

Shared challenges, transformative actions

OECD Science and Technology Policy Ministerial

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Issues Notes



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Breakout A - How to engage society in science, technology, and innovation for green and just transitions?

24 April 2024, 11:45-13:00 Paris time, OECD Conference Centre, Room CC2

Chaired by: M. Mehmet Fatih KACIR, Minister of Industry and Technology, Türkiye

Key issues

- Far-reaching transition policies and technological shifts require diverse inputs, widespread acceptance, and legitimacy, for which reason many actors in society should be engaged in science, technology, and innovation (STI) processes and policies. Stakeholders across society possess diverse and unique sources of knowledge that can help to inform the choices of researchers and policymakers, and better understand the possible repercussions of policy decisions. In some spheres, so-called 'collective intelligence' has been shown to outperform other forms of knowledge generation. In addition, the value of citizen science has long been recognised in environmental and health research, and transdisciplinary research that engages different societal actors and disciplines can make an important contribution to solving complex societal challenges. Widespread engagement can also help identify the needs of different social groups, including those otherwise underrepresented in science, innovation, and policy spaces.
- Engaging society is essential to counter the erosion of trust in traditional authorities in many countries. Declining public trust in institutions has been precipitated, at least in part, by the impacts of social media, where research shows that false information circulates more rapidly than true information. Trust in government is lower among individuals in certain socio-economic groups, such as those experiencing greater financial instability, an issue of concern if transitions cause some groups to experience greater precarity. While scientists remain one of, if not the most trusted group in society, national surveys indicate that this is not a universal trend and is impacted by demographic characteristics and political affiliation. Specific concerns about trust in science came to the fore during the COVID-19 pandemic and have been heightened by the emergence and spread of disruptive technologies such as artificial intelligence (AI).
- Transparent and inclusive engagement practices are needed to increase the legitimacy of policy decisions. Clearly insufficient today is the historically prevalent one-way communication model whereby information flows from policymakers and scientists to the public without sufficient opportunity for feedback or dialogue. A significant share of the population across countries, from 64% in China to 35% in Japan, believe that scientists do not know how to communicate to the public (Edelman, 2024). In response, there is increasing recognition that scientists and policymakers require different approaches to communicate scientific results and evidence-based policy decisions to the public. Digital technologies provide opportunities to engage with stakeholders from across society in new ways but can also accentuate divides. Broad inter-disciplinary approaches, where scholars in the humanities, sociology and other social sciences collaborate with researchers in natural sciences can also help to develop and implement technologies in human-centric ways.

- Engaging society in STI involves several challenges. Policymakers often lack sufficient time and resources to develop, implement, and evaluate engagement initiatives to ensure they are fit-for-purpose and context-sensitive. Important disparities and deficiencies exist in knowledge and awareness of STI on the side of the public, and policymakers and scientists do not always appreciate public concerns and interests. Institutional incentives also limit motivation for outreach among many scientists. Such deficits can hamper public communication, as well as efforts to increase engagement. For example, at the height of the COVID crisis, a lack of understanding of basic concepts of probability increased susceptibility to misinformation about vaccines among some members of the public. In addition, attention-based business models associated with the news and social media industry can incentivise biased or polarising coverage of STI.

Agenda

Intervention	Duration
Opening remarks by Chair	5'
No set order – Heads of Delegation participating in this session raise their flag as they wish to intervene, and the Chair will give HoDs the floor in the order in which they register interventions.	2' per Delegation
Closing remarks from Chair	3'
Concluding remarks from other Breakout rooms	10'

Key directions for policy

The OECD has drawn attention to the importance of several policy measures in this domain. These include actions to:

- Improve STI communication practices to cultivate mutual trust and understanding.
- Engage a diverse and inclusive range of societal groups in STI and its policies.
- Commit to using the outcomes of citizen engagement in STI policy processes and instruments.
- Mainstream and scale up public participation in STI activities and policymaking, including by setting up institutions and partnerships to for high quality engagement processes.
- Design citizen engagement as an active dialogue with society rather than one-off and one-sided communications.
- Advance and empower citizen led STI activities through experimentation and knowledge sharing.

Key questions for discussion

- How does your country identify and act on high-value opportunities to engage the public in different stages of STI or STI policy development (from co-design to co-production and dissemination/uptake)?
- What policy approaches and tools has your country found to be most effective in promoting the inclusivity of STI activities and policy making? Can you share specific challenges and lessons ?
- What should the OECD do to help governments to foster societal engagement with STI and STI policy?

