

Expert and Citizen Assessment of Science and Technology (ECAST)

Technology Assessment and Public Participation: From TA to pTA

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Consortium for Science,
Policy & Outcomes
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Cover photos: Scenes from World Wide Views on Biodiversity Day in the US, (from top to bottom) participants entering Koshland Science Museum in Washington, DC; Denver participants during Skype call with Alberta, Canada; lively discussion among participants in Boston, MA; Phoenix, AZ participants during their exercise break.

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1= Arizona State University; 2 = Pomona College, 3 = Museum of Science, Boston; 4 = Science Cheerleader and SciStarter, 5 = University of Massachusetts; 6 = Virginia Tech

Our Gratitude

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TECHNOLOGY ASSESSMENT AND PUBLIC PARTICIPATION: From TA to pTA

Executive Summary

Expert and Citizen Assessment of Science and Technology
December 2012

From 1972 to 1995 the United States became a world leader in applying insights about technological change to public policy by creating and operating the Congressional Office of Technology Assessment (OTA). The support base for OTA was always narrow, however, and the office ultimately fell victim to a political clash between Congress and the President in 1995, resulting in the cancellation of its funding.

In contrast to this narrative of rise and decline, more than a dozen European nations plus the European Parliament, inspired (ironically) in part by the U.S., established their own technology assessment agencies from the mid-1980s onward. Most remain in operation today as vital contributors to science and technology policy discourses and developments in their respective countries. In addition to strong analytical capacities, these agencies have pioneered promising methods for citizen participation, giving rise to a new practice known as participatory technology assessment (pTA).

In the U.S., recognition of pTA's value has grown in recent years. In light of the limited prospects for major initiatives to develop it, however, a number of organizations formed the Expert and Citizen Assessment of Science and Technology (ECAST) network in 2010 as the appropriate means to advance pTA in the U.S. ECAST's founding organizations are the Consortium for Science, Policy and Outcomes at Arizona State University; the Loka Institute;

the Museum of Science, Boston; Science Cheerleader; and the Science and Technology Innovation Program at the Woodrow Wilson International Center for Scholars.

This report about participatory technology assessment (pTA) is prepared by ECAST members. Our primary motivation is to articulate the role that a network like ECAST might play in conducting and institutionalizing pTA in the U.S.

ECAST's first large scale project was coordination of the U.S. component of World Wide Views on Biodiversity. This global citizen consultation, conducted in 25 countries on September 15, 2012, provided input to the Eleventh Council of Parties of the UN Convention on Biological Diversity (CBD) that took place the following month. In this report, we examine the process and results of WWViews as a means of understanding the challenges and opportunities for expanding the practice of pTA in the U.S. Our report thus takes up three main themes:

- The context in which pTA has emerged and in which it might develop
- The results and implications of WWViews
- Opportunities for developing pTA

From TA to pTA

TA and pTA developed in an era that witnessed a significant change in the role of science and technology in society. The

mobilization of scientific resources during World War II constituted a watershed beyond which S&T became increasingly central to the nation's military and economic development. Government support through the funding of research and development and the rapid expansion of higher education during the postwar period were critical to this transition.

By the 1960s, awareness of the escalating complexity and significance of the technological changes that government was supporting prompted Congressional interest in a dedicated capacity for foresight that could inform relevant public policies. OTA was a product of these developments. Despite being the smallest Congressional office, OTA published 755 in-depth reports from 1972 until its closure, and in 1994 alone provided expert Congressional testimony on 38 occasions.

The role of science in society continued to change over the course of OTA's institutional life. Given the insular and culturally exalted status of science, a significant trend of the past several decades has centered on broader access to and participation in technological policies and practices. Key elements in this opening have included:

- Diversification of the people who do science, especially as reflected in growing numbers of women, African Americans and Latinos in the S&T workforce.
- Direct participation by lay people in citizen science and community-based research.
- Challenges to the authority of experts by lay people.
- The emergence of dissident scientists who directly challenge research programs backed by powerful industry, government and scientific institutions.

