IDOS German Institute of Development and Sustainability

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Scientific Policy Advice

Tasks, Requirements and Tensions

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Summary

Science, politics and the public engage in dialogue on agenda-setting and problem-solving. This poses particular challenges for everyone involved, including scientific advisers. They are confronted with expectations and different role models and operate in different systems. In addition to this inherently tense relationship, there have been further challenges in recent years, with increasing hostility to science and disregard for evidence. Times of upheaval, in which uncertainties and complexities increase, on the one hand require scientific assessment and contextualisation, but on the other hand also necessitate reflection on the roles, demands and tensions involved in providing scientific advice.

The reciprocal relationship between science and politics is frequently viewed critically by the public and also by decision-makers themselves. It is, of course, also the subject of discussion in science itself. This policy brief considers policy advice in the context of political decision-making processes from the perspective of international political and social research as an applied science, based not least on the experience of the German Institute of Development and Sustainability (IDOS), which closely integrates research, advice and training. Key statements are:

- Maintaining critical distance, despite the necessary degree of proximity, requires agreement on the role and purpose of policy advice.
- For science, the principles of critical questioning and non-partisanship apply. However, researchers are never “neutral”, but represent positions based, among other things, on internal scientific discussions on the weighting of findings.
- There are areas of tension between science and politics with regard to complex issues and scientific uncertainties, not least with regard to future-oriented questions, which are faced with expectations for simple, quickly implementable solutions. In addition, science and politics have very different time horizons.
- Advisory institutions specialise in particular areas of expertise. Their expertise must be grounded in sound scientific research (beyond institutional knowledge) in order to create confidence in their reliability.
- Ultimately, scientific knowledge must also be communicated to the society that supports it financially and as “knowledge as a common good”, as a form of public advice that contributes to society's ongoing process of reflection and self-understanding.

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Science and politics – it's complicated

The relationship between science and politics, which was already complex, has often become more difficult in recent years. Particularly during acute crises, scientists are expected to explain the causes and possible options for action. In addition, the relationship is increasingly complicated for at least two reasons.

On the one hand, decision-making pressure and complexity are increasing. In recent decades, interdependencies have grown; at the same time, global dynamics are changing rapidly and fundamentally. This increases uncertainties and interdependencies. Addressing the local impacts of global health, climate, energy and security crises requires collective action across social groups and state borders, and raises not least questions of justice and values. Especially under acute pressure to act, decision-makers are looking for scientific expertise. In acute crises, quick solutions are needed, and complexities are often neglected. For example, on the one hand, the COVID-19 pandemic showed the crucial importance of medical expertise, including knowledge of infections, transmission chains and vaccine-induced protection. At the same time, it illustrated the limits of expertise: Social science and international perspectives were overshadowed by immediate challenges (Grimm, 2020). While also controversial domestically, immediate crisis responses such as travel restrictions and vaccine procurement reflected global inequalities between the Global North and the Global South (Mbeva, 2022).

On the other hand, the political environment with which scientific advice interacts is changing. Populist actors are deliberately trying to delegitimise (supposed) elites. This was already evident in 2016 in the debates about Brexit and its expected consequences. A prominent figure, Michael Gove, brushed aside critical analysis with the words: "I think the people in this country have had enough of experts" (Chatham House, 2017). Sometimes, no attempt is even made to justify such measures, and the desired effects are simply asserted ("post-truth"). The US government under Donald Trump has been an example of current pressure on science since January 2025: In addition to minority groups, pressure is being put on scientific institutions and renowned universities in particular. Again and again, the government treats scientific research questions as taboo or assumes political ("woke") intentions instead of an interest in knowledge. This development has European equivalents and forerunners, for example in Hungary under Victor Orbán. In the USA, the deletion of data sets for ideological reasons has apparently also become possible, representing a setback for science (Grimm & Hornidge, 2025).

The freedom and self-regulation of science are therefore important. In authoritarian states such as China or Russia, technical innovations are in demand, as are analyses of long-term social developments. However, with limited academic freedom, this is primarily understood as *technical* knowledge, not as a critical debate, for example on social effects. But even with fundamental freedom of science, the system can be taken to absurd extremes. Science thrives on critical questioning: A "truth" only holds until it is refuted. This can be abused if debate contributions do not meet scientific quality standards. Thus, unscientific positions – from the denial of human causes of climate change to questions of vaccination – can be presented as an equivalent contribution in a supposedly "open debate", so that political actors can "cherry-pick" their findings, regardless of their scientific content

The role of science-based advice in a democratic society

The relationship between science and politics is never without tension, even in democratic, liberal societies. Science and politics operate according to very different logics. Simply put: while politics is based on decision-making and implementation skills (power) – and requires majorities in democratic societies – science seeks insights and puts them up for discussion, regardless of social acceptance or pre-formed world views.

Jürgen Habermas distinguished three models of policy advice as early as the 1960s (Habermas 1968). The **technocratic model** assigns the greatest importance to science, as scientific research reveals solutions. In the most extreme case, it could develop into a form of rule by experts ("expertocracy"), but it tends to suffer from a legitimacy deficit, since its logic makes political decision-makers increasingly dependent on scientific expertise, even without public consent or societal participation. Scholars have no mandate for balancing of societal interests.

