraton Boston Hotel.

Individuals or organizations wishing to present proposals or resolutions for possible consideration by the council should submit them in written form to AAAS Chief Executive Officer Rush Holt by 1 December 2016. This will allow time for them to be considered by the Committee on Council Affairs at its winter meeting.

Items should be consistent with AAAS's objectives and be appropriate for consideration by the council. Resolutions should be in the traditional format, beginning with "Whereas" statements and ending with "Therefore be it resolved."

Late proposals or resolutions delivered to the AAAS Chief Executive Officer in advance of the February 2017 open hearing of the Committee on Council Affairs will be considered, provided that they deal with urgent matters and are accompanied by a written explanation of why they were not submitted by the 1 December deadline. The Committee on Council Affairs will hold its open hearing at 2:30 p.m. on 18 February 2017 in the Sheraton Boston Hotel.

when exactly the advice is needed. For policy-makers, said political scientist Dame Helen Wallace, "very often it's not what you want to do, it's whether you can do it, whether you can implement it, whether it will be behaviorally acceptable, whether it will be ethically acceptable." Wallace is a member of Academia Europaea and a fellow of the British Academy.

Mark Ferguson, who is the chief scientific adviser to the Government of Ireland, said he asks the politicians he serves, "What is it that you are trying to achieve, and how can science help you?"

In addition to recognizing the multiple challenges facing politicians, scientists generally need a desire to work across disciplines, and especially to integrate the social sciences with the natural sciences in order to provide information that will affect important decisions. This is especially true at a time when whole sectors of society are rejecting experts and evidence in favor of political ideology, as is happening in the United States with regard to acknowledging climate change.

We need the social sciences "to understand why social change is not happening at the pace or in the direction we would like it to, despite all of the efforts that have been made to date," said Martin Porter, who serves the European Climate Foundation as the executive director for industrial innovation and European Union affairs. By integrating social science research "with the world of natural science, perspectives open up for more rapid change."

Social scientists at the conference recommended communicating with stakeholders to increase the applicability of scientific evidence in

policy-making, as well as establishing a dialogue with citizens who are not stakeholders but who make up a representative sample of a population, both to sound them out on their views and to help inform them about the technical, social, and ethical aspects of a certain issue and the best corresponding scientific evidence. Such dialogue, said Heather Douglas, who is the Waterloo Chair in Science and Society at the University of Waterloo, can help both scientists and politicians to understand citizens' concerns.

"You need to know what people care about," said Douglas, "what risks they'll accept, which are not acceptable, and why."

Pushing public and stakeholder involvement a step further, conference experts recommended "citizen science" and "co-production" of scientific research, referring to it as a means of reaching out to citizens experiencing an overload of digitally delivered information—much of which is misleading—and reestablishing the public's trust in scientific evidence.

An excellent example of such participatory research is outlined in a report by the Pew Initiative on Food and Biotechnology, Douglas pointed out. An extremely contentious issue was the report's focus: the effect on monarch butterflies of a variety of corn bred to be insect resistant by genetically engineering it to produce a toxin derived from the *Bacillus thuringiensis* (Bt) bacteria, which in its natural form is used as a bio-pesticide by organic and conventional farmers. Scientists from academia, government, industry, and environmental groups worked together to plan the experiments for answering the question of whether the genetically modified corn posed a risk. Ultimately, virtually all of the participants accepted that any acute threat was negligible, especially compared to other threats such as conventional pesticides.

Panelists throughout the conference also emphasized transparency about how scientific results were derived and how the work was funded as crucial to policy-makers.

Mady Delvaux-Stehres, a member of the European Parliament who has often sought the advice of scientists, said, "Policy-makers know research is expensive, so they want to know who's financing it. Otherwise, they are suspicious."

Amid brand-new and time-tested ideas for fostering the connection between science and government, the longstanding AAAS Science & Technology Policy Fellowships won praise for their effectiveness during a presentation by UNESCO Assistant Director-General for the Natural Sciences Flavia Schlegel. The 43-year-old program, which places hundreds of scientists and engineers in U.S. government offices every year, is being viewed as a model for state and federal governments to consider.

After acknowledgment by many speakers of the many challenges of presenting increasingly complex scientific evidence to constrained policy-makers and a somewhat dismissive public, David Mair, head of the Geographic Coordination Unit of the Joint Research Centre of the European Commission, issued a battle cry.

"Evidence-informed policy is not axiomatic. It is not a requirement of any scientific or natural law. It is a value, and it needs to be fought for," he said. "I hope one of the positive things we take out of this conference is that there is a community of people prepared to fight."



David Mair participated in a panel discussion about the skills that experts and policy-makers need for effective dialogue.

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