European Commission

Trust in Science for Policy Nexus

Workshop report, "Trust in Science for Policy", 12-13 September 2024, Ispra Italy

Scharfbillig, M., Allegra, A., Brossard, D., Cassio, L.G., Cologna, V., Dratwa, J., Dunlop, T., Feeney, M., Gadzina - Kołodziejska, A., Gluckman, P., Guimaraes Pereira, Â., Harayama, Y., Jonkers, K., Kups, S., Mair, D., Mcbride, V., Mehlenbacher, A., Mercier, H., Petersen, M.B., Possanner, N., Quaglia, A.P., Roozenbeek, J., Rosa, P., Stanvrou, V., Starkbaum, J., Szelewa-Kropiwnicka, B., Tokarski, M., Vecchione, E., Wald, D.

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Contact information

Name: Mario Scharfbillig, Mario.SCHARFBILLIG@ec.europa.eu

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Abstract

The "Trust in Science for Policy Nexus" workshop, held in Ispra, Italy, on September 12-13, 2024, convened by the European Commission's Joint Research Centre, the International Science Council, and co-sponsored by the US National Science Foundation, explored the intricate dynamics of trust in science as it relates to policymaking. This workshop addressed the challenges and strategies for fostering trust among scientists, policymakers, and the public, particularly in the context of disinformation and the current political situation. One of the most fundamental questions was how far issues of trust in science for policy can be separated from issues of trust in democratic institutions in general. Discussions highlighted the need to integrate scientific evidence in a credible way into policymaking to bolster public trust in specific policies and the democratic system more generally. Furthermore, there is a need for clear governance frameworks to manage expectations and ensure scientific integrity, to support scientists as "honest brokers" and to tackle criticism regarding the limitations of science. The workshop highlighted that, while scientific evidence can strengthen policymaking and trust in political decisions and institutions, science is subject to human fallibility and scientific controversies, calling for a nuanced understanding of trust that recognises the benefits and limits of science in policymaking. The workshop also identified the need for further research into the complex relationships between scientific institutions, policymakers, and the public, emphasizing the importance of transparent, responsible, and inclusive scientific practices to enhance trust in democratic governance.

Executive summary

The "Trust in Science for Policy Nexus" workshop brought together staff from the European Commission's Joint Research Centre (JRC), the International Science Council (ISC), and the US National Science Foundation (NSF). The workshop further had a diverse group of participants, including government representatives and leading researchers in the field of trust, democracy and science advice, to discuss the multifaceted issue of trust in science for policy (S4P).

Overall, trust in S4P is anchored in the relationships between society, science, and policymakers. Participants emphasised that trust in S4P is fundamentally linked to societal and institutional trust. A well-functioning science advice system within the evidence-informed policymaking ecosystem can therefore significantly improve trust in democratic institutions. This can only work if scientific insights are effectively communicated via trusted relationships between policymakers and scientists, which in turn fosters public confidence and trust in resulting policies and thereby strengthens democracy.

State of science about trust

- Despite the common narrative of a “crisis of trust in science”, research suggests that trust in science in general is high across most countries, though some very low levels of active distrust exist and should be taken seriously.
- The online information ecosystem leads to false conclusions and conspiracy theories spreading, easily reinforcing distrust especially among those already sceptical of institutions.
- Legitimate scepticism can lead citizens to seek more information. Unfortunately, today the prevalence of criticism based on dis- and misinformation (terms that are contested themselves) is hindering legitimate criticism and stifling public debate, reducing the effectiveness of democratic decision-making.

Methodological issues in measuring trust

- Findings on trust in science vary depending on discipline, method, sampling, and on its consequences on behaviour, among others. Surveys on trust, while imperfect, still effectively capture broad general perceptions and provide useful insights into trust in S4P relationships.
- Surveys must still account for respondent diversity and behavioural consequences to result in actionable knowledge, e.g. in the realm of climate change or vaccine hesitancy.
- There is also no definitive "right" level of trust. The aim should not be to have blind or universal trust, but sceptical trust that may involve some kind of verification and deliberation process.

The direct and indirect relations between science and citizens

- The public's relationship with science is often mediated by media and other interested parties that can impact citizen’s and policymakers’ levels of understanding and interest in a particular issue. Scientific practices, like prioritising publications in prestigious journals behind paywalls, further hinders direct public interaction and understanding.
- However, new communication platforms and online content creation make it harder to for anyone to distinguish between scientists, experts, and citizens, offering both opportunities to bridge gaps but also increasing potential for misunderstanding and incivility.
- These factors shape perceptions of scientific credibility, underlining the need to address challenges to S4P often driven by partisan or social identities. The challenge is to go beyond fostering trust to creating effective channels for interaction between scientists and the public.

Relationship between scientists, policymakers and advocacy

- Scientific evidence is only one ingredient of policymaking, others such as values and political priorities have to be taken into account as well, calling for humility regarding the role of science in politics. But scientific evidence still provides an important control function as the most accurate available picture of reality, which itself constrains policy choices.

- Scientists need to accept their limits and adopt a transparent approach, while policymakers need to engage with scientific evidence, with all its uncertainties and nuances.
- Further research is essential to understand the motivations and overcome barriers affecting policymakers' use of evidence, including the impact of social identities (such as using partisan cues as veracity signals) and improving institutional frameworks on evidence uptake.

Citizen's trust in institutions

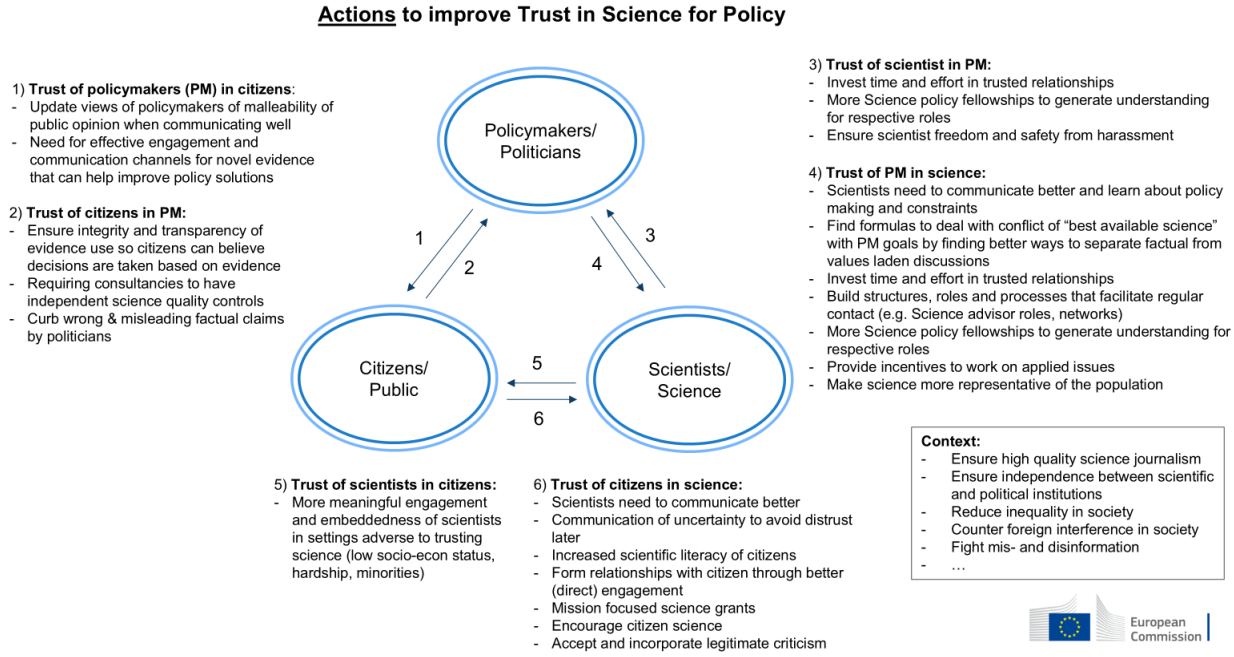
- Globally, there is a decline or low levels of trust in democratic institutions, with variations across regions and institutions, including a slow recovery of trust in the European Union (EU).
- The low levels of trust in institutions stem from complex, multifaceted root causes and are more focused on the big-ticket items in society rather than day-to-day service delivery.
- Effective evidence use is one crucial element for trust in policymaking, yet citizens often distrust evidence provided by governments, highlighting a need for transparent and trustworthy evidence use and communication.

The specific challenge of dis- and misinformation

- The exact level of impact of dis- and misinformation on society is still debated. More specifically, while its prevalence is clear, evidence of its impact on behaviour is limited and hard to measure, also because platforms often do not provide access to test this relationship.
- Disinformation often aims to sow distrust and increase polarisation rather than change behaviours, acting as political identity signal for some, especially those distrusting the system.
- In any case, misinformation undermines trust, erodes scientific authority, and polarizes public opinion, making it more difficult to establish a policy consensus.

Suggested actions to improve trust in and functioning of S4P ecosystems:

Figure 1 Actions to enhance trust in science for policy



Source: own elaboration.

Participants also identified research needs to enhance the understanding of trust in S4P, including exploring the limits of motivated cognition to better communicate facts, understanding why policymakers may hesitate to engage with scientific evidence, and what constitutes "appropriate" levels of trust in government performance, given that trust must be earned, not demanded.

1. Introduction

The purpose of this report is to summarize the discussions from the workshop on Trust in Science for Policy in September 2024 in Ispra, Italy. The workshop focused on current challenges and solutions to fostering **trust in science used to inform public policy**. Instead of discussing general issues of trust in science and scientific integrity (e.g. replicability, vanity journals, etc.), the focus was explicitly on trust in science for policy, which is a broad nexus of trust between science, politics and the public. The topic is of interest to a broad range of government actors, researchers, and civil society organisations.

The topic was proposed by the International Science Council (ISC) and comes as part of a broader programme of work spanning previous reports from both ISC[1], and JRC[2] and the work on Scientific Integrity in the US[3]. Important concerns about trust in science for policy are the increasing prevalence of conspiracy theories, dis- and misinformation, and with recent elections the increasing likelihood of scientists having to win the trust of politicians who may see them as part of the problem.

The workshop aimed also to respond to the call in the COMPET Council conclusions (Council of the European Union 2023), which among other things: *"STRESSES the importance of including the best available scientific evidence in impact assessments to support the political decision making process to increase the credibility of and **citizens' trust** in public action … " and "Calls on the Commission to further develop the concept of 'Science for Policy' and to promote the role of scientific and evidence-based knowledge and its cross-cutting integration in public policies … by extension, **raising the trust of society in science and research as well as trust in researchers among policymakers.**;"*

Additionally, this event addressed one of the major challenges at the interface between science and policy, namely the need for "Good governance of evidence use: Recognising and responding to the limits of science for policy".[4] Building trust between science and policymaking needs clear guidelines to manage expectations and demarcate responsibilities, as well as smart institutional design of science advisory bodies to consider "biases" on both scientists' and policymakers' sides, as well as uncertainties in the science of complex problems. Understanding how to safeguard scientific independence and integrity from political interference involves recognizing the potential for political and societal influences on scientific inquiry. It is crucial that scientists act as "honest brokers" rather than issue advocates and that there is deliberation with society at large in order to build a trust towards scientific and public institutions.

A fundamental assumption of all participants is the belief that **policies that are informed by robust evidence are probably better policies in delivering the desired impact**. "Better" in this context is of course in the eye of the beholder and depends on normative value judgements about the desired impact. A corollary of this is that not only should evidence go into the development of policies, but also that policies should be properly evaluated to create evidence on their functioning, allow monitoring and improvement along the way (De Vrieze 2017). This may however entail a risk that political decisions that rely heavily on scientific evidence (e.g. in times of crises), may sometimes

[1] https://futures.council.science/publications/trust-in-science.

[2] https://knowledge4policy.ec.europa.eu/evidence-informed-policy-making/topic/enlightenment-20_en.

[3] https://bidenwhitehouse.archives.gov/briefing-room/presidential-actions/2021/01/27/memorandum-on-restoring-trust-in-government-through-scientific-integrity-and-evidence-based-policymaking/. https://bidenwhitehouse.archives.gov/briefing-room/presidential-actions/2021/01/27/memorandum-on-restoring-trust-in-government-through-scientific-integrity-and-evidence-based-policymaking/.

[4] Commission Staff Working Document SWD(2022)346.

sideline values and conflicting interests while presenting policy decisions as devoid of alternatives (Bogner 2021). Science (for policy) becomes a major object of criticism of political decisions in such instances.

Another fundamental assumption is that while science is a great way of knowing things, through scientific institutions such as peer review, open data, social norms of interrogation, revisiting, and argumentation, **science is still done by fallible humans**. Science strives to be values-free but in fact does not always achieve this ambition (Douglas 2009), for example when deciding which phenomenon to research or at what point evidence is sufficient to justify when something is considered safe. This means the need to acknowledge that science and scientists can sometimes fail in giving correct, complete, or unbiased evidence on issues and thus may also contribute to policy failures. By no means is trust in science for policy therefore seen as a dogmatic prerequisite for good policymaking, but it is likely to - on average - improve policies more than it harms.

Structural issues in science are not deeply addressed in this report, such as historical discrimination of various communities in sciences, scientific scandals and malpractice, conflicts of interest, issues of paywalls and inaccessibility to the broader public. While the group accepts these as important issues legitimately affecting trust in science for policy, they were not primarily addressed in this workshop.

The workshop took place under Chatham House rules and included participants from governments, public administrations, leading researchers in trust research, prominent scientists with a track record in advising policymakers and policy practitioners.

2. The state of evidence on trust

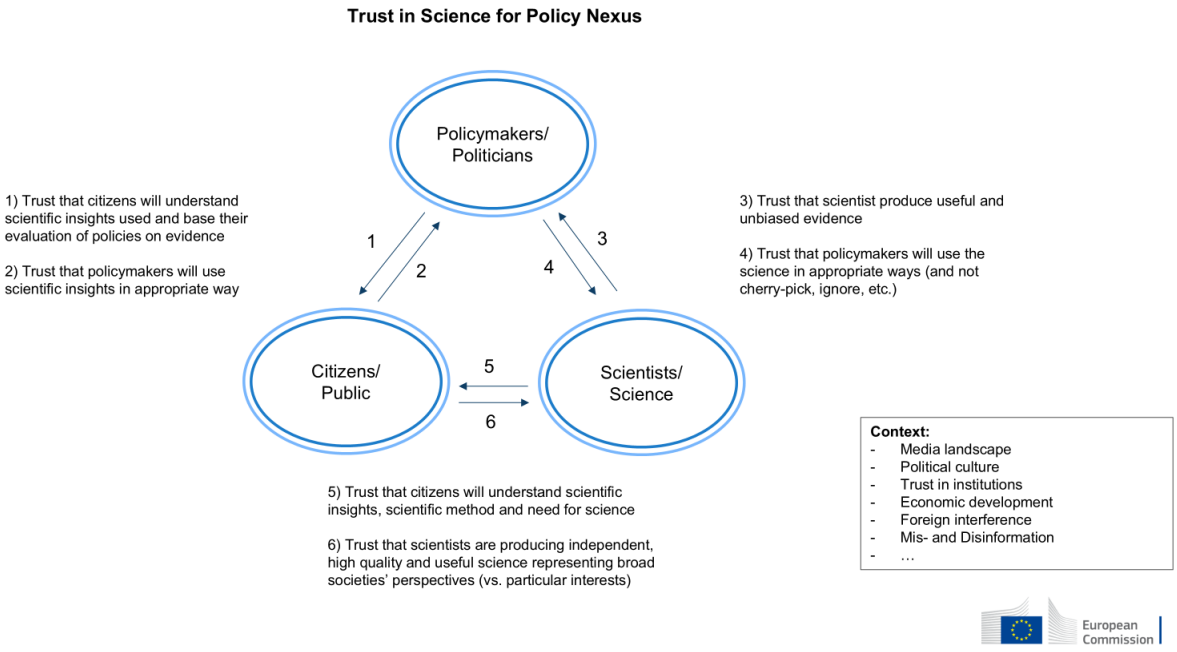
2.1. Trust in Science for Policy Nexus

Defining, measuring, and evaluating trust is a difficult undertaking with many caveats. Trust has been researched in many scientific disciplines for a long time and there are many different definitions that cannot easily be reconciled (National Academies of Sciences, Engineering, and Medicine 2017). However, in the spirit of this pragmatic review and in line with the desire to move forward in identifying what "Trust in Science for Policy" means, figure 2 is instructive. The concept of "Science for Policy" (S4P)[5] is about harnessing the full potential of the best available science for the benefit of policymaking at all levels (Šucha and Sienkiewicz 2020). As such, trust in S4P needs to involve trust by all parties involved: scientists, policymakers, politicians, and citizens and includes trust in the production, relevance, and use of the available science.

Many participants stressed the need to clarify the question of what is meant by "trust in S4P". The discussions concluded that the issue is complex and multifaceted, necessitating study from various perspectives. Opinions differed on prioritising and identifying relationships that may need repair or intervention, if any. Some stressed that it is an issue of increasingly low societal trust in science specifically, while others emphasized it to be low trust in institutions in general of which science is but one. Again, others contended that low trust in institutions seems limited to few countries and therefore does not represent a big issue and, again, others contended that the real question is only about the use and misuse of science in policymaking and politics to justify certain positions ("policy-informed evidence").

[5] S4P as a concept is more restricted than the concept of Evidence-Informed Policymaking (EIPM). EIPM is broader in that it encompasses the integration of the best available evidence from various sources, including but not limited to scientific research, for example data from empirical research, expert opinions, stakeholder consultations, citizen engagement, and evaluations of past policy outcomes. This approach recognizes the value of diverse forms of evidence in contributing to robust policy decisions (Cairney and Oliver 2020).

Figure 2 Trust in science for policy nexus



Source: Own elaboration.

Trust in S4P is seen as improving the effectiveness of science advice in informing policymaking, because it encourages trusted relationships between scientists and policymakers facilitating information exchange. Societal trust in S4P also leads to citizens demanding the inclusion of scientific evidence in policymaking, as shown for example in recent Eurobarometer where citizens express the expectation for scientists to intervene in politics.[6] This is true in general, and even more so in times when societies need to respond to societal crises where scientific evidence can help solve issues quickly and sustainably. This trusted relationship needs to be built during times of relative calm and can significantly enhance the agility and effectiveness of governments when they need it the most, as exemplified during COVID.

While trust in science is generally viewed positively, it is not universally seen as beneficial due to varying knowledge or belief systems among citizens. Some participants noted that while many citizens welcome increased use of scientific evidence in policymaking, others, particularly those valuing other knowledge systems such as religion, might perceive it with some degree of suspicion. Although this group may be small, its size probably varies between countries and deserves consideration. There was a widely shared perspective among participants that the role of S4P seems to be increasingly questioned in public. A common narrative in recent years is that there is a "crisis of trust in science", or sometimes more precisely "trust in Science, but crisis of expertise"[7]. Nevertheless, a reflection shared by several participants is that it is unclear whether the perceptions are based on facts or simply a widely shared narrative. The latter may be a sign of the tendency of overestimating

[6] https://europa.eu/eurobarometer/surveys/detail/2237

[7] https://en.unesco.org/inclusivepolicylab/analytics/trust-science-crisis-expertise

or overemphasizing a crisis of trust both on the scientific side as well as on the media side.[8] Some contended that the narrative of a crisis in trust is used systematically by some actors to undermine the importance of science further. Thus, if the evidence does not support such a claim, efforts need to be undertaken to correct false beliefs to prevent them from becoming perceived as "true" or even as social norms.

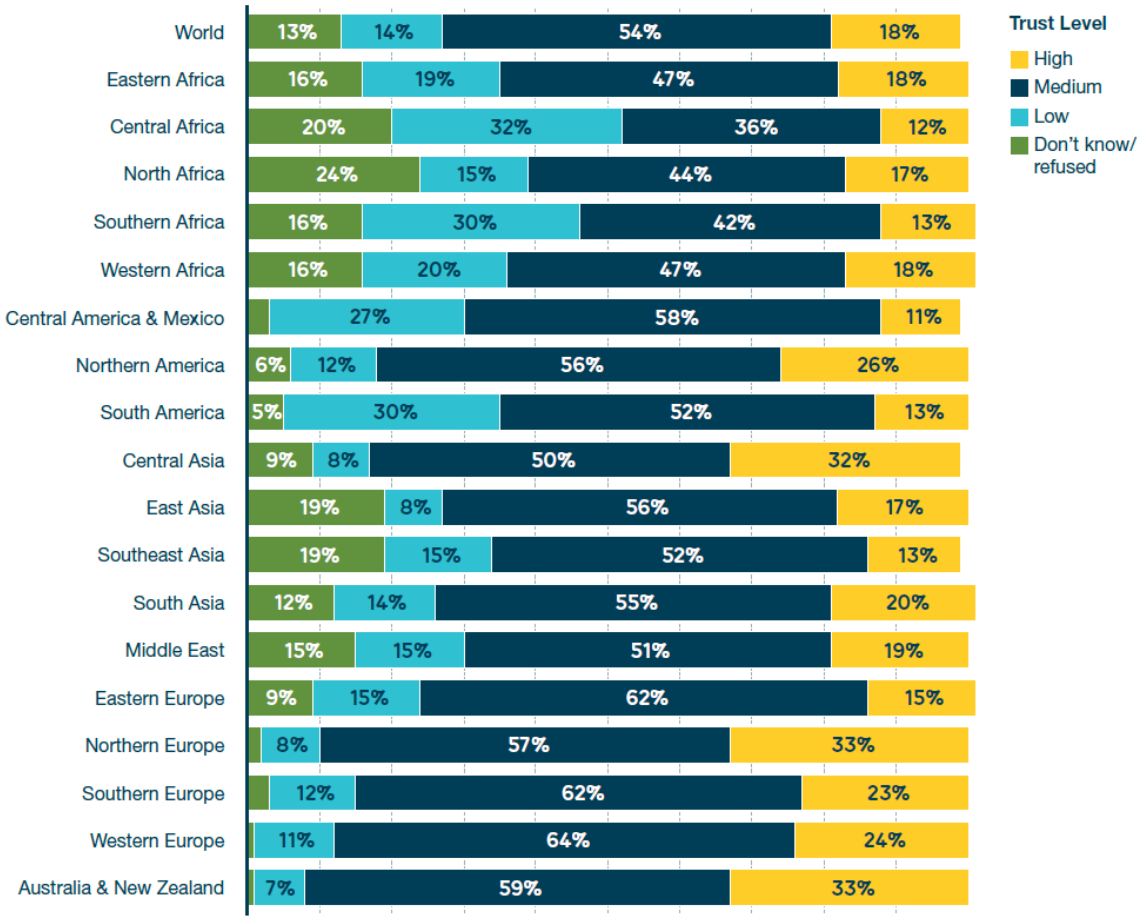
Most of the insights cited in this report are related to relationship 6) in figure 2, where the question is in how far, what for, and why citizens trust science. All other relationships (except 7) have received much less attention in research, for reasons such as small available samples, more difficulty in reaching participating subjects, and less political interest. Thus, one important outcome of the workshop was the conclusion that more research is needed to investigate those other relationships, where interesting research questions arose during the workshop such as: "Do policymakers/politicians trust scientists to produce independent and useful research?" or "Do policymakers/politicians believe that citizens understand and use scientific evidence to evaluate their policies?". Of note is that policymakers, politicians, and scientists are of course also part of the general population and inferences may be attempted by extrapolating from specific markers such as high education and political orientations as proxies for trust in science as well.

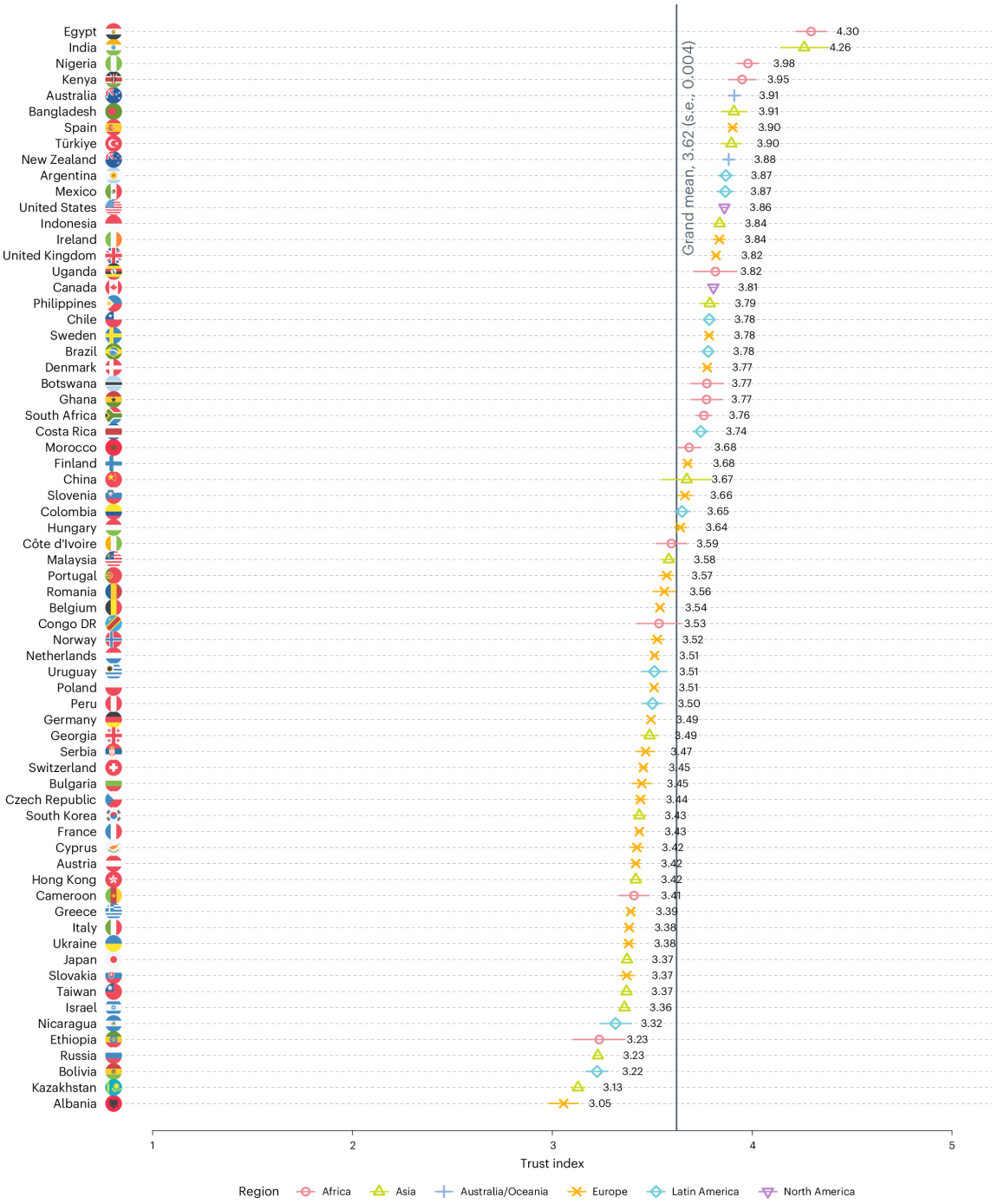
In most surveys, see figure 3, people still trust science very broadly, (Cologna et al. 2025; Gallup 2019; Eurobarometer 2021). Only 14% on average globally have low trust in science as per Wellcome Trust in 2019 (Gallup 2019), but there are significant differences across countries and regions, a finding repeated in other studies (Cologna et al. 2025; Younger-Khan, Weidmann, and Oswald 2024). Trust in science in the US, where it is particularly low[9], has also recently increased (Soliman 2024), but it is unclear whether this trend will hold. These figures may even underestimate the trust people have in basic or fundamental science as mentioned by some participants.

[8] This was not only a questions of quantity, i.e. survey responses and the share of populations trusting science, but also one of quality, i.e. how much these survey responses reflect reality and whether opposition groups may appear louder than their numbers would warrant.

[9] https://www.pewresearch.org/science/2023/11/14/americans-trust-in-scientists-positive-views-of-science-continue-to-decline/

Figure 3 Global evidence on trust in science, recent survey results





Source: Upper panel Gallup (2019), lower panel Cologna et al. (2025).

In general, many citizens want scientists to be present or even active when it comes to policymaking. For example, in Cologna et al. (2025), 83% of respondents responded “strongly agree” or “somewhat agree” that they want scientists to communicate about science with the general public, and 54% similarly agreed (20% opposed) that they should work closely with politicians to integrate scientific results into policymaking. But the results also show that they see a difference between generally communicating insights and specific policy application and that there is at least a sizeable minority agreeing with the statement that scientists should not be overly involved in policymaking. .

When it comes to distrust in science, there is a proliferation of studies looking at individual level factors based on survey research. Correlates found to be related to higher trust are higher education

levels, more interactions with science, and more left leaning political orientation (e.g. Younger-Khan, Weidmann, and Oswald 2024). Psychological effects also seem to have a strong impact on trust, such as group identity, where being part of political or non-political groups in which leaders of the group reject science reduces trust in science (Kahan, Jenkins-Smith, and Braman 2011; Kahan 2013), the myside or confirmation bias when evidence contradicts beliefs of the receiver (Stanovich, West, and Toplak 2013; Stanovich and West 2008), different epistemic styles of sender and receiver, and distrust in the source of the message (Philipp-Muller, Lee, and Petty 2022). Importantly for the S4P interface, "Politics triggers or amplifies many principles across all four bases, making it a particularly potent force in anti-science attitudes" (Philipp-Muller, Lee, and Petty 2022, 1). This means that while trust in science in general is high, different socio-demographic and psychologic factors predict variations in trust.

Other factors can explain low trust in science, as science scepticism seems to be difficult to generalise. Scepticism in science is not consistent across different potentially controversial science fields or technologies even among the same social groups. For example, in US samples scientific understanding is positively related to support for vaccines and genetically modified organisms (GMOs), but not for belief in climate change (Rutjens, Sutton, and van der Lee 2018). And while GMO scepticism is not related to religiosity or political ideology, scepticism towards vaccination attitudes is. Thus, while there may be tendencies to distrust science, it is important to differentiate based on various factors including the topic in question, country, political orientation, political leader behaviour, and religiosity and their interactions.

Accepting that trust in science by citizens is still relatively high for most groups in society, any initiative planned to increase trust in science among citizens should be targeted to sceptical groups and focus on the topics in question. There is no need to increase trust in science in general, specifically among those who already have very high levels of trust. In some cases, there might even be too much trust, bordering on dogmatic trust, as discussed in the introduction.

Quotes:

"Wanting to have your policy informed by science is not a scientific judgment - it is a political and values judgment."

"Tell me where I really need science in my life."

"I am open to all evidence confirming what I already know"

"Hubris has been the single biggest enemy of trust in science."

"Lobbyist are successful by pitching problems to journalists and (preferred) solutions to policy-makers"

"When you talk as scientist about things that affect people, everybody has an opinion"

"'We follow the science' is an extremely dangerous statement for politics"

"We know already many things, but we are researching the wrong stuff"

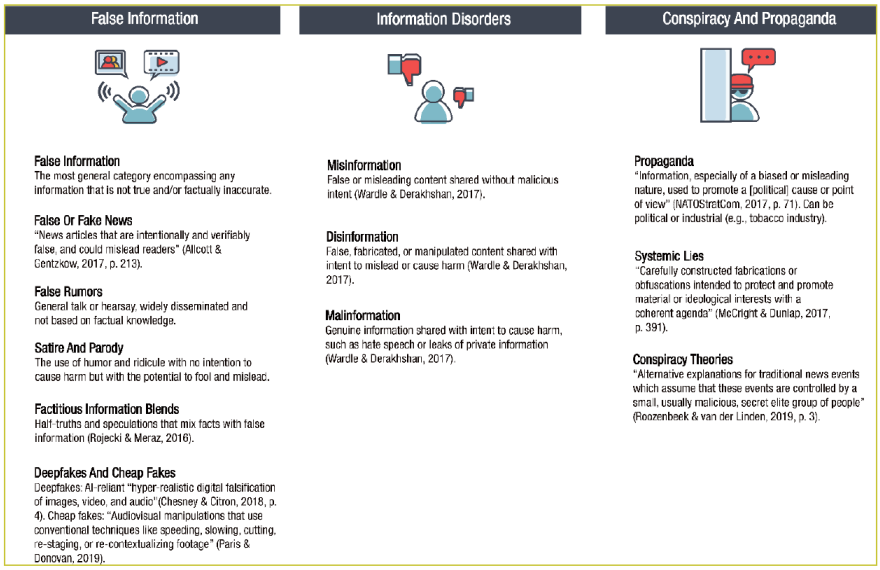
"Not every scientist wants to or can be a communicator for the public or policy"

Although scepticism is often related to specific groups and topic dependent, small shares of the population reject scientific knowledge across the board. These shares of the population are typically smaller, e.g. 10% of the population in Austria (Starkbaum et al. 2024). Stating a stark rejection of science in surveys can still be largely performative in the sense that people may be motivated to answer this way because they reject specific scientific beliefs, but not science as a whole. For example, some or even most of those responding to distrust science still accept broad scientific consensus on non-controversial issues, as shown in some studies (Pfänder, Kerzreho, and Mercier 2024). Additionally, in the United States, a "science confidence gap" exists, where some people trust scientific methods but distrust scientific institutions, particularly less educated populations (Achterberg, de Koster, and van der Waal 2017). Similarly, trust in "common sense" – which is sometimes portrayed as the opposite to believing in

science – does not have to mean a rejection of scientific findings per se, but rather represents a useful heuristic for daily decision-making and rejection of some aspects of science based on concerns regarding rapid technological change (Starkbaum et al. 2024).

Another interesting observation brought up by several participants is that sceptical or distrusting people and even conspiracy theory believers, often have a high interest in scientific findings and "facts" and engage in a lot of their own investigations and enquiries. Despite their perspectives clashing with the general population or the scientific consensus, they are nevertheless often well-informed, sometimes even more so than the average citizen who trusts science. However, empirical findings on this phenomenon are often more nuanced. For example, conspiracy believers do not exhibit a general tendency to discount information from friends, family and other social circles more than others (i.e. they are not more independent thinkers), though they may claim to do so (Altay et al., 2023). Conspiracy belief is also linked to an overreliance on intuition and a lack of analytical thinking (Binnendyk and Pennycook 2022). Interestingly though, socio-demographic factors play a minor role in predicting conspiracy beliefs, while distrust in governmental institutions is a significant predictor as is lower access to information (Gonzalez and Maffioli 2020). Thus, one useful action to fight conspiracy beliefs and dis- and misinformation (see Figure 4 for definition) about science may be to increase general trust among those groups who are deeply distrusting of societal institutions themselves, rather than trying to dispel specific beliefs, but see also section 2.6. about the topic in more detail.

Figure 4 Typology of misleading information



Source: Lewandowsky et al. 2020

One perhaps surprising issue is who is most susceptible to distrust science. A recent multi-country study by Lackner et al. (2023), which builds on the well-known Dunning-Kruger-Effect paradigm (Dunning 2011), finds that confidence in people's own ability grows much faster than actual knowledge, leading to the highest gap between confidence and knowledge (which they term "overconfidence") for intermediate levels of knowledge, while at a later stage this gap closes again. Importantly, this group of overconfident individuals is a large group of the population which also seems to have the least positive attitudes towards science no matter the topic (Lackner et al. 2023). Extremely low levels of confidence in one's own knowledge, e.g. because of wide-spread dis- and misinformation, may however also hurt society because people may no longer trust any information

or institution. Thus, correcting misbeliefs and low trust in science, if at all, might have to start in particularly affected groups of over- and low confidence.

Participants also raised the point that *healthy* scepticism should be part of a democratic system which relies on collective intelligence where autonomous agents make their own decisions and aspire to form own opinions. "Trust without critique is dogma", and what is needed is "critical trusters" (Norris 2022; Smillie and Scharfbillig 2024), not gullible trusters. Distrust in that sense can also be a motivator leading to at least some critical citizens being much more informed about science, even if it is in a partial way. People who trust science in contrast may know very little, especially about specific topics that conspiracy believers care about, but this is a natural feature of trust as replacing the need to verify. As long as the information available to those who distrust science leads them to accurate beliefs, this should not be discouraged. Unfortunately, evidence shows that today online searches typically do not lead people to more accurate beliefs (Aslett et al. 2024). More research is therefore needed on how distrusting individuals come to their conclusions, and whether they are justified in specific circumstances as well as how the online (and offline) information ecosystem interacts with the search for accurate information. An important takeaway is that more evidence is needed on the availability of high-quality information to the public and online and whether interested citizens can come to successfully distinguish misinformation from accurate information when doing their own research.

An additional challenge to trust in science (for policy) is pseudo-science on the internet that is masquerading as science, but which does not meet standards of scientific research. While calls for more scientific literacy may help citizens better distinguish good from bad science, it is unlikely to help if most of online information is fake. Researchers on vaccine hesitancy have shown that given current growth of true and fake information online, by 2035, there will be more fake information about vaccines available online than true if no action is taken. Policies are needed that prevent increasing degradation and pollution of the information ecosystem in our societies. This does not mean censoring debate, opinion and self-expression, but rather generating the right institutional framework, physical and online infrastructures and incentives for high quality information to be produced, disseminated and consumed.

An important response from participants is that certain communities no longer have (or never had) political agency and are therefore disregarded in policies, which leads to a legitimate question of why they should trust institutions in the first place. Fixing politics with science may be a dangerous notion if science remains unrepresentative and representation in science alone will not address all issues regarding political agency.

Summarising this discussion, within the current limits of research on trust in science which are largely based on survey research, trust is rather high across most countries, but cases of distrust exist. On the one hand, this distrust can be legitimate, leading to people seeking out more information in a way that captures a certain ideal of the sceptical citizen. On the other hand, today's online information ecosystem seems to also spread a number of unnecessary false beliefs and conspiracy theories. These then feed those already distrusting institutions with low quality information further sustaining their distrust. Those believing conspiracy beliefs and disinformation are also seldom more critical or better equipped to do their own research than average citizens. This means that those most prominently claiming to know the "truth" do not seem to be generally more sceptical or and knowledgeable. Therefore, an otherwise positive scepticism may lead uninformed or misled people to hide behind these terms. Thus, the increasing presence of conspiracies, dis- and misinformation, and the justified fight against them can itself drown out vital discussion about policy failures and unresponsive governments.

2.2. Methodological issues of measuring trust

As mentioned above, general methodology issues were not the target of the workshop. However, some discussion and refinements were discussed and are essential to better understand whether measured levels of trust can truly be seen as high or low and what we can learn from the data that is available.

Trust implies a relationship between (at least) two sides. Within the context of S4P, information exchange is central to that relationship, and it requires the scientific side to be perceived as trustworthy, or at least the information given to be perceived as such, and it requires scientists to believe that others want to hear what they have to say. It also requires those receiving the information to listen, and to a certain degree, to be open to new information, even in cases of information that contradicts their current beliefs, knowledge, and world views. The latter might be made easier if the information is communicated in such a way that it eases the updating of beliefs by avoiding overt conflict (Scharfbillig et al. 2021). In this context, the communication style could reflect either honest brokerage, advocacy or even be manipulative, which is an essential distinction for all knowledge brokerage.

In general, there is a great deal of variation in trust in science depending on what is meant by "science". For example, trust in science differs greatly based on the scientific discipline in question. Cross-country evidence shows more trust in natural science (material science, genetics) over social science (education, economics) (Younger-Kahn et al. 2024). This resonates with some participants referring to the fact that social sciences are sometimes considered as "common sense" by citizens, while advanced physics is unreachable for average citizens resulting in citizens "needing to trust". Nevertheless, there are exceptions like "flat earthers". A related issue raised by participants is that there is more differentiation needed between trust in specific methods (experimental, survey, interviews, theory, etc.). There can also be legitimate different levels of trust in scientific institutions vs. individual scientists, or among publicly funded vs. privately funded (or mixed funding) science. All of these considerations have a legitimate impact on the trust in scientific evidence and scientists. Those distrusting science may simply see science as lobbying. Thus, the generalisation of "trust in science" is not fully justified because trust varies greatly depending on what is understood by the term science.

A further consideration is that some methodological issues regularly plague some sciences more than others, especially social sciences like psychology (Wiggins and Christopherson 2019) but also medicine (Baker 2016). Among those issues are the replication crisis, p-hacking, forking, HARKing, predatory journals, exaggerated findings, and data manipulation scandals.[10] These issues may justify a degree of lower trust of citizens in those fields compared to others.

Trust of citizens in S4P is also strongly associated with the role and purpose of science in society which relates to feelings of institutional alienation. These views are typically embedded in and informed by politics, religion, economics, and culture, which makes trust and its roots hard to measure. This is even more the case when politicians use science to justify their decisions, and/or play a blame game where scientists are the target, but also when scientists (or groups under the flag of science) become political activists, or, something commonly known as Astroturfing (Chan 2024), even if they might not (fully) represent a broader consensus in the sciences. The rejection of S4P is therefore often about the societal roles of science, policymaking and politics, including the influence of economic and

[10] https://opusproject.eu/openscience-news/he-reproducibility-crisis-how-open-science-can-save-research/.

political interests. In short, it is very difficult to distinguish between trust in science, trust in scientists, or trust in the use of science in policymaking.

One interesting and perhaps surprising methodological issue with measuring trust is that "trust" and "distrust" do not perfectly (negatively) correlate. In other words, while they are related, trust and distrust are not simply opposite ends of a single continuum; rather, they represent distinct psychological states with different antecedents and consequences. Stated in a different way, distrust is characterized by scepticism, wariness, or disbelief in the trustworthiness of others. It is not just the absence of trust but an active expectation of ill intent or harmful behaviour from others (Lewicki, McAllister, and Bies 1998). Surveys often investigate trust but seldom distrust, which could arguably be more relevant when it comes to trust in S4P and related issues of polarisation and societal disagreements of fundamental issues.

Another methodological issue is that it is unclear to what degree trust causally influences any kind of related attitudes or behaviours, and discussions around it often overlook the need to discuss the validity of the research conclusions. In other words, it is not clear what low (or high) levels of trust mean and what direct consequences it could have on beliefs, attitudes and behaviours in real life. This also relates to the fact that societies have not broken down as much as the surveys indicate. For example, if less than 30% of citizens have high or moderately high trust in their government as is the case for some Western countries (OECD 2024), one might expect riots and protests on the street. But this is not what we observe in most of those countries, with some notable exceptions. Most people still largely follow (almost) all the rules in society. It therefore seems unlikely that this low trust can be seen as an outright rejection of democracy, but rather the wish for change within or at the boundary of the democratic norm.[11]

Another complication is that it is not clear what the measurement for "wrong" beliefs for citizens is. While there is strong cross-national evidence that the general population consensus deviates at least somewhat from (disciplinary) scientific consensus, e.g. in some factual beliefs around climate change, vaccine safety, GMOs, nuclear power, or even evolution, it is not clear whether that can be used as evidence that scientists are either not trusted or that there is a need to act, as other considerations may be more important than truth seeking for citizens, and it should be noted that scientific consensus has shifted in the past and is therefore no failsafe for the "accurate" belief.

Additionally, there is an important difference between trust in science in the abstract and trust in scientists as individuals. While trust can be built at an individual level, at the same time scientists are not bound by the same institutions that make scientific findings more trustworthy (e.g. peer review) when asked to give advice as experts. In contrast, people are shown to be sometimes more persuaded by individual experiences than by the presentation of scientific evidence (Van Bavel et al. 2021). Participants also argued that while there is much research about the effects of written communication from scientists or organisations on the receiver, evidence from interpersonal trust relations with "natural science communicators" like doctors or teachers is less available. Similarly, if these are seen as natural science communicators, then it is important to know more about trust of doctors and teachers in science themselves, but this topic remains understudied.

A related issue is the issue of trust within the scientific community, e.g. between researchers of different fields, but also within a field. COVID-19 brought several cases to light where researchers even from the same discipline heavily disagreed with each other both on the factual level, and on the level of which policy should follow the factual knowledge. While disagreements are nothing new to

[11] There may still be other reasons for not observing more riots and protests in the streets, for example fear of retribution by governments.

science, the general population is relatively unaware of these disagreements and may find it hard to know what to make of them (H. M. Collins and Pinch 2012; H. Collins 2023). Coupled with the tendency on social media to take a position and tie one's identity to it, these different views can lead to increased polarisation where both sides believe that only their beliefs are evidence-based. Additionally, issues like "false balance" in media reporting make these phenomena worse and have significant impact on people's perception of what is known and accepted in science.

Despite the methodological issues, several of the shortcomings mentioned here are usually taken into account in survey research already. For example, Cologna et al. (2025) included 12 different questions on trustworthiness of scientists with respect to competence, integrity, benevolence, and openness, as well as a separate question on general trust and trust in "whether scientific research methods are the best way to find out if something is true or false". It is also shown repeatedly in public opinion research, psychology and statistics, that people are able to answer survey questions in a way that reflects general tendencies towards broader categories even if some nuances are lost. A large part of survey research involves crafting questions that are clear, unbiased, and easy to understand. Methods such as cognitive interviews and pre-tests ensure that peoples' complex opinions are translated appropriately into numerical judgments when given well tested scales and context (Tourangeau 2000; DeVellis and Thorpe 2021). Thus, while there is variation among survey respondents on how they understand the questions and what type of "science" and "trust" they consider, central tendencies can still be highly informative, especially when comparing different and large groups (Landesvatter and Bauer 2024). In other words, even if contexts and terminology matter, people are usually quite capable of summarising their views in short type survey questions and most measures of trust correlate strongly with each other, making surveys a valuable tool to approach societally relevant questions about trust.

A summary of methodological concerns brings about three important implications: 1) while survey questions are imperfect in measuring what we are truly after, they are still relatively good in capturing aggregate feelings and perceptions in society and therefore contain useful and actionable content; 2) any kind of survey measure needs to take this diversity into account when asking respondents about "trust in science" especially when thinking about designing interventions to increase trust; and 3) even if the question is clearly formulated there is no good way to evaluate whether a certain level of trust is the "right" level of trust. The goal cannot and should not be blind trust or trust levels at 100% of the population, and issues about distrust in science should likely be investigated both at the grander scale and at the more specific phenomenon of where it matters, like vaccine hesitancy, or climate change scepticism and resulting behaviours. Additional measures need to complement survey measures, including more behavioural studies on the consequences of low trust in S4P.

2.3. The direct and indirect relations between science and citizens

Science itself is rarely perceived to be present directly in people's lives. Usually, the interaction with science for many people is mediated either via various media sources (news, videos, science communication) which typically targets specific subgroups of the population (e.g. highly educated, health focused), or it is mediated in specific domains via topic professionals (e.g. doctors). This indirect relationship with science is underscored by a high degree of disinterest or feeling of irrelevance about science, i.e. there is no deeply rooted attitude towards science that is unshakeable, but rather views of science can easily be swayed when faced with scandals, or conflicts (Starkbaum et al. 2024). Additionally, participants mentioned that most people do not really know how science affects their daily life, or what real world consequences recent scientific findings have. This raises the question, especially if there is lost trust, of how awareness can be raised for the importance of science.

Overcoming this missing direct relationship between science and citizens is not easy, because there are several practices and norms within science that discourage more interaction and relationship building. These include incentivising research in top-tier academic journals behind paywalls or emphasizing basic over applied research, e.g. as applied research often allows more active engagement[12]. One counterargument made is that more abstract research can also inspire more trust than more applied research, which is more easily contestable from a layman's perspective than for example, astrophysics, due to more opportunities for personal experience.