In the **decisionist model**, insights from scientists contribute to decisions, but are subordinate to politics. Here, political decisions are always shaped in advance by power politics and ideology, and the truth content is ultimately secondary. The decisionist model raises questions about the effectiveness or sustainability of decisions if expertise is not sufficiently taken into account, for example for impact assessment or risk analysis. Knowledge and rationality gaps lead to ineffective governance and thus ultimately also result in legitimacy deficits. A non-resolvable tension remains between knowledge production and decision-making legitimacy.

The third – and ultimately preferred – model of policy advice in the sense of Habermas is **pragmatic advice**, in which both sides, science and politics, collaborate in a process of co-creation to define problems and develop solutions. The combination of scientific expertise and practical experience with political decision-making processes as well as knowledge and values is a potentially productive relationship – with certain tensions (see below). The emphasis on legitimacy also points to the need to advise members of parliament as well as the public. The demand for change from science is more pronounced in some areas (Box 1).

Box 1: Transformative research – analysis or initiating change?

Ultimately, the fields of development and sustainability are concerned with fundamental economic, political and social transformations in societies, as well as with their ecological conditions. Research captures potentially very complex contexts; it also goes beyond national and transnational considerations and includes a global perspective. On the one hand, the process of development or changes towards more sustainability cannot follow a predetermined pattern ("blueprint"), as they are subject to social and international negotiations and thus always follow "their own paths". On the other hand, with regard to the goals, i.e. the concept of "development", planetary boundaries, possible sustainable futures, and the (necessary) transformation processes facing all countries must also be taken into account.

Transformative research is understood as transdisciplinary; it involves social actors in the research process ("co-design" and "co-production" of knowledge) and, in addition to system knowledge, also creates insights into the goals (orientation knowledge) and the transformation process itself (transformation knowledge). It also critically reflects on its own role (Schneidewind & Singer-Borowski, 2013).

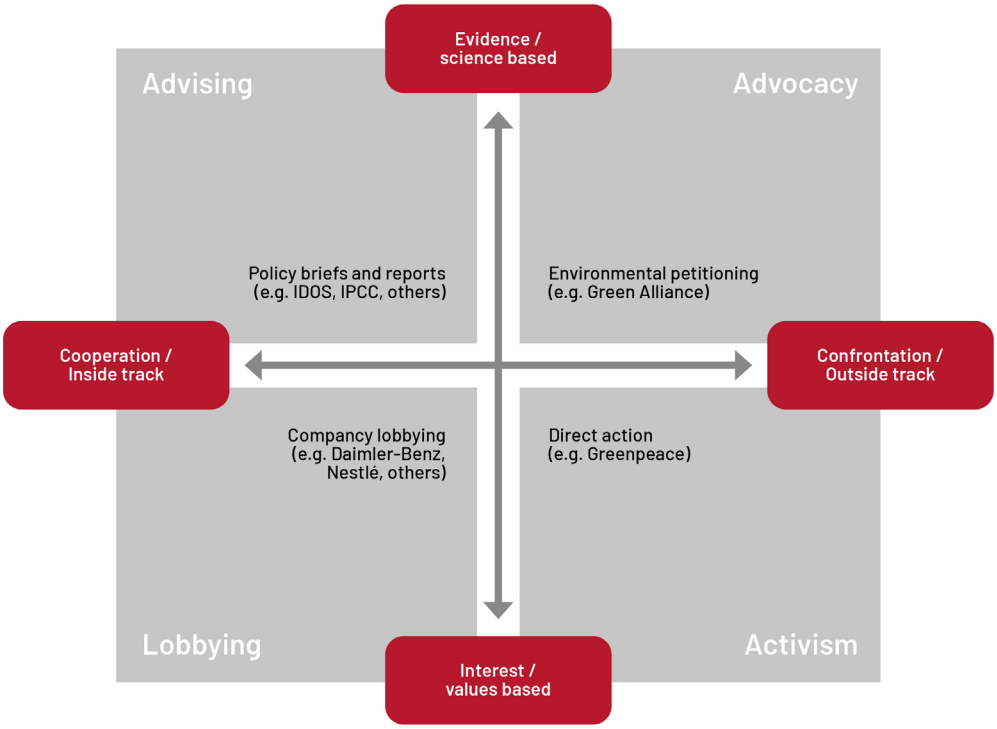
The approach of transformative science is not uncontroversial; critics see it as "solutionism" in science, which also blurs the boundaries between different actors' responsibilities (Strohschneider, 2014). While co-creation requires proximity to the political process in order to acquire system knowledge, critical distance is also a prerequisite for an independent evaluation of processes.

Objectives of scientific advice

The communication process between decision-makers and advisers is a reciprocal process of problem identification and definition, the translation of problems into research questions, their interpretation in the context of existing knowledge and the translation of new knowledge into policