OECD Science, Technology and Innovation Outlook 2016

# Policy Profile

# Public engagement in STI policy

## Rationale and objectives

Over the last decade, processes of public engagement – in which members of diverse publics express their views, concerns and recommendations – have become increasingly common features of STI policy. There are multiple rationales for public engagement in STI policy. First, public engagement can broaden the knowledge base on which to make STI policy decisions, enhancing the quality and relevance of the knowledge produced and helping to steer science and innovation toward socially desirable objectives. Second, engaging the public upfront on questions of controversial technology policy may stave off a public outcry and enhance trust between scientists and the lay public. Third, from the perspective of democratic governance, public engagement can enhance the meaningful participation of citizens in decisions that affect them deeply (Fiorino, 1990; Stirling, 2008). But public engagement can also help improve the relations of science and society by building a more scientifically literate, supportive and engaged citizenry.

Public engagement in STI policy often involves a wide range of instruments, from less deliberative forms of public communication (e.g. notice and comment rulemaking, surveys) to more dialogic mechanisms (e.g. real-time, constructive technology assessments or citizens' juries). It is important to note that these tools are often employed together rather than in a stand-alone approach. (See Table 1.1 for a typology and country examples.) Such efforts consider publics not as passive recipients of expert knowledge, but as actors shaping technologies and their trajectories (Winickoff et al., 2015).

## Major aspects

**Table 1.1.** Typology of public engagement mechanisms and some country examples

| Key policy features | | Key policy instruments | Some country examples |
|---|---|---|---|
| Communication* | Online notice | Publishing research plans/regulatory actions on website with public access | Lithuania's public e-platforms; Poland's Public Information Bulletin |
| | Open science | Open access to academic research | South Africa's Scientific Electronic Library Online; Turkey's Ankara Statement on Open Access and National Open Science Committee |
| Consultation | Public input on agenda-setting | Surveys, online feedback, bottom-up sourcing, etc. | Colombia's Ideas for Change Programme; Turkey's Technology Roadmaps; Netherlands' National Research Agenda; Argentina's Argentina Innovadora 2020; The Great New Zealand Science Project |
| Participation | Anticipatory governance | Foresight activities regarding technology assessment | Czech Republic's Parliaments and Civil Society in Technology Assessment (PACITA); Germany's BMBF Foresight Process |
| | Dialogue for identifying research priorities | Workshops with publics to identify key societal questions | Germany's dialogue on future technologies; Denmark's INNO+ Catalogue |
| | Citizen science | | Austrian Centre for Citizen Science |

*Source*: Based on Rowe and Frewer (2005) and country responses to the EC/OECD International Survey on STI Policies (STIP), edition 2016.

### *Communication*

One form of engagement might be considered "communication", and encompasses instruments that convey information from STI policy makers (or other sponsors) to the public. The information in these efforts is unidirectional. Still, such approaches can have significant implications for innovation, in part because such transparency can help foster public trust in scientific advice. Examples of this approach include, for instance, making strategic research plans accessible to the public, either in hard copy or online, or "open science", defined as "an approach to research based on greater access to public research data, enabled by ICT tools and platforms, and broader collaboration in science, including the participation of non-scientists, and finally, the use of alternative copyright tools for diffusing research results" (OECD, 2016a).

### *Public consultation*

Another form of engagement is public consultation, in which STI policy makers (or other sponsors) initiate the collection of input from the public. These approaches generally do not entail formal *dialogue* between publics and policy makers. Nevertheless, information elicited by policy makers from the public can help guide socially responsive STI activities. Examples of public consultations include formal requests for public input regarding STI research priorities, the conduct of surveys regarding public views on science and technology, etc.

### *Public participation*

Unlike the aforementioned forms of engagement, public participation entails a formal *dialogue* between policy makers and publics. Of central importance in participatory exercises is the act of deliberation. Information is exchanged across experts and lay publics, which can facilitate mutual learning and even changes in opinions of both the policy makers and public participants. One example of public participation includes participatory methods of technology assessment.

While the trend toward the greater adoption of public engagement policies within STI suggests that countries view this as beneficial, there are some challenges to its effective implementation. First, previous efforts at engagement and scholarly work suggests that engagements are most effective at achieving the stated objectives when they do not frame the event as being purely educational, as if needed essentially to fill gaps in public knowledge. In addition, outreach designed to engage "the public" will seldom be representational of national publics, and may lose legitimacy if the output of the engagement claims a public mandate. This has been termed a "fundamental problem of scale" (Lövbrand et al., 2011; Stilgoe et al., 2014) and points to the need to consider engagement exercises as only one element of a more responsible STI policy. Another challenge relates to making STI policy responsive to the outputs of public engagement efforts. There is some risk that weak public engagements do not facilitate true deliberation, and instead serve to legitimate existing STI policies. Furthermore, these mechanisms of engagement are most likely to have an impact when technologies are further "upstream", before they are locked-in (Collingridge, 1980). This means that, while especially effective in cases of emerging technologies, public engagements can be more challenging for technologies that are already deeply entrenched.