Participatory impulses among OTA insiders dated to its inception, notably from Senator Edward Kennedy, who served on the Office's governing board, and Hazel Henderson, a member of a public advisory board. Both

thought ordinary citizens had a role to play in such matters as suggesting topics for study. In a politically delicate context where professional expertise and objective knowledge were buttresses against partisan conflict, however, these impulses were never embraced by OTA.

Today's context is different, and harbors prospects for a reinvigorated technology assessment that includes participatory elements in appropriate circumstances. In addition to the European developments and more general shifts in the social role of science already mentioned, the Obama administration has advocated citizen participation in public policy through its Open Government Initiative, and a White House-commissioned report on the ethics of synthetic biology and emerging technologies lists "Promoting Democratic Deliberation" as one of the five ethical principles for the governance of emerging technologies.

World Wide Views Results

Organized by the Danish Board of Technology (a Parliamentary technology assessment body), World Wide Views on Biodiversity was the second global citizen consultation designed to provide input to a United Nations convention.*

At each WWViews site (including Boston, Denver, Phoenix and Washington, DC in the U.S.), 100 ordinary citizens were selected to reflect the diversity of their country in characteristics such as education level, income, race and ethnicity, and rural vs. urban residency. Experts in biodiversity did not participate in order to assure a deliberation that reflected the views and knowledge of lay people, and members of environmental organizations, who would naturally be interested in such an event, were limited in number to prevent undue influence in the

* The first was World Wide Views on Global Warming, held in advance of the December 2009 UN climate summit in Copenhagen.

deliberation. Participants received a scientifically neutral briefing booklet on biodiversity and the policy issues to be addressed at the CBD in advance of the deliberation, which were supplemented by short videos with the same information on deliberation day. Participants were thus considerably more informed than most citizens would be about these issues. To assure a fruitful interchange of ideas, all participants were assigned to tables with 5-7 of their peers and a neutral facilitator, where they discussed four thematic issues for about an hour each, and then voted individually on multiple-choice questions. The themes were:

- Why biodiversity is important
- Protecting biodiversity on land
- Protecting biodiversity at sea
- Burden and benefit sharing among countries

Main Results

Looking across all the responses, it is clear that most participants think more should be done to stem the decline of biodiversity. Sixty-three percent of U.S. participants and 74% worldwide said they were “very concerned” about the loss of biodiversity, and on a question asking who is impacted by biodiversity loss, 87% (84% for the world) thought that most people in the world are affected by biodiversity loss today. Digging deeper, however, 42% percent thought that “My country in general” is impacted (participants could select up to three of seven statements). It may be significant that nearly half of participants from developing countries, but only a quarter of those from developed countries, selected this item, as this suggests a perception in the latter countries that biodiversity is “someone else’s problem.”

On a range of questions, participants were willing to support expanded regulation of activities that negatively impact biodiversity, while large majorities (60% from developed countries and 71% from developing

countries) thought that all nations should contribute financially to biodiversity preservation in developing countries, “but industrialized countries should pay the main part.”

Beyond the widespread concern about biodiversity and a disposition to take action, the results show the participants’ attention to nuances and multiple perspectives on the issues under consideration, rather than a single-minded urge to promulgate new rules that will mandate environment-friendly behavior. For example, participants were mixed in their responses to a question about trade-offs between new protected areas and economic aims, but overwhelmingly supported more regulation on the High Seas, where little exists at present.

Table 1 - Preferred Policy Instruments (US)

<i>Which of these measures do you prefer to ensure the protection of nature areas in your country?</i>	%
• Stricter laws	37
• Enforce existing laws	33
• Incorporate biodiversity in planning	58
• Incentives for stakeholders	70
• Educate children and public	87

Participants were thus willing to advocate new laws in particular circumstances, but were significantly more inclined to support policy instruments that inform citizens through education, help them adjust to change through incentives, and enhance government effectiveness through planning (Table 1).