Additionally, the online proliferation and increasing ease of production of content, but also the increased prevalence of alternative communication platforms and products such as blogs, microblogs, databases, videos, podcasts, crowdfunding, citizen science, social media and many more have led to an increasing blurring of the line between scientists, experts and citizens (Brossard and Scheufele 2013; Mehlenbacher 2019). For example, podcast listeners exhibit willingness to listen to detailed and highly specialised conversations that can last several hours, contradicting a common narrative of declining interest in long and detailed content by today's audiences. Related to the increasing online content availability and shift in communication styles are increasing "uncivil" ways of communicating about certain topics, especially by the most frequent users, which in turn can lead to more polarisation on those issues (Anderson et al. 2014; Kim et al. 2021). New online forms of communication and blurring of lines can help build relationships between different publics and science, but they may also lead at the same time to increased incivility, increasing use of evidence that does not follow scientific standards, or increased engagement with unscientific or outdated findings, such as retracted or sensationalist studies that did not replicate.

In general, the average scientist is still not seen as good public communicator, which may hamper building trusting direct relationships (Fiske and Dupree 2014). Recent years have seen a proliferation of science communication training which may change this. Participants stressed the need to look at the consequences of the often misused "trust deficit model". Trust is earned differently in different domains and context and language is important. One question raised is what we can learn from scientific language and vice-versa what we can learn from general rhetoric in society.

A related question pertinent in current political environments is the perception of researchers and science as being part of the "elite". Populist tendencies that portray societal grievances through the elite vs. people lens are enjoying significant success in recent elections (European Group on Ethics 2024). However, it is unclear whether the rhetoric of portraying science as part of the elite really works or is simply a strategy of winning political arguments on specific policies. Certainly, political advocacy and the political leaning of highly educated researchers at least in some countries may suggest a relationship.

One participant stressed that trust in science may also be affected by the way science, and the scientific process, is portrayed in the media, specifically in films and movies. Science documentaries and science fiction movies usually emphasize complexity and difficulties (e.g., Oppenheimer) and therefore people might be impressed by the intricacies involved. This argument seems to be in line with the idea that disciplines which appear less complicated appear to be less trusted, but the argument can be seen as a double-edged sword as the complexity for to predict the climate can also be used against it by climate change sceptics (Cologna and Siegrist 2020). Some participants questioned whether trust itself is the right focus, as it may distract from the core issue of the connection between science and policymaking. The real issue should be that better channels or

[12] https://actionproject.eu/citizen-engagement/.

structures are needed to bring people together for better dialogue. Trust should not be the end goal in S4P, it is policies that use scientific insights better.

Another hypothesis offered was that some resistance to messages grounded in science comes from a desire to maintain and express epistemic agency and autonomy, the right to make up one's own mind. In contrast, having to "follow the science" may evoke reactance, a motivation to resist being told what to do (Miron and Brehm 2006; Rosenberg and Siegel 2018). This is likely true in the public, and potentially even more true for policy makers.

Several participants also mentioned that trust in scientists and institutions is also a factor of local proximity. The more local policymakers are, the more people trust them. The further scientists are away geographically, the less they are trusted, e.g. scientists from the local university are usually more trusted than those from abroad. Of note however, trust in the EU Institutions is higher than trust in national governments across most EU countries despite geographic distance. Given this geography effect, it may also be difficult for national and international initiatives to become highly trusted.

One important additional concern is related to partisan and party ideological mediation of relationships. An important question in this context is the role such partisanship and ideology play in the understanding of scientific specific findings. For example, it seems that ideology has a strong indirect impact on views towards specific policies via perception of scientific credibility and goodwill (Hunt and Wald 2020). Furthermore, the relationship between "conservative" ideology[13] and trust in science is not the same in every country, showing that it depends on the role and stances parties take relative to scientific findings and potential policies they stand for. These findings may explain why, despite today's strong partisanship influence on cognition in general (Van Bavel and Pereira 2018), political opponents of a certain policy still see it as important to reduce scientific credibility and intentions, rather than simply dictating the right policy. Science is still seen as trustworthy and therefore important in determining policy effectiveness, goals and needs.

In conclusion, the relationship between science and the public is often indirect and mediated through media or professionals and marked by a lack of deeper engagement between science and citizens. This finding is exacerbated by scientific practices that discourage public interaction, such as prioritizing publication of fundamental research in prestigious journals. The proliferation of online content and alternative communication platforms has blurred the lines between scientists, experts, and citizens, offering opportunities to bridge the gap but also leading to increased incivility and misinformation. Additionally, political and ideological factors influence perceptions of scientific credibility, highlighting the need to overcome partisan challenges to S4P. The challenge lies not just in fostering trust but in creating better channels for interaction and dialogue.

2.4. Relationship between scientists, policymakers and advocacy

An important upfront statement agreed upon by many participants is that science advice has its limits in that it cannot *decide* normative policy questions, but rather helps in describing the situation, proposing policy options and evaluating their likely impact, all with degrees of uncertainty. Decisions on the final policies are normative, value-based judgements and should be made in a democratic fashion. However, most participants agreed that distinguishing between normative debates, which focus on values and what should be, and factual debates, which deal with objective information and

[13] Measurement of ideologies in these contexts often works with self-identification, e.g. questions that ask respondents to rank themselves on a spectrum from "conservative" to "liberal" or "left" to "right".

what is, and defining where each domain begins and ends, is challenging. . Nevertheless, science has an important role in holding policymakers and politicians to account.

The term evidence-informed policymaking helps clarify the limits of science in policymaking, showing that although science is essential for generating insights for policymaking, science is often neither complete, nor fully accurate or free of controversy in its advice to policymakers (P. D. Gluckman, Bardsley, and Kaiser 2021). Therefore, policymakers do and should rely on diverse types of evidence. In this regard, while science advice at a distance (independent committees producing public reports) which are sometimes favoured by scientists for maximising trust in the evidence itself, may not be effective, responsive, or agile enough to provide evidence that is required when policymakers need to make decisions.

One important research question concerns "What motivates policymakers in using scientific evidence in the sense intended by scientists?" While there seem to be consistent views that many policymakers – and even more so politicians – are using evidence to confirm their perspective to justify their preferred choice to the public, it is less clear what would motivate them to use evidence as is. Some recent research in real-world settings attempts to measure the demand for research among policymakers, e.g. showing that mayors are willing to pay to learn the results of evaluation studies, and update their beliefs when informed of the findings while preferring larger-sample studies (Hjort et al. 2021), but such research is still rare (Oliver et al. 2014; 2022). Thus, in general more efforts should be undertaken to studying policymakers' behaviour themselves.

The limitations of science advice to make policy decisions is clearly related to limited behavioural consequences of trust in science for policy. Policymakers and citizens both may "trust the science" but opt to not "follow the science" for various reasons, such that it is hard to pinpoint the true relationship. Similarly, policy debates are seen as sometimes unjustifiably closed to people having different views: If politicians claim that they "follow the science", someone wanting to challenge the policy would need to question the scientific ground it is based on, which is unrealistic for non-scientists.

Participants also pointed out a degree of epistemic hubris on the side of (some) scientists, which can be seen as condescension of the intellectual establishment. This can be coupled with privileged status (socio-economically) of many researchers vis-à-vis the "normal citizen" insulating them also culturally from concerns of a large part of society. Distrust in science in this sense may be more about arrogance of scientists and less about "vulnerability" of the audience which is a dominant narrative in some research areas (Barker and Marietta 2020). There is a role for more self-criticism for science. One participant expressed it as, "There are manifest, latent and accustomed mechanisms of suppression of science and democracy in different areas of science, policy and society". Often, any criticism on science is framed as non-legitimate and science thus idealized. Science reacts to criticism "like a nest of ants with an intruder" (H. M. Collins and Pinch 2012, 142), and one of the strongest reasons for distrust in scientists is their own hubris and arrogant behaviour. Other argue that unrealistic expectations of science and what it can deliver, lead to disappointment and discrediting of science. More clarity about the scientific process and how consensus is achieved and how and why controversies persist in the general public may improve the understanding of what science is and what it can deliver, avoiding disappointments later.

Issue advocacy on the side of scientists, even if transparently communicated, can also fuel distrust in science. The categorisation by Pielke (2007), while relatively crude, can still distinguish between different strands of how science advice can range from the pure scientists who have no connection with decision makers to issue or shadow advocates who covertly or openly go beyond the scientific mandate to influence decision making. The latter, especially when done against considerable public

opinion can decrease trust in science in legitimate ways. Empirically, research seems to confirm this finding (Alabrese, Capozza, and Garg 2024).

Additionally, beyond scientific quality and advocacy issues, there are also legitimate concerns around cultural and political biases and discrimination within intellectual institutions that can harm trust, such as historical or ongoing experiences of injustices, e.g. by scientific health research marginalising certain groups in society such as women or people of colour. Other concerns centre around focus on WEIRD (Western, Educated, Industrialized, Rich, and Democratic) populations (Henrich, Heine, and Norenzayan 2010), racial, ethnic and social class biases, conflicts of interest with outside funding, third-party (including government) paid research agendas, and topics which might favour specific interests.

Related to self-criticism is the issue of non-transferability of scientific findings into practice that is often overlooked by scientists. Much of science is tasked with establishing certain findings and relations, where it helps to study things in the lab under perfect conditions. However, going from lab to the field is often challenging for several reasons and effects often either break down, or have tiny effects (List 2022; Roozenbeek, Culloty, and Suiter 2023; Maier et al. 2022).

Another open question raised during the workshop is what the role of science and scientists is vis-à-vis consultancies. Should scientists be expected to take on (all) this work of translating science in a timely and applicable fashion to policymakers and replace consultants, think tanks, and lobbies if they are seen as too biased? How should the balance between the needs of science with the need to communicate and translate evidence be struck? Participants agreed that not every scientist wants to be or can be a communicator for the public or policy and further that consultants may bring unique understanding/skills to the table that scientists may lack.

There is an intricate balance also between useful science responding to political requests and independence. While engagement between the different players (scientists, policymakers, intermediaries) should be strengthened to build trusted relationships, integrity and independence of science needs to be safeguarded. People at the boundary seem to be less concerned with this issue (Scharfbillig et al. 2024), but this does not make it less relevant. Clear principles are needed to ensure transparency and accountability (The British Academy 2024).

Finally, especially on the policymaker and politician side, the issue of partisanship and social identities today seems to interfere more and more with both fact and value-based considerations. Due to the nature of social identities – the groups humans so easily identify with (Tajfel 1974; 1981) – people easily disregard what others are saying if they categorise them as belonging to another group. Going one step further, "identity fusion" happens when people merge their group identity with their personal identity, which then leads to anything threating the status or beliefs of the group to be perceived as threating the self (Swann and Buhrmester 2015). Social media today reinforces these tendencies of identity signalling and fusion (Reese and Whitehouse 2021). In these cases, whether people (citizens, politicians, or even scientists) do or do not trust science becomes irrelevant once identity is fused because the only thing that matters for a person's positions is what the group says, which is often embodied by their leaders' positions. In these cases, science will find it hard to counter these positions, and conflicting views will be resolved by declaring individual scientists to be "bought" or part of a conspiracy, which allows people to uphold their trust in science in general. This can happen (even if empirically not equally distributed) on all political sides (Barker, Detamble, and Marietta 2022). Thus, one of the most important challenges today is to understand better how to decrease the influence of social identities, or at least better understand how political views become linked to them, rather than increasing trust in science alone.

In conclusion, the complex relationship between scientists, scientific institutions, policymakers, and politicians necessitates broad understanding to the use and limits of science in advising policy to understand and foster trust. While participants acknowledge the limitations of science advice in informing policy decisions, policymakers must be willing to engage with evidence and the corresponding uncertainty and nuances of scientific findings. Scientists could recognise and rectify issues relating to own hubris and privileged status, which can lead to a more self-critical and transparent approach, including acknowledging and addressing cultural and political biases within scientific institutions, as well as limited transferability of scientific findings into practice. On the other side, more research is needed on motivations and limitations of policymakers on their uptake of evidence, including studies into social identities, as well as institutional settings that can increase motivation or even force the uptake of evidence, some of which are discussed in the following sections.