Background

Societal engagement is the process by which public authorities engage citizens to shape STI and its policies. It encompasses a spectrum of activities. These include communication efforts to inform and educate, consultation processes seeking feedback and input, active participation in STI activities, such as citizens engaging in scientific research projects, and providing inputs to STI policy design.

In the pursuit of a just and sustainable future, engaging society in STI activities and policymaking processes is essential. Broad engagement can help to make STI processes more efficient, effective and, in addition, responsive to the needs of distinct social groups. Public engagement can improve the legitimacy of transition policies, mitigating political obstacles to socially valuable change, and supporting equitable distribution of the benefits and costs of transition. Citizens possess a wealth of diverse knowledge that can add to STI and its policies. They also exercise influence as voters and adopters of new technologies and behaviours.

While more societal engagement could advance and even accelerate transitions, policymakers and researchers often have limited resources and time with which to develop and implement effective engagement strategies. Disparities in STI literacy and awareness among the public further complicate engagement efforts. The media landscape, often driven by attention-based business models, can exacerbate these challenges by encouraging the promotion of biased content, skewing the representation and evolution of public discourse. Overcoming these barriers is crucial.

Current societal engagement practices are also deeply influenced by cultural factors and long-standing communication norms. STI and its policy design have traditionally relied on scientific experts, with the public perceived as the beneficiary, but not a critical contributor. This imparts biases in the direction of STI and challenges to its diffusion. Rather than minimising the public's contribution, effort should be invested in making STI more accessible and enhancing scientific literacy.

Improving inclusive society-STI engagement

Communication, consultation, citizen engagement in STI policy processes, and citizen participation in STI activities, are all complementary forms of public engagement (Figure 1).

Figure 1. Complementary citizen involvement activities



Source: Paunov and Planes-Satorra (2023)

- Communication activities help to inform citizens about STI issues. They can increase awareness, interest, and understanding of specific topics, and help combat the spread of misinformation and disinformation.
- Consultation activities comprise methods used to collect citizens' views on specific issues including feedback on policy or legislative proposals. They are a relatively low-cost and quick way to enhance engagement and improve preparation of policy. Among other things, they help gather information on the range of opinions that need to be reconciled.
- Citizen engagement is the process by which public authorities engage citizens in a dialogue to help shape STI policies. Dialogue can take different forms, such as citizen assemblies that bring together a representative group of citizens to develop policy recommendations, or online deliberation processes where inhabitants in given locations express their preferences through a dedicated virtual platform.
- Direct participation in science and research activities offers another and more active way to build awareness of and interest in STI. While such participation tends to attract citizens with a specific prior interest, they can also serve as an entry point for those new to the field and help reduce the perception of research as disconnected from communities' needs and priorities (the "ivory tower").

Addressing underrepresentation and accessibility is vital if STI is to address complex society-wide challenges. However, there are significant obstacles to widespread engagement. Disparities in scientific literacy and awareness are a major obstacle to inclusive societal engagement. These disparities are shaped by factors such as historical context, educational backgrounds, socio-economic status, and access to reliable information. They lead to different perceptions of scientific institutions and research findings as well as uneven participation across demographic groups (European Commission, 2021; NSF, 2022).

Prior OECD work suggests that the following approaches are important for improving inclusive engagement in STI:

- Support awareness and STI literacy across the population, including via education programmes, science fairs, exhibitions and other communication materials (EC-OECD, 2023).
- Engage grassroots organisations and community leaders who can bridge gaps between researchers, policymakers and groups that are otherwise hard to reach.
- Embrace diverse approaches to addressing socio-economic challenges, including indigenous and traditional knowledge. For instance, traditional agricultural practices offer useful insights on resilience to climate variability.
- Translate complex scientific and technology concepts into terms and formats that make them more accessible to the public.
- Embrace dynamic forms of engagement that can include participatory decision-making processes, such as the public's involvement in agenda setting and funding allocation, and in setting research orientations (Planes-Satorra and Paunov, 2023).

Digital data and communication tools can facilitate exchanges but may be insufficient to reach and adequately represent marginalised groups. Digital divides can limit the propensity of affected groups to engage (Van Dijk, 2017). However, online forums, interactive webinars, and social media campaigns provide opportunities for engagement that is less constrained by time and geography. Advanced technologies like machine learning and natural language processing can enhance monitoring and analytical abilities, offering innovative ways to engage with civil society. These possibilities require further experimentation and assessment to better understand the opportunities and limitations.