## Recent policy trends

### *Moving ethical, social, legal and political considerations upstream*

Recognising that much of modern STI can have profound implications for individuals, communities and society, policy makers have adopted a range of approaches to understand the ethical, legal and social implications of research and innovation. The most recent iteration of these approaches seems to go further, aiming to integrate the consideration of these and other issues "upstream" in the innovation process (Wilsdon and Willis, 2004). These efforts include Europe's Horizon 2020 programme and the US National Nanotechnology Initiative, among others. Norway, for example, has replaced its programmes on research on corporate social responsibility and the ethical, legal and social aspects of technology with the Programme on Responsible Innovation and Social Responsibility (SAMANSVAR), which is aimed at "addressing global societal challenges through responsible technology development and a socially responsible private sector". Spain also explicitly acknowledged the promotion of responsible research and innovation (RRI), mainstreaming public engagement at the Spanish Foundation of Science, Technology and Innovation, and embedding public engagement "in the promotion of scientific culture". In June 2015, Austria's Federal Ministry of Science, Research and Economy founded the Alliance for Responsible Science, the objective of which is to steer the national research system towards RRI.

### *Public input on research priorities and strategies*

One of the most pronounced trends in national STI policy on public engagement is the use of "bottom-up" approaches to generating research strategies and priorities. These approaches can be public consultations, in which sponsors solicit input from public participants via surveys or electronic platforms, or dialogues in which research experts and public participants exchange information and develop research plans together, for example via workshops. Some countries have employed a combination of these approaches. Argentina's Innovadora 2020: National Plan of Science, Technology, and Innovation was developed based on an "open and participatory approach", whereby three working tables of 350 experts developed a strategic research plan, which was then posted on the Ministry of Science, Technology and Productive Innovation's website "for public consultation". Moreover, the Ministry involved seeks input from the broader public and civil society organisations regarding the "forms of knowledge and technology they deem most appropriate to satisfy their demands".

Colombia's Ideas for Change Programme aims to identify, support and provide innovative solutions from science, technology and innovation in order to address the basic needs expressed by the country's poor and most vulnerable communities. In identifying those needs, the programme targets grassroots communities, who then articulate their needs on an electronic portal. If those needs are selected, those publics are actively involved in the implementation of the research plan, "contributing knowledge, experience, work and commitment".

The Danish INNO+ Catalogue lays out six thematic areas of research for Denmark, and resulted from a national dialogue run by the Ministry of Science, Innovation and Higher Education with non-state actors and R&D stakeholders on research and development (R&D) and innovation priorities for solving societal challenges.

The Netherlands adopted a "bottom-up" process to develop the National Research Agenda, through which any member of the public in the Netherlands was able to submit their "question to science". In total, 11 700 questions were submitted, which were organised into 140 key scientific questions to which Dutch researchers could make a major contribution.

### *Use of electronic platforms, both for transparency and to obtain public input*

Many respondent countries indicated that they are using electronic platforms to enhance public engagement, either by increasing transparency or by soliciting feedback from public participants on STI policies. With respect to the former, a number of countries require public notice and comment periods for legal and strategic documents. For example, Lithuania generally requires that every national project be announced and made available for public opinion, including through "public e-platforms". In South Africa, the Scientific Electronic Library Online facilitates open access to academic journals.

With regards to public participation through the use of online platforms, Colombia's Ideas for Change programme uses an online portal to facilitate the submission of the research and innovation needs of poor communities. In Turkey, the 12 Technology Roadmaps were developed using online questionnaires given to the private sector, universities and NGOs. The Design Finland programme was prepared through broad consultation, including the use of an open social media channel to solicit public feedback. While now ceased, the Greater New Zealand Science project entailed a national public consultation campaign, including a website where public participants could state their opinions about the most significant research and innovation needs.

### *Foresight and participatory technology assessment*

Countries are using a range of societal technology assessment techniques, which include formal risk analysis but can also consider the longer-term social implications of technologies that are not easily reduced to health and safety risks (OECD, 2016b). In the Czech Republic, the Parliaments and Civil Society in Technology Assessment (PACITA) ran from April 2011 to March 2015, during which three methods of technology assessment were used: expert panels, future scenarios and citizens' consultation. In Germany, the BMBF Foresight Process engages in technology foresight efforts, alternating between "technology push"

and "demand pull" perspectives. The approach aims to anticipate long-term trends in society related to science and technology.

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