

# Rebuilding Public Trust in Science for Policy-Making

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Ensuring the effectiveness and integrity of science-based policy-making is a high-priority task in Japan.

Until recently, there was little recognition within Japan's science policy circle of the need to discuss the role of science in government policy-making. A rather innocent notion that the established knowledge and wisdom of scientists would ensure proper decision-making was prevalent.

The great earthquake, tsunami, and nuclear accident that occurred in March 2011 induced a radical alteration of such a simple, optimistic view on science in policy-making. In the nation's bitter struggle for recovery, scientists sometimes created confusion by supplying divergent recommendations on evacuation, food safety, and cleanup. Public confidence in the impartiality of scientists faltered when people suspected that some of them were too easily endorsing government views. Scientific societies did not have access to critical information and failed to be systematically involved in the national effort. Polls have shown that public trust in science in Japan was damaged (see the chart) (1).

A more robust system of linking the scientific community to the government is clearly needed. That is not just to prepare for the next national emergencies. In fact, science in a broad range of fields is deeply built into the everyday operation of today's government. Science-based policy-making has grown ever more important in recent years, in parallel with the dramatic increase in the complexity and uncertainty of the ways in which science and technology interact with society and economy at the local, national, and global levels. Installing a proper framework for ensuring its effectiveness and integrity to secure public trust in, and support of, science is becoming an urgent task in Japan.

## Antecedents

Looking back, many nations have faced similar situations since the 1990s and have endeavored to straighten out their own sys-

tems of incorporating science into the process of policy-making, mainly by establishing principles or guidelines on science-government relations.

In the United Kingdom, controversies surrounding bovine spongiform encephalopathy during 1990s prompted public debate on science and policy-making. In response to mounting criticism that scientific knowledge was not properly reflected in relevant policies, the British government formulated a set of rules for science-based policy-making and then updated them several times, a process that continues to this day (2, 3). In addition, the British government issued a document in 2010, laying down general principles prescribing science-government relations (4). It stated that the government should respect the professional expertise of scientific advisers, and, in turn, scientific advisers should respect the decision processes in democracy and appreciate that science is only part of the evidence that government must consider in policy-making.

In the United States, the Obama Administration is strongly promoting scientific integrity in the government. On the basis of his concern that the sciences of climate change, stem cells, etc., were subject to political suppression under the Bush Administration, Obama declared his intention to "restore science to its rightful place." Soon after he took office, he issued a memorandum outlining his administration's basic policy for scientific integrity (5). His science adviser, John Holdren, finalized a more detailed guideline in late 2010, in cooperation with relevant departments and agencies, most of which have in turn issued their own guidelines for ensuring scientific integrity by March this year (6).

One can find many more ongoing efforts to give order to science-government relations. The European Union has been concerned about the issue since it drew up its own guideline in 2002 (7). In Germany, the Berlin-Brandenburg Academy of Sciences and Humanities set up a guideline in 2008, after conducting elaborate studies for several years (8). The Netherlands and Canada have also been leaders on this subject. Thus, efforts to ensure the effectiveness and integrity of

science-based policy-making have steadily accumulated during the past 15 years.

## Japan's Effort

In Japan, the fourth 5-year Science and Technology Basic Plan, adopted by the cabinet last August, specifically stated the need to set up basic principles with regard to the relations of science and technology to policy-making (9). The Science Council of Japan expressed its resolution to strengthen its own scientific advisory activities (10). The Japanese government is now moving toward enhancing the systems for scientific advice, including the appointment of science advisers to the prime minister and other ministers, the enhancement of the think-tank functions, and the strengthening of liaison with the Science Council of Japan.

Recently, the Japan Science and Technology Agency's Center for Research and Development Strategy (JST-CRDS), a semipublic think tank, issued a policy proposal calling for measures to ensure the effectiveness and integrity of science-based policy-making in Japan (11). The proposal features a draft of general principles on science-government relations. Formulated by referring to foreign examples and also taking into consideration Japan's particular situations, the draft includes 10 principles:

*The role of scientific advice in policy-making.* Scientific knowledge is an essential element in the policy-making process, and the government must duly respect it. At the same time, scientific advisers must recognize that scientific knowledge is not the sole basis of government decision-making.

*Seeking scientific advice in a timely and pertinent manner.* The government shall endeavor to identify policy issues that require scientific knowledge in a timely and pertinent manner and act to acquire the best scientific knowledge available.

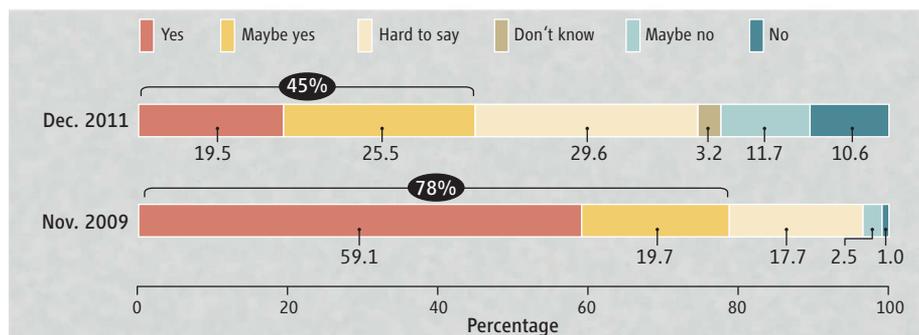
*Ensuring the independence of scientific advisers.* The government must not intervene in the activities of scientific advisers. As a means to ensure objectivity and fairness, scientific advisers shall declare their own conflicts of interest.

*Awareness of responsibility as scientific*



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**Survey results.** Question: Should the direction of research and development be decided by experts who are well-versed in the subject? [Source adapted from (1); original data come from surveys conducted by the National Institute of Science and Technology Policy in December 2011 and the Central Research Institute of the Electric Power Industry in November 2009]

*advisers.* Scientists shall always provide scientific advice for the public welfare and with the awareness of the large influence scientific advice has on the process of public policy formulation.

*Achieving broad perspectives and balance.* When the government seeks scientific advice, it should strive to secure the participation of scientists with appropriate insight and experience matched to the nature of the issues and to obtain balanced advice based on broad perspectives.

*Ensuring the quality of advice and integrating viewpoints.* Scientific advisers shall strive for a balanced treatment of observational and experimental results and of cited papers and should seek to improve the quality of scientific advice through peer review. The Science Council of Japan and academic societies shall, where appropriate, endeavor to present high-quality scientific advice by integrating views of the nation's scientific community. The government shall ensure, as needed, that scientific knowledge used in policy-making has gone through independent peer review by qualified experts.

*Proper handling of uncertainty and diversity.* Scientific advisers shall provide policy-makers with clear explanations of uncertainties and diversity of views associated with scientific knowledge. The government shall respect such uncertainties and diversity of views.

*Free disclosure of scientific knowledge.* In principle, scientific advisers are free to make their scientific knowledge public. They shall do so responsibly, however, in awareness of the large influence that scientific knowledge can have on policy-making and public opinion, as well as on society as a whole.

*Even-handed treatment of scientific advice by the government.* The government must treat with fairness the scientific knowledge it acquires. It must not approach scientific advice with any preconception, distort

scientific knowledge when making it public, or intentionally add wrong interpretations when using advice in policy-making. The government should explain how scientific advice was considered when drawing up policy. It is especially important for the government to explain the rationales when making policy decisions that are in conflict with the scientific advice obtained.

*Ensuring transparency of the scientific advice process.* To improve the quality and reliability of policy-making based on scientific advice, the government shall ensure transparency of the scientific advice process.

This draft of principles is intended as a starting point for discussion among a wide range of stakeholders in Japan. It is hoped that, through such discussion, the principles will be finalized, and relevant organizations will draw up and implement their own guidelines, reflecting the characteristics of their respective missions.

### Outlook

The efforts for scientific integrity in Japan should not proceed in isolation from those in other nations. The scientific community and the government of Japan, as well as other nations, have the duty to provide their best contributions to solving a broad range of problems that today's society faces, including global problems. At the same time, scientific activities, not only in advanced nations but also in emerging and developing nations, are increasing rapidly. Thus, scientific integrity is a common goal that should be pursued internationally.

Some international efforts are already moving forward. The InterAcademy Council (IAC), which offers scientific advice to international organizations, is leading such efforts. IAC came under the spotlight in 2010, when it conducted a review of the operation of the Intergovernmental Panel on Climate Change (IPCC) and made recom-

mendations to reassure its scientific credibility (12). IAC's more recent endeavor is its project to produce educational materials for the global science community on "research integrity and scientific responsibility." Meanwhile, the U.S. National Science Foundation, in May this year, hosted the Global Summit on Merit Review, which stressed the importance of ethics and integrity in review processes. International collaboration at the academic level is also rapidly advancing, as more and more social and natural scientists are taking interest in this issue. They have begun extensive discussion among themselves and with policy-makers (13, 14).

Ensuring the effectiveness and integrity of science in policy-making is a complex problem. In promoting relevant efforts, particularities of diverse policy and scientific fields must be given due consideration. Also, the approach to this problem should vary depending on national differences in political systems and scientific traditions. That is why all stakeholders from all nations should actively participate in this endeavor and advance dialogue. Such a concerted effort will not be easy to organize and manage. But that is exactly what is needed now, as we have entered the age of intense, intricate interaction between science, technology, and the globalized society.

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