Improving mutual trust and understanding through science communication

While scientists typically enjoy high levels of social trust, distrust among certain groups raises concerns and underscores the necessity for engaging in trust-building exercises. For example, while scientists are among the most trusted groups in some countries, the share of the population expressing high levels of trust in scientists has declined (EnviroNics Institute, 2023; Pew Research Center, 2023). These trends are particularly pronounced among certain population groups, according to ethnicity and level of educational attainment. Country-specific correlations between political affiliation and trust in science have also been identified. This underscores the potential effects that the way politicians work with and address scientists can have on public perceptions (Cologna et al., 2024; Wong, 2024).

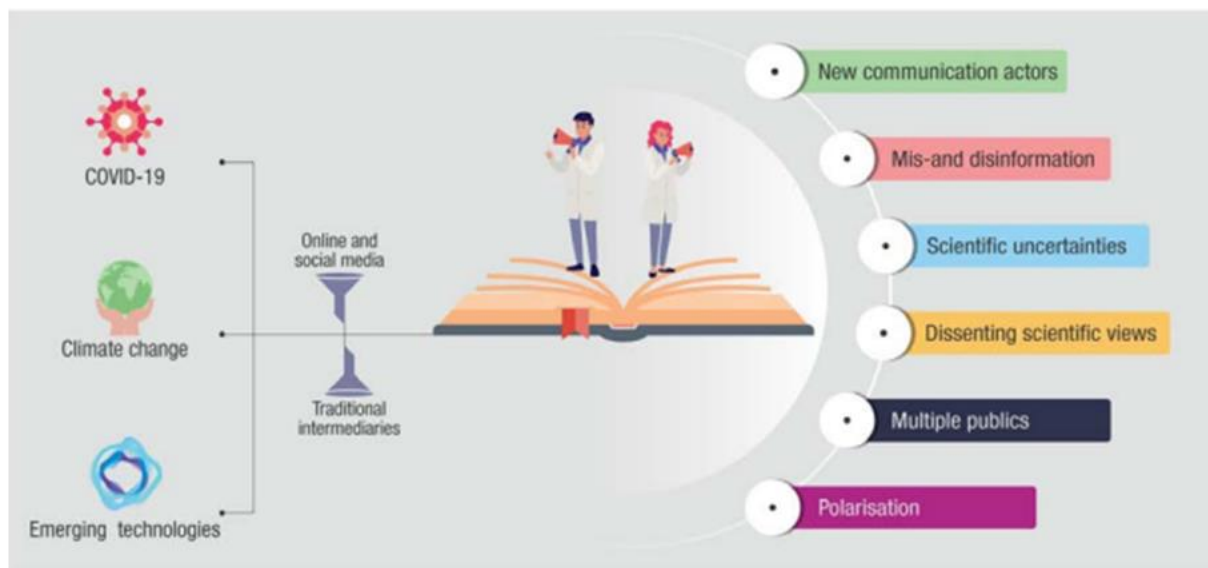
In STI, mistrust in some communities has been worsened by past unethical practices, such as the 1932-1972 Tuskegee syphilis study and the 1997 Fenfluramine challenge, among others (Alsan, Garrick and Graziani, 2019). These background conditions also affect public participation in STI activities and policy. For example, underrepresentation of specific demographic and geographic groups in citizen science has been identified in both the peer-reviewed literature (Waugh, 2023) and the user base of citizen science applications (Strasser et al., 2023).

Lack of trust between researchers, policymakers, and the public can delay and undermine the willingness of citizens to adopt or adhere to STI-based solutions and policy. The sluggish adoption of vaccines and the public's responsiveness to the COVID-19 pandemic illustrate this well (Paunov and Planes-Satorra, 2021). Countries' resilience correlated positively with trust in society, as did the ability of governments to adapt the stringency of pandemic responses to evolving circumstances (Lenton, Boulton and Scheffer, 2022).

Misinformation and disinformation pose a major threat to trust, impeding the ability of STI policymakers and researchers to engage with the public. The proliferation of misinformation and disinformation by some news and social media platforms has been driven largely by attention-based business models. This dynamic has also been affected by scientists who in some cases have overstated the significance of preliminary findings, misrepresented evidence and used the legitimacy of academic positions to communicate unsubstantiated opinions (OECD, 2020c; OECD, 2023c). The increase in misinformation is further complicated by active disinformation campaigns, which can come from multiple sources with different motivations, including foreign state actors.

Building trusted relations with society also requires accurate communication from scientists and innovators to address other evolving conditions. Such conditions include new actors communicating about science and growing polarisation, whereby groups feeling marginalised take on extremist perspectives. Figure 2 provides a simplified representation of multiple complex processes and shows the relationship between critical issues of societal concern (on the right) and the challenges for effective and responsible science communication.

Figure 2. The evolving science communication landscape

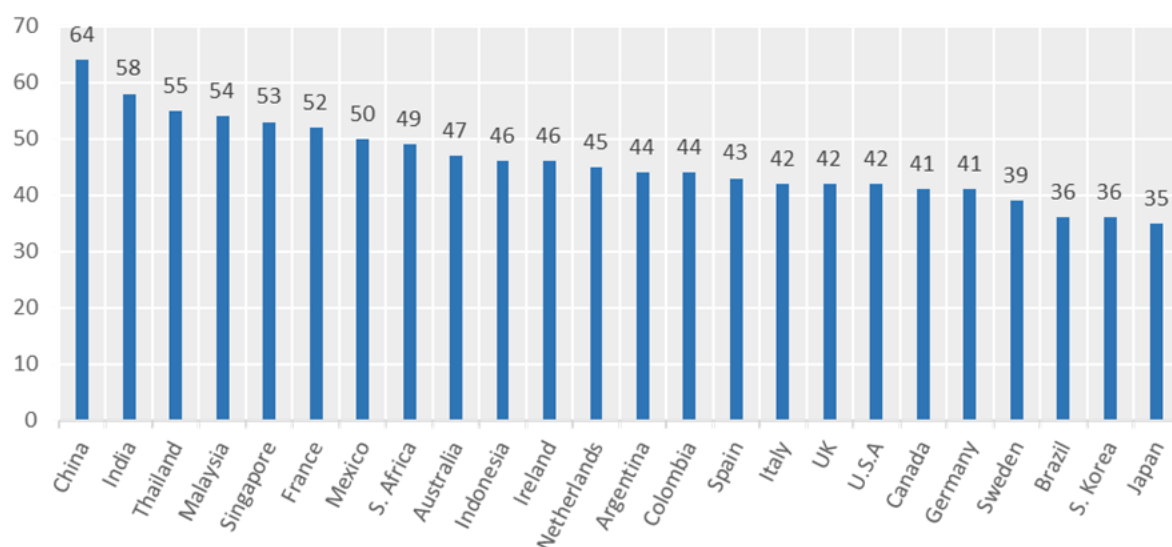


Source: Communicating Science Responsibly (OECD, 2023a)

The ineffectiveness and, at times harmful, character of top-down communication approaches was evident during the COVID-19 pandemic. Practices limiting the transparent disclosure of uncertainties and assumptions, and omitting divergent views, discounted legitimate concerns and alienated many communities (OECD, 2023c). Not only did a lack of transparency affect public trust, it fueled the spread of false narratives. Insights from behavioral and communication science were often disregarded. This suggests that situations marked by complexity and uncertainty, such as sustainability transitions, require public communication that is consistent, transparent about limitations in scientific knowledge, and avoids downplaying citizens' concerns (OECD, 2020c). In addition, a significant number of people across countries believe that scientists do not know how to communicate to the public (Edelman, 2024) (See Figure 3).

Figure 3. Making science transparent and accessible to the public

Percent who agree, by country, that scientists do not know how to communicate with “people like me”



Source: Adapted from the 2024 Edelman Trust Survey (Edelman, 2024)

The OECD has identified several possible ways that policy can help to build trust and navigate the evolving science and innovation communication landscape. These include the following:

- Support awareness and STI literacy, including on the challenges involved in the green and digital transitions, digital literacy, and critical thinking skills (OECD, 2021).
- Be transparent to the public about uncertainties in scientific evidence and diversity in scientific perspectives.
- Address societal concerns in official communications on STI matters (OECD, 2023c).
- Integrate communication as part of researchers' roles and develop guidance clarifying individual and institutional roles and responsibilities in communication on critical matters of STI.
- Provide communications and media training, incorporating insights from behavioural science where appropriate.
- Integrate communication into scientific evaluation and assessment processes.

An essential condition for trusted scientific communication is that institutions be recognised for their objectivity. These institutions should serve as trusted arbiters of information and analysis, providing impartial assessments and guidance.