Many differences thus end up in the details. For example, citizens clearly supported incentives to eliminate over fishing, but

Table 2 – Pacing Implementation

<i>Should incentives and subsidies that lead to over fishing be abolished?</i>	
• Remove subsidies quickly with no	9 assistance to fishers
• Phase out subsidies quickly with	37 some assistance
• Phase out subsidies slowly with some ...	48 assistance

differed over the pace of change (Table 2). This creates a clear and concise message for policy makers:

- Goal: overfishing should be stopped
- Policy instruments: incentives are an important tool
- Tactics: negotiations should focus on the timing rather than the means of change.

The National Question

The design of WWViews permitted hosts at the various sites around the world to develop a question focused on an important issue in their country. The U.S. team, with input from a panel of a dozen distinguished scientific and policy experts in biodiversity, designed a session that elicited individual and group responses, the latter in the form of a recommendation from each table. Participants were first asked to discuss what they could do “individually, among neighbors, or even at the state or local level, to preserve biodiversity” by identifying which of 13 statements reflected their views.

- One battery of five statements provided opportunities to decline involvement, for reasons ranging from busy personal schedules to a preference for market solutions over public policies for addressing biodiversity concerns. *The number of participants selecting these items was low, ranging from 0% to 13%.*
- A second battery of five statements included changes in personal behavior (eating less meat, etc.), learning about the issue, and participating in local efforts for education, taking direct action such as restoring a damaged natural site, or advocating new policies. *Participant support on these items ranged from 71% to 85%.*
- The final three statements called for leading educational, direct action and policy efforts. *A sizable minority (34% to 47%) expressed their willingness to take these types of actions.*

- For these last two types of actions (participating and leading), participants were *most willing to be involved in education, then direct action, with policy ranking last.*

The qualitative question asked participants at each table to prepare a statement that either identified ways of encouraging a national biodiversity strategy and action plan, or that argued against adopting such a plan. Again, calls for education were the most common, appearing in more than 4 of every 5 table recommendations. Other categories of recommendations were enhanced public awareness (e.g., labeling of products), incentives, funding, governance, research, new technology, and changing habits (e.g., planting native landscapes, eating less meat). None of the tables rejected a national biodiversity strategy, although individual participants at several tables dissented from the support that their peers registered for such a strategy.

Selected National Question Recommendations

Education

‘Education should be central in a national biodiversity strategy. Biodiversity should be included in national common core standards. Also, each state should develop biodiversity educational curricula, which includes field trip activities that connect students with local ecosystems and farmlands.’

Governance

‘Businesses, government and citizens should be accountable, therefore all need to work together.’

Expert and citizen participation

‘Do grass roots education and organizing and develop written, detailed resolutions with support of experts.’

Research

‘Create metrics to analyze impacts of actions/policies.’

Political Bias

The political orientation of participants was significantly over represented by those who described themselves as left of center and somewhat over represented for centrists, leaving those to the right of center significantly under represented. It is thus likely

that the results of the event register a greater disposition to rely on government action than would have been the case with a participant pool that more closely reflected the political leanings of the U.S. population. Notwithstanding the imbalance, however, even those to the right of center ranked economy and biodiversity as equally important goals. The near-universal support for planning on the national question may reflect a sense that the substantial resources (existing laws, local projects, etc.) that are already in place for a national biodiversity strategy should be better utilized.

Circulating the Results

The primary purpose of WWViews is to share the views of ordinary citizens with the biodiversity policymakers. Two important outcomes signal success in this regard:

- 3000 copies of a results report prepared by DBT with input from project managers were acquired by attendees at the UN biodiversity summit
- CBD leaders (e.g., the Executive Director and the Japanese Minister of the Environment) endorsed a future WWViews and called for improved

integration of the results with the decision-making process.

This reception is an important milestone for the ongoing WWViews project, but there is both potential and need for a far wider and sustained amplification of the results.

Much like policymakers for science aspire to cultivate a research enterprise that generates “usable” research in the service of complex issues like biodiversity, calls for public engagement with science (pTA in the context of this report) demand equal attention for processes that articulate “usable public values” representing not only stakeholders and interest groups, but also the knowledge and experience of a diverse American public. Amplification of the deliberative results through public science centers, secondary and college curricula, and other channels can stimulate and sustain the public’s engagement with the results of WWViews and create opportunities for their integration into policy networks, creating “usable public values”.

Designing programs to engage the public in this way (Public Engagement with Science) involves a re-conceptualization of audiences as not only learners, but as decisions makers in society (see figure below).



Activities undertaken after WWViews within this framework included:

- Biodiversity activities at the Museum of Science, Boston that culminated in a “Biodiversity Day” and forum on “Who Should Protect Biodiversity”
- A “science café” and online version of the WWViews “National Question” sponsored by the Marian Koshland Museum of Science in Washington, DC.
- Youth forums at the Phoenix Zoo and Seattle Aquarium that help participants understand the complexities of bringing science into the policy realm.
- Sessions at Informal Science Education professional meetings to introduce professionals to the concepts behind WWViews and learn their perspectives on adopting such programs at their own institutions.

Early indicators are that all of these initiatives met with enthusiasm, but a more sustained program and evaluation is required to better judge their prospects.

Pathways to pTA

The most promising *outcomes* of the WWViews project in terms of ECAST’s development are:

- The insights it generated about the informed and considered views of ordinary citizens around the world on practical policy issues; previously there was little comparable information for such views on biodiversity
- The positive reception at CBD
- The engagement (although nascent) of citizens in addition to those who participated directly
- The mobilization of ECAST core members and significant contributions by experts, such as the panel that helped shape the National Question

There are three main *challenges* for pTA in the

U.S.

- The media has little interest in biodiversity except when high stakes controversies (such as developing an undisturbed landscape) erupt. Yet policy makers are unlikely to heed citizen views from deliberations in the absence of a wider public awareness of them.
- Sustained engagement is critical, but most professionals in the informal science education community lack the particular skills required for designing and conducting programs for this engagement.
- Research on WWViews to date has been organized informally and somewhat independently. Data on issues like the political orientation of participants or the dynamics of table conversations are thus missing for most sites, which limits project managers’ ability to understand strengths and weaknesses and the options for addressing the latter.

Several *action items* for WWViews connected to these challenges are the need to make balance a priority in recruitment of participants and facilitation, strengthening the research capacity and integrating it with the project operations, including a few journalists as participants, and incorporating emerging technology issues (such as synthetic biology) into future deliberations to generate debate within CBD as well as media attention.

For ECAST, the agenda going forward includes the following:

- Encourage the Obama Administration to develop the citizen engagement component of the Open Government Initiative during its second term.
- Develop a strategy to encourage training in science museums, zoos and other science centers for the skills needed to implement programs for Public Engagement with Science.
- Solicit input from business, government and nonprofit organizations about the

ECAST mission and strategies for accomplishing it.

- Establish and sustain a presence in the European Parliamentary Technology Assessment organization; build ties with partners in the World Wide Views Alliance through collaborative research and cooperative projects for the next WWViews deliberation (e.g., for developing national questions).
- Connect participant recruiting with sustained engagement. For example, all applicants for a deliberation can be invited to subsequent events or receive results.
- Track and report events such as conference presentations, science cafes, and new ties. Prepare a protocol for tracking the resources (including in kind labor) required to conduct the next WWViews or other deliberation conducted by ECAST.

When ECAST was launched in 2010, Richard Sclove noted in *Reinventing Technology Assessment: A 21st Century Model* that “the time is ripe” for integrating a “modern, expert-and-participatory technology assessment capability into our nation’s civic life” (p. 41). The ECAST activities undertaken since then, including those highlighted in this report, are offered here as a proof-of-concept. The network’s efforts in the next few years will be critical in determining whether that concept can begin to take shape as an ability to better inform public actions that affect the responsible design and use of technology.