2.5. Citizen's trust in institutions

Trust is a foundational principle of democratic legitimacy, participation, institutional accountability, and societal stability. Trust in democracy means both trust of citizens in democratic processes and the democratic institutions. Low levels of trust in democracies can drive citizens to no longer view it as the best process through which their needs and concerns are addressed fairly and effectively, creating a crisis of legitimacy of governments and leading to susceptibility of authoritarian leadership styles (Open Society Foundation 2023; Magalhães and Garoupa 2024; Claassen 2024). Furthermore, erosion of trust can weaken social cohesion and political stability in general, which is essential to solve global challenges. Trust in government is not just "nice to have." High trust societies and economies tend to be correlated with prosperity (Zak and Knack 2001; Beugelsdijk, De Groot, and Van Schaik 2004) in part because trust can replace some of the cost of burdensome regulation, implementation, and enforcement by public administration. Trust in democratic institutions also helps people not to fall easily for dis- and misinformation and it makes countering it more effective. Thus, trust is essential for democracies, even if other goals seem more pressing in the short-run.

When it comes to the EU, a recent Eurobarometer shows that 51% of EU citizens were 'not very satisfied' (31%) and 'not at all satisfied' with the way democracy works in their country (against 47% 'very satisfied' or 'somewhat satisfied').[14] Furthermore, out of a list of ten threats to democracy, growing distrust and scepticism towards democratic institutions (36%) and false and/or misleading information in general circulating online and offline (34%) are the two greatest threats[15]. While trust in the EU has risen to the highest level in last 20 years, it just shows that it took roughly 20 years to recover since from the financial and Euro crisis[16]. Trust is easy to lose but hard to gain.

Going beyond Europe, the recent OECD Trust report from 2024, covering 30 countries, found that 44 percent of citizens have low or no trust in the national government compared with 39 percent with high or moderately high trust. This represents a 2 percent decrease in trust from 2021 to 2023. The root causes of low levels of trust in democratic institutions are complex and multifaceted and there is no magic bullet. Many factors contribute to this decline, which is not recent, including perceived government inefficiency, corruption, foreign interference, social media, and the influence of private interest in politics (Lorenz-Spreen et al. 2023; OECD 2024).

[14] https://europa.eu/eurobarometer/surveys/detail/2966.

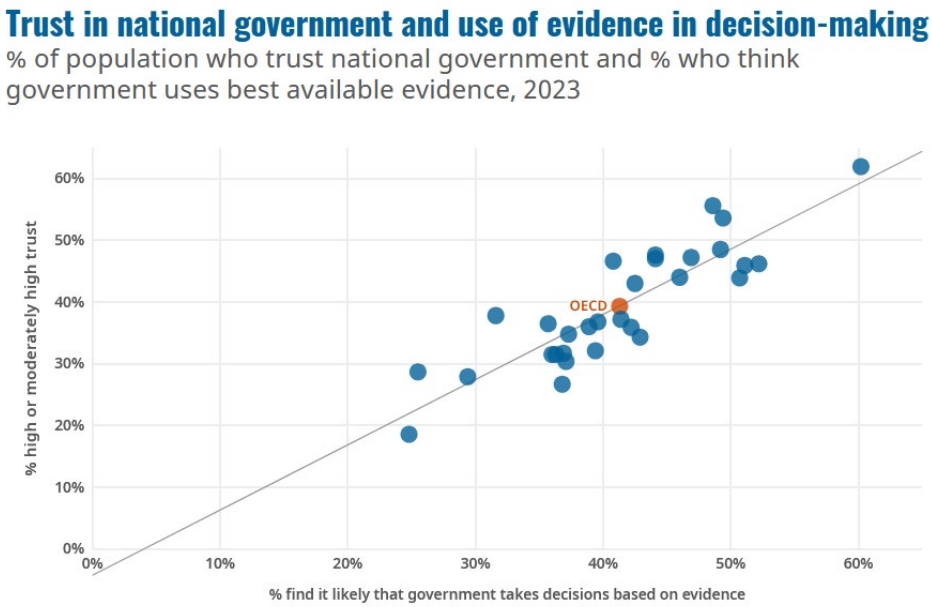
[15] https://www.ipsos.com/sites/default/files/2024-09/EU%20challenges%20and%20priorities%20FL550_summary_en.pdf.

[16] https://ec.europa.eu/commission/presscorner/detail/en/ip_24_6126.

Similar to people distrusting science, low levels of trust in democratic institutions are driven by a wide variety of factors, including socio-economic inequalities, cultural grievances, and perceptions that elected officials do not reflect their constituents' interests and do not act on their behalf. Evidence shows that several social groups are underrepresented in politics, including women, ethnic minorities, people with lower socio-economic status and education, young people, the LGBTIQ community, and disabled people (Sobolewska, McKee, and Campbell 2018; Traber et al. 2022; Magni and Reynolds 2021). Segments of society feel alienated from the institutions of liberal democracy because they perceive them as indifferent to their own issues or ineffective. Such drivers can be summarised as a government-citizen disconnect and a feeling of low political efficacy (Mettler 2018; Wolak 2018).

When it comes to evidence use and trust, again based on the OECD trust survey, only around four in ten people believe that governments draw on the best available evidence, research and statistical data when taking decisions. Additionally, citizens rarely find the evidence presented by governments trustworthy. Finally, at the country level, there is a strong correlation between trusting the administration and belief that governments are using evidence, see figure 5 below.

Figure 5 Trust in governments and evidence use



Source: (OECD 2024). OECD Survey on Trust in Public Institutions, Figure 5.13.

Participants stress that the role of media, social media and recent developments of the media landscape are extremely important for explaining trust levels. A recent meta study has shown that the most likely conclusion is that in developed countries, social media has led to a decline in trust, although it is unclear whether this decline is unjustified or not, as it had a positive impact on developing countries (Lorenz-Spreen et al. 2023).

Participants further stressed the need to investigate the S4P paradigm and what it entails. There are different instances/processes/mechanisms of S4P depending on country, governance level, and policy topic and each of those will likely have implications for trust. A generalisation seems difficult in this relation if the way science is taken on board varies. There is a lack of research that would investigate or allow judgement of whether varying levels of trust in the use of science in policymaking in the above-mentioned OECD survey is justified or rather an issue of perception only. If the former, then this would call for the need to reorganise the science advice governance, while if the latter is the core issue it is a question of better communication.

One specific perspective mentioned by participants is that S4P is not a question of trust, but rather one of performance and effectiveness. The position suggests the reversal of causality, namely that as long as things work for people, they will trust the system and see science and science advice as part of the system, while when it does not work, trust is being lost. This perspective implies that efforts should not focus on increasing trust of citizens in science (for policy), but rather to improve the science advice mechanisms in society with the view of making it work for everyone. This view was however contested by several workshop participants, as it would imply a very technocratic understanding of S4P.

Overall, the erosion of trust in democratic institutions is a pressing concern that seems to require more attention. The decline in trust is a global phenomenon in democracies albeit with variations, and even if trust in the EU itself has recovered slowly in recent years. The root causes of this decline are complex and multi-faceted and the OECD Trust report (OECD 2024) highlights the importance of evidence-use as an important driver in trust in policymaking but also reveals that citizens often do not trust the evidence itself presented by governments. This calls for more action to establish a transparent, responsible and trustworthy way of evidence use and communication in policymaking.

2.6. The specific challenge of dis- and misinformation

The workshop did not discuss best strategies for tackling dis- and misinformation, rather it focused on discussing whether it presents an issue in the first place. In other words, the question was whether mis- and disinformation is a symptom, a cause or anything in-between the two of current low levels of trust in (some) institutions. While there is no doubt about the prevalence of dis- and misinformation, the key concern is regarding the magnitude of its impact and therefore whether resources are spent wisely focusing on this issue (e.g. Adams et al. 2023; Stephan Lewandowsky et al. 2023; McKay and Tenove 2021; Acerbi, Altay, and Mercier 2022; Guess, Nagler, and Tucker 2019). Even after presentations and discussions, there was no full agreement among participants either way.

Important arguments are that the prevalence of misinformation exposure of citizens is not that high – with estimates varying greatly – and that it is hard to know their causal impact, if they have any. Both arguments are difficult to evaluate overall, both due to different misinformation definitions and a general lack of data provided by social media platforms to investigate the true scale.

The case for no or low causal impact relies on the fact that most studies never investigate behaviours in the first place (Murphy et al. 2023). One reason is certainly the nature of the goal of much disinformation – namely to sow distrust and polarisation rather than getting people to do a very specific thing, like buying a product. Another reason is that especially politically motivated disinformation is purely for signalling ones' group membership, for example while approximately 70 million American adults claimed to believe that "Hydroxychloroquine has been proven effective in treating COVID-19" based on an assertion by then President Trump[17], only very few recorded cases exist of Hydroxychloroquine intake. Other examples included Pizzagate (Bleakley 2023), or QANon (Garry et al. 2021). Thus, while the belief is at least according to surveys prevalent, they may only serve as a political social identity signal (Huddy 2001), but not really as motivator for behaviour.

A further argument presented was that even if one claim of misinformation could be stopped, others would pop up to take its place, in other words, the counterfactual to one misinformation story spreading is not the prevailing of truth and facts, but potentially just other misleading facts and beliefs. Bringing these dimensions together, a key argument is that there is a pre-disposition around

[17] https://www.ipsos.com/sites/default/files/ct/news/documents/2020-10/topline-axios-coronavirus-index-wave-28.pdf.

certain content, contexts, and people that creates demand for misinformation. Content wise, intuitive appeal of some theories may make disinformation spread more easily (Miton and Mercier 2015; Blancke et al. 2015). Some worldviews (e.g., conservatism, free market ideologies) may also lend themselves to be anti-science and therefore susceptible to disinformation (Lewandowsky, Gignac, and Oberauer 2013). And contexts like corruption or low levels of democracy lend themselves more to conspiracy beliefs because trusted sources are harder to find (Cordonier, Cafiero, and Bronner 2021). Nevertheless, no or scarce evidence of behavioural effects are not evidence for no effect and behavioural consequences are not the only ones that matter in democracies, given that an important part of democracy is public deliberation about policies. Mis- and disinformation can significantly disturb and alter these deliberations, thus leading to worse policy outcomes and potentially more polarisation.

Regarding the scale of exposure, analyses often put the engagement with fake information to be about small parts of society. For example one study showed that only 2.3% of all early COVID-19 websites could be classified by NewsGuard as misinformation, but engagement on Facebook with these websites was about 14% (Acerbi, Altay, and Mercier 2022), or a recent analysis of climate tweets flagging 15.5% as misinformation (Rojas et al. 2024). A recent response to such criticisms states that even if engagement is not yet large, even low levels of consistent engagement should not be neglected. It may still matter in the long-run because some parts of society engage much more with those types of information, which may lead to radicalisation of those groups impacting democracy at large (Ecker, Tay, et al. 2024; Ecker, Roozenbeek, et al. 2024).

Irrespective of the factual disagreement on scale and behavioural implications, there seems to be at least some agreement that misinformation, even if not directly leading to outright harmful beliefs or behaviour in the majority, can undermine trust in science in many ways for those who are exposed (Muhammed and Mathew 2022; Lewandowsky 2024). To name a few, misinformation erodes public understanding by spreading false or misleading information, creating confusion and leading to questioning of established knowledge; it amplifies false equivalence by giving undue weight to fringe theories; erodes the validity of scientific evidence; cultivates distrust by casting doubt on the motives of scientists and suggesting research is driven by external agendas; facilitates echo chambers through social media algorithms reinforcing pre-existing extreme beliefs; exploits cognitive biases against evidence-based considerations; encourages complacency by misrepresenting risks associated with urgent issues; creates alarmism on safe practices; undermines scientific authority by falsely challenging the credibility of experts; and polarizes public opinion, complicating the achievement of consensus on science-informed policies by creating artificial barriers to the acceptance of scientific consensus. In short, there are many ways that mis- and disinformation can hurt the relationship between science and society even if behavioural consequences are limited.

A somewhat more contested argument among participants is that dis- and misinformation actors are spending a lot of money on these campaigns, which would unlikely be the case if they were broadly ineffective. For example, it is well known that the Russian Federation is deliberately spreading fake information about COVID-19 and vaccines (Glenza 2020)[18] and tobacco[19], and oil companies[20] and lobbies have engaged in disinformation campaigns for a long time. Disinformation strategies can have different goals: whereas foreign interferences through misinformation (FIMI) seems to be more topic agnostic, simply attempting to increase distrust and polarisation in societies such that

[18] However there are also reports that Western countries are doing so https://www.reuters.com/investigates/special-report/usa-covid-propaganda/.

[19] https://applications.emro.who.int/docs/FS-TFI-198-2019-EN.pdf.

[20] https://www.ucsusa.org/climate/accountability.

democracies are less able to work effectively together and creating reflexes for “strong leaders”, other campaigns such as those of the tobacco, oil, or sugar industries are more targeted towards specific topics with the goal of favourable policy decisions (Oreskes and Conway 2011). It is worth noting however that dis- and misinformation campaigns represent only one of the tactics for both FIMI and corporate lobby campaigns and it is hard to disentangle their individual impact.

Consequences of several of these campaigns together with recent radical shifts in technology such as AI, deep fakes, etc. may increase “post truth” attitudes (Cormick 2019), where it is legitimately difficult for people to distinguish truth from fact, and this can lead people to disregard new information altogether and no longer update their believes in line with scientific consensus (Nyhan, Porter, and Wood 2022).

A crucial problem for society in fighting dis- and misinformation is that they are hard to fight. Pre-bunking and debunking has an effect in reducing beliefs and sharing intentions of misinformation (Bruns et al. 2024), but they do not fully cancel the effect of misinformation. Similarly, while it sounds sensible to suggest people verify the veracity of false information, online searches seem to increase beliefs in false information partially because of the existence of data voids, or an abundance of low-quality sources that sometimes seems to confirm the suspicion (Aslett et al. 2024). Paywalls of scientific publishers that make scientific findings difficult to reach, while low quality information is readily available funded by advertising revenue, certainly further harms citizens’ ability to find quality information. Furthermore, the advent of AI and the possibility of cheap production of wrong information will only make this phenomenon worse.

Another complication for fighting disinformation as scientists today is that of perceived neutrality or objectivity. If disinformation is disproportionately targeted to one specific political camp, then being engaged as scientists in correcting those disinformation rooted beliefs can be perceived as a political act. Increasingly authoritarian leadership styles may then also put these researchers directly at risk. Scientists are especially the target when their views and findings are inconvenient for special interests, as in the case of climate change, or public health issues such as tobacco or sugar. One important reflection is therefore whether disinformation researchers should have a bigger distance to fact checkers and people involved in verifying information relevant to important societal debates and what protection of those researchers could look like. Disinformation researchers can describe the phenomena but should potentially not be the ones engaging in fighting disinformation directly. This certainly calls for governments to take this role more seriously to protect trust in science and to protect individual scientists.

An important question discussed at the workshop is whether (dis)trust and misinformation are rooted in broader phenomenon like inequality, the lack of social cohesion and the perception of breaking of the social contract. More evidence is needed to answer the question conclusively, but there are some studies that suggest a link, in which case it is important to include responses to issues of inequality and social cohesion to strategies of fighting misinformation

In conclusion, the discussion of whether mis- and disinformation is a symptom or cause of low trust in institutions leads to a nuanced answer. While misinformation's prevalence is acknowledged, its actual impact remains debated, as exposure levels vary and causal effects on behaviour are hard to measure. The nature of disinformation often aims to sow distrust rather than directly alter behaviours, serving more as a signal of political identity than a behaviour motivator. However, even if misinformation rarely leads to immediate harmful behaviours, it can undermine trust, erode scientific authority, and polarise public opinion, complicating consensus on policies. The challenges of countering misinformation are compounded by technological advances, perceived neutrality issues, and political targeting, necessitating a strategic, long-term approach that invests more into trust, but

also a more targeted response to the goals of dis- and misinformation which are polarisation, distrust and political apathy.

3. Potential options for improving trust in S4P

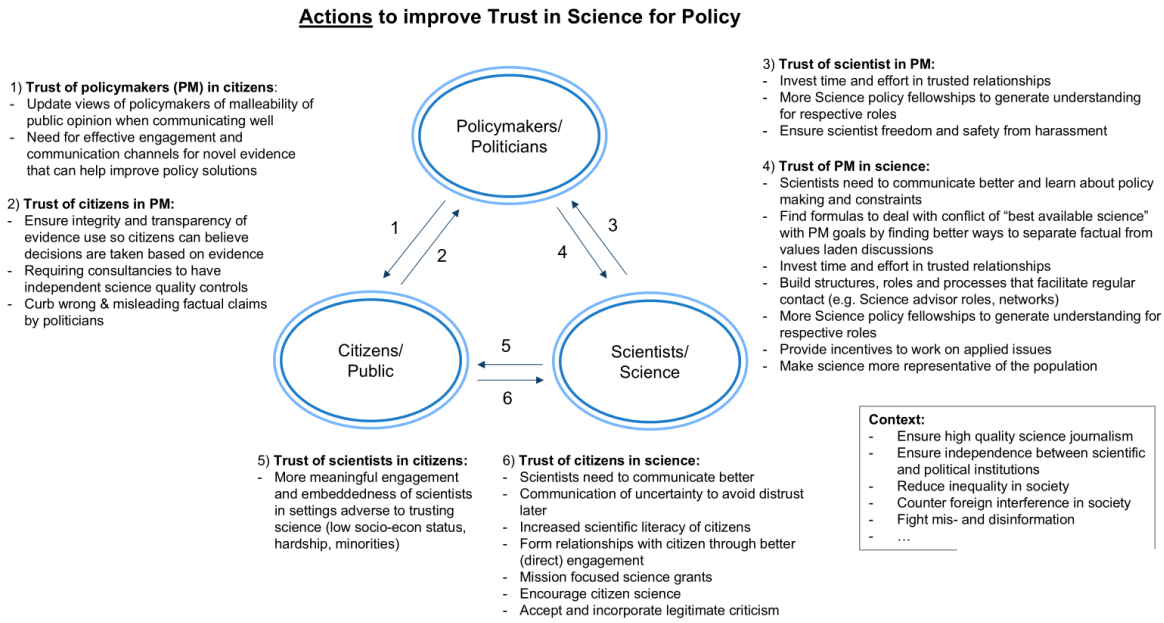
The previous sections showed that trust in science for policy is a multi-dimensional phenomenon, which means that any action to increase trust will also involve actions on multiple fronts. While the discussion pointed out that evidence of a true crisis of trust may be scarce to non-existent and that active distrust in science is limited to specific sections in society, there is often also no strong connection between science, citizens and policymaker's necessitating at least some actions to improve those relationships.

Before discussing measures for improving trust in S4P, it is important to note that during the workshop the understanding emerged that good science advice and evidence-informed policymaking can also do a lot to foster trust in democracy. In particular the section above on "Citizen's trust in institutions", discusses the conclusion that citizens want governments to use (more) evidence and science in their decision-making. Given the strong correlation between perceptions of evidence use and trust in governments, efforts to increase and improve the uptake of S4P in a country will probably contribute positively to trust in institutions and therefore in democracy. Thus, the trust relationship between scientists and policymakers is one of special concern here not only for general trust, but also a functioning relationship to improve trust in democracy itself.

When it comes to developing initiatives, participants agreed there is a need to define the overall objective and desired outcome in terms of trust. Wanting citizen or policymakers to have 100% trust seems illusionary and overly dogmatic and perhaps the question should focus on how a person with increased trust would behave. It does not seem to be enough to focus on surveys, but to look at which behaviours could be proxies for trust (e.g. accepting vaccines to reflect trust in science or voting for parties that do not question human made climate change).

An overview of actions can again be clustered around the relationships between the main players in trust in science for policy, see figure 1. More actions came up on how to increase trust in science, while the inverse relationship was hardly discussed, which probably reflects the concerns that have been discussed and studied in recent years, but additional research gaps were also discussed, see further down.

Figure 1 Actions to improve trust in science for policy



Source: own elaboration.

1) Trust of policymakers in citizens (regarding science for policy):

While there is no evidence on how much policymakers and politicians trust citizens in their views on science, the topic was nevertheless discussed from the perspective that policymakers often seem to have a too narrow view of citizens' opinions and how public views are malleable. The perception was that politics is rather reactive in following public opinion, even when public opinion runs counter to scientific findings. Nevertheless, participants pointed out that some politicians are actually very influential on public opinion themselves.

In this context, participants recommend that policymakers and governments need to trust the public more by investing in effective ways of engagement and communication novel policy relevant information in a trustworthy way. If they believe that citizens cannot be trusted to understand evidence and facts, then they will take different routes in policymaking, including hiding evidence, making decisions behind closed doors, and communicating in untrustworthy ways, jeopardizing science for policy in general.

2) Trust of citizens in policymakers in the use of science and evidence

Views of citizens regarding the use of evidence by policymakers and politicians may be skewed in a self-serving way. The nature of democratic decision making through compromises on stakeholder positions seems to make credible evidence communication by governments and public administrations difficult. The previous section showed consequently that many people even in advanced democracies do not trust the information provided, especially for verifying that governments kept to their promises (OECD 2024). Therefore, any solution that would increase the trust of citizens in the evidence use in politics requires credible signals, processes and mechanisms that allow citizens to update their sometimes rather cynical views.

One particularly interesting approach discussed at the workshop is the relatively recent Scientific Integrity (SI) Framework introduced in the US[21]. Since 2023, the framework is applicable to all federal agencies and departments in the US that fund, use, or disseminate science. The official definition of SI according to the framework is "the adherence to professional practices, ethical behaviour, and the principles of honesty and objectivity whey conducting, managing, using the results of and communicating about science and scientific activities. Inclusivity, transparency and protection from inappropriate influence are hallmarks of scientific integrity". The framework has two principal objectives: 1) ensuring the science that policymakers receive is accurate, and 2) ensuring an appropriate use of the science by policymakers. In practice, advisory body monitors and ensures that SI is upheld in an institution and advisory body members should be chosen in a transparent/fair/accountable way. As the framework has not been implemented for very long, no conclusive evaluation of the framework is possible to date.

Another option involved the question of how to handle current practices of science advice to policymaking. Evidence-informed policymaking relies mostly on country-specific ecosystems, which differ greatly (P. D. Gluckman, Bardsley, and Kaiser 2021). In practice though, many contracts for policy relevant research are going to consultancies who are specialised in these services, not scientists (e.g. 't Hart et al. 2023). Multiple reasons lead to this phenomenon, and many participants agreed that it also should not be the role of scientists to take over this role completely, if at all. However, the evidence provided by these consultancies can vary greatly in quality (as does scientific evidence) but above all it is not tied to scientific standards and processes such as peer review. The contractual relationship may also steer results in the direction of what the policymaker preferred in the first place, which may impact trust citizens place in the evidence provided. One potential action discussed was to implement effective quality assurance schemes for evidence provided by private companies through scientists or scientific institutions. If done in the right way, consultancies could focus on their strength in areas that scientists are lacking, while the quality and unbiasedness of the evidence provided could be strengthened.

Potential ways of curbing misleading and deceptive factual/scientific claims made by politicians were also raised as methods for reducing the impact of mis- and disinformation.[22] While politicians (and policymakers) have legitimate democratic competitions over value judgements, narratives, plans and visions for society, the use of claims that are irrevocably shown to be factually wrong (not where no evidence exists to support it) could lead to some legal action, similar to laws in Europe that ban unfair commercial practices.[23] It seems obvious that any enforcement of such laws would be seen as highly critical by many in society for concerns of "ministries of truth", free speech limitations, and the independence of courts and the rule of law apparatus that would be tasked with enforcing these laws. Nevertheless, participants raised the point that it seems surprising that false claims that cannot be made by advertisers can be made by politicians without legal consequences.

3) Trust of scientists in the use of policymakers' use of science

The trust that scientists put in policymakers' unbiased use of science is closely related to that of citizens, as for almost all cases scientists are mere citizens in decisions that do not concern their field of expertise. Therefore, the recommendations made under 2) will also apply to this relationship.

[21] https://bidenwhitehouse.archives.gov/ostp/news-updates/2023/01/31/nstc-a-framework-for-federal-scientific-integrity-policy-and-practice.

[22] https://www.project-syndicate.org/commentary/right-to-truth-essential-to-combat-online-disinformation-by-geoff-mulgan-2024-08.

[23] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=legissum:l32011.

However, there are further opportunities to build more meaningful relationships between policymakers and scientists that would relate to their fields of expertise. In general, it is recommended that both sides should invest more time in trusted relationships, mostly through formats similar to science policy fellowship programmes, where policymakers can come to research institutions to spend time engaging with cutting edge research in their field and scientists can spend a time in ministries/departments/agencies to learn about the daily work of policymakers. As numerous publications have shown, one of the biggest hurdles for effective science advice are the lack of engagement possibilities rather than simply providing more evidence (Pearson 2024).

Another discussion among participants centred around the question of ensuring scientist freedom and safety from harassment especially from politicians to increase their trust. It is the sad reality that harassment of researchers is on the rise for political and cultural reasons and especially affects women (Bell and Koenig 2017; Nogrady 2024). This harassment can even be centred around research that is itself completely neutral such as mask effectiveness in containing infectious diseases or virus spreading rates, thus no scientist seems inherently insulated against political backlash. This can be linked to psychological issues such as solution aversion (Campbell and Kay 2014), where people attack the science that could support effectiveness of a measure they oppose. As mentioned above, policies cannot be determined by evidence, they can only be informed by it, but protecting scientists from harassment in their core work would go a long way in increasing trust of scientists in policymakers even if their recommendations are (seemingly) not implemented. Positive examples of how to implement protection of scientists is for example the initiative of SafeScience in the Netherlands.[24]

4) Trust of policymakers in usefulness and unbiasedness of scientists

The dimension of trust of policymakers in the scientists providing evidence goes to the heart of science advice, and the difficulty of bridging the different worlds of policymaking and science. Science uptake and science advice is a two-way street (Gluckman 2018), therefore investing into more trusted relationships can help, for example under the previous point by science-policy fellowships. As some participants mention, science uptake is still strongly a function of interpersonal trust between policymaker and the scientist providing the advice. Additionally, many participants agreed that scientists and scientific institutions would have to learn how to communicate in a more effective and especially targeted way, such that science advice would better take into account political realities. This could be achieved by adapting incentives for scientists to care more about the application of their work, not focusing exclusively on publishing in disciplinary journals, or by investing more generally in competences through training (Schwendinger, Topp, and Kovacs 2022). Science advice should also be where policy ideas are generated, not only implemented, i.e. in representative democracies, science advice needs to be more active in advising political parties, especially during times when they are defining their priorities and proposals, e.g. before elections.

Another option raised had to do with the political arena itself. As of now, it seems unclear what to do for policymakers when 'best available science' may be contrary to policymakers' beliefs or interests. That is to say, while agreed by most participants that science cannot determine policies, scientists are also citizens and have political agency. When scientists overwhelmingly come out in favour of certain policies, policymaker and politicians seem to have a hard time arguing against those scientists' views using normative arguments. Abstracting from current polarising political topics like migration or climate change, examples may also emerge where the global scientific approach seems to clash with local and indigenous knowledge (Chirisa, Matamanda, and Mutambwa 2018). Separating the

[24] https://www.wetenschapveilig.nl/en/about-us.

debates around facts, values and norms seems to be often counterintuitive and difficult to many but is desperately needed in times of high affective polarisation of society.

Another action proposed is to make the scientific landscape more representative of the citizenry. In most countries, academia is populated by necessity by highly educated individuals, and educational achievements correlate strongly across generations (Claver and Ortega-Lapiedra 2024). Thus, over time, academia may get increasingly insulated from a large part of the population which combined with the fact that science is not values-free may prove to be a hurdle especially for policymakers and politicians representing parts of the population which are further away from educated elites (even if themselves part of that same elite). In scientific institutions, these issues have often been responded to with hiring practices aimed at a more diverse pool of applicants, centring around minorities' status like race, gender, or ability status or around socioeconomic and educational background such as first-generation college students. However, it seems difficult to come up with similar measures based on values/political orientation or religion in a meaningful and enforceable way. However, other initiatives may help to bring scientific perspectives closer, by incentivizing research funding to increase contact or designing research missions based on representative populations and engagements and others. Obviously, addressing concerns of those who do not trust institutions should not be limited to the arena of S4P, as it feels dangerous and undemocratic to ignore those concerns in general.

Some participants also mention that a focus should be on ensuring *trustworthy* institutions (as opposed to simply increasing trust in science) that will lead to the outcome of increased trust. This would mean to begin with better governance of science rather than initiatives that would focus directly on improving relationships. What matters is not only the science itself, but the mechanisms of communication and verification between scientists and policymakers. Trust is usually relational, and the mechanisms used to give, receive and assess evidence in policy making differ in their ability to lead to trusted relationships. For example, scientific committees, chief scientists, or departmental science advisory units all have very different relationships with both science and policymakers. Each of those mechanisms will therefore have a different route to be trusted. An effective knowledge broker needs to build trust with multiple stakeholders, e.g. the government, opposition, administration, media, and science community. Participants called for more sharing of best practices on science advice, especially due to variations between countries and what can work in different contexts.

5) Trust of scientists in citizens understanding and uptake of science

This cluster is one with the least research and therefore few actions were proposed by participants. One recommendation was to increase engagement and embeddedness of researchers into citizen realities and especially circumstances that typically lead to decreased trust in science and institutions, such as economic hardship, low socio-economic status or the realities of minorities. Being able to see first-hand the concerns these groups are facing may help increase understanding for the limited applicability of scientific findings for every-day life and thereby in turn inform scientists approach to trusting citizens to make the "right" choices.

6) Trust of citizens in science

Trust of citizens in science is the most researched of all the relationships and therefore naturally most comments concentrated on actions that could be taken here. Initiatives proposed focus on making citizens more familiar with science either directly through science communication, citizen science initiatives and science citizen engagement, or indirectly via trusted representatives (doctors, teachers). While science education to increase scientific literacy was also proposed by some participants, it was questioned whether this will truly work in an effective manner to increase trust in

science. For example, one study finds that a higher level of scientific literacy is associated with more polarised beliefs in controversial topics (Drummond and Fischhoff 2017), which is well in line with typical findings around motivated reasoning not being decreased by intelligence (Kahan et al. 2017). Thus, it seems likely more important to focus on the relationship rather than the knowledge and skill when wanting to increase trust in science.

Another caveat mentioned by many participants was that in order to not endanger long-term trust, science engagements and science communication need to be humble and acknowledge uncertainty clearly enough. Sensational reporting on novel but unrobust findings may in the short-term increase engagement with science but also feed into delusion later if not caveated in the right way. This perspective includes a more realistic assessment on the side of scientists of what science can do and what its limitations are. People do not seem to respond badly to expressions of uncertainty - if the science is explained well, it can result in increased trust especially in the long-term.

Regarding concerns around mis- and disinformation, there is an increasing need for some measure to ensure public information integrity. When legacy media was the traditional gate keeper of information flows in society, many countries had self-governing bodies in place such as Press Councils, which could sanction – albeit with limited power – newspapers or journalists for reporting fake, false or misleading information. With the advent of social media, micro blogging and the crumbling of gatekeeper functions, there is often a vacuum for ensuring information integrity that needs to be filled. For example, the OECD is working on some such guidelines that would help countries have clear guidance on how to ensure a non-polluted information environment.[25]

A more controversial proposal was highlighting the need to invest in decoupling trust in science from trust in institutions, by clearly signalling non-alignment between science/scientists from political agendas, see also the point above about separating research around misinformation and engagement in fact-checking. However, scientists can and have the right to be political activists (although they should be transparent about it) and bad faith attacks on science will need to be responded to, making non-alignment difficult in practice for issues scientists deeply care about.

In contrast to the actions proposed above, several participants mentioned that irrespective of the actions taken, it is important to not equate all criticism of science with anti-science and even anti-democratic perspectives. There are many legitimate and meaningful criticisms against science, scientific institutions, and individual findings or technologies where critics must be allowed and listened to in society. Ignoring these criticisms or even belittling those will do more to hurt trust than the above-mentioned initiatives can repair them.

Finally, a concern shared by several participants was that trying to improve trust in science may not be a very useful strategy as in many countries, trust may be hitting a ceiling as most people already do trust science. Any action taken with this respect should be targeted to those who do not trust science, but only after listening and addressing their concerns.

[25] https://www.oecd.org/en/networks/oecd-information-integrity-hub.html

4. Further research needs

Apart from the above-mentioned recommendations, participants also mentioned a number of research needs for which further evidence is required to better answer the questions of trust in science for policy:

- What are the limits to motivated cognition and how can we make use of them to convince people of the "facts"? What are factors weakening motivated cognition?
- Why are policymakers reluctant to engage more with evidence/scientists? Is it trust or some more mundane factors?
- What elements in a report/evidence are seen as useful?
- What are the elements in the citizen engagement exercises that make citizens happy, and at what stage do they want to be involved - problem definition, goal definition, policy option generation or decision?
- Are citizens able in today's digital information space to find high quality information? What can be done to ensure this?
- What are "right" levels of trust, given government performance? Trust needs to be earned, and if governments are doing badly, demanding high trust is wrong. But what is the proper amount of trust?
- What does time-series data say about the causality of trust on following or using scientific insights?
- What are the key issues for those actively distrusting science?
- Does better use of evidence/science in policymaking really increase trust in governments (based on the OECD survey)? How would citizens know? What do citizens understand as "best available evidence"?
- How can citizen engagement be better scaled?
- How do we explain country differences in trust in science/gov/S4P? Is it based on true factors, or is it merely perception?
- Which institutional factors determine when there is a spill-over of low trust in institutions on low trust in science? When is trust in science resilient?
- Why are European Science Advisory systems different from Anglo-Saxon ones? When does the cultural difference inhibit/improve science uptake?
- How important is institutional trust for the survival of democracy? In most countries with lower trust in institutions, people still follow (mostly) government actions, recommendations etc.
- How do you study the science-for-policy interface methodologically? Experimenting with new methods beyond surveys and experiments
- 'Meta level' systematic reviews of knowledge exchange that brings together different points of view - what we know and what we don't know (about any given science).
- Can we have a monitoring framework? Data collection is very siloed - there are limitations with conducting multi-country studies, too expensive etc.
- More citizen engagement in science including evaluation of their effect is needed, both on the participating citizens and on the scientists.

5. Conclusions

The "Trust in Science for Policy Nexus" workshop, held in Ispra, Italy, explored the multidimensional aspects of trust in science within the context of policymaking. The discussions underscored the critical role of integrating scientific evidence into policy to enhance credibility and trust in democratic institutions, acknowledging the challenges posed by dis- and misinformation and current political dynamics. A nuanced understanding of trust was advocated, recognizing that while scientific evidence can strengthen policymaking, science itself is subject to human fallibility and that scientists should remain humble and realistic about their contribution. The workshop emphasized the necessity for transparent, responsible, and inclusive scientific practices to foster trust, proposing that scientists act as "honest brokers" to facilitate this trust.

The workshop highlighted the need for further research into the complex relationships among scientific institutions, policymakers, and the public. It pointed out that trust in science is not universally high and varies by context and demographics but seems to generally be high across most countries. The discussions also identified significant methodological challenges in measuring trust and assessing its impact on policy outcomes. Participants provided several suggestions for reinforcing trust in S4P, including enhanced engagement between scientists and policymakers, improved communication strategies, and the implementation of governance frameworks that safeguard scientific integrity while promoting evidence-informed policymaking. These efforts aim to build a more trustful environment in democracies, ultimately benefiting S4P as much as S4P will help uphold trust in democratic governance.

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