Funding, skills and capacities to effectively engage

Organising societal engagement processes requires sufficient time, resources and expertise. Funding required to experiment with and scale-up participatory activities is often limited. The growing precarity of the public research workforce in many countries hinders the allocation of time and resources to public

participation activities. Incentive and evaluation frameworks are often based on narrow definitions of scientific excellence and designate professional advancement based on patenting and publication activities (OECD, 2020a). In fact, citizen science projects have been shown to negatively impact priority metrics, such as publication productivity, due to the need to commit time and resources to alternative goals, such as education or advocacy (Sauermaun et al., 2020). Evolving research funding mechanisms in many countries have also meant the decline of core funding for research institutions in favor of competitive, short-term projects (OECD, 2020b). Consequently, institutions and researchers are often limited in their ability to undertake engagement activities that are not recognized in research rewards systems.

Many governments are also limited in their ability or willingness to allocate funding to policy engagement efforts, and to amass the internal capacity and evidence necessary for these efforts to be effective. To organise citizen engagement requires the ability to effectively reach out and mobilise target groups (including underrepresented groups), select and tailor the methods and tools used, and facilitate discussions and process inputs received. Such abilities are not always available within public administrations. Specialised intermediary organisations and research institutions can provide expertise to help public administrations progressively expand their internal capacities. Such support is important as there is no one-size-fits-all approach to policy engagement processes. Design choices (e.g. in-person versus online formats, tools used, number of interactions and expected outputs) need to respond to the specific purpose and context of participatory exercises.

In this context, priority should be given to organising fewer, well-designed engagement processes with higher impact. A proliferation of sub-optimal engagement processes risks undermining public trust in institutions and governments, particularly if citizens perceive that such endeavours are conducted simply as a 'tick the box' formality and that their inputs are overlooked. Studies indicate that in many participatory efforts citizen recommendations often have limited impact on decision-making and are usually only partially considered or completely ignored (KNOCA, 2022; Paunov and Planes-Satorra, 2023).

Policymakers can take various approaches to address challenges preventing effective society-STI engagement. For example, established research metrics could be adapted to credit and better reward researchers' contributions beyond research and teaching, so that engagement activities are not neglected. This may also support researchers in cultivating important 'soft' skills, such as diplomacy and sense-making, which are needed for transdisciplinary collaboration but are not often rewarded in STI systems (OECD, 2015; OECD, 2018; OECD, 2023b). With respect to resources, it will be important for convenors to be strategic in terms of the kinds of activities citizens are engaged in and for what purpose. For example, as shown in Table 1, several areas of public participation in STI and STI policymaking have been identified as being of high value valuable.

Participatory efforts should not focus exclusively on efficiency. Experimentation is also necessary to support the development of good practice. Facilitating the sharing of good practices, including internationally, can help reinforce and expand the use of those practices. Many countries are already involved in peer learning exercises, such as the European Commission's Mutual Learning Exercise on Citizen Science (European Commission, 2023). Communities of practice can provide powerful signals on the importance of their subject matter. They can also support the adoption of coherent, validated approaches and accelerate the scale up of targeted initiatives (Gold et al., 2023).

Table 1. High-value opportunities for public participation in green transitions

High-Value Engagement in STI Activities	High-Value Engagement in STI Policy
<p>Citizen perspectives will assist in the identification and contextualization of sustainability challenges and/or harmonize diverse priorities in setting research agendas.</p> <p>Research questions require the collection of data or diverse knowledge, including technical and socio-political insights, from across large geographic or temporal scales.</p> <p>STI-based solutions may neglect important social aspects of sustainability challenges or where they need to be supplemented with behavioural change.</p>	<p>Long-term strategy requires selection among various potential pathways, which may benefit from societal endorsement.</p> <p>Policies require local community knowledge and input to ensure successful design and/or implementation.</p> <p>There is potential for policy decisions to create divides between 'winners' and 'losers' in an area that citizens are deeply invested in or where trust in public institutions may be at risk.</p>

Source: (Sauermann et al., 2020; Paunov and Planes-Satorra, 2023)

The diversity of beliefs, cultural backgrounds, and values within society often results in conflicting views on scientific and technological developments. Public controversies, for example around nuclear technologies, genetically modified organisms and artificial intelligence have been common in OECD countries since the second world war. Diversity and inclusion, while beneficial for the development of robust and inclusive STI-based solutions and policies, can also make STI processes more complex and resource intensive. In that regard, it is essential to recognise that there are benefits to designing STI long-term engagement activities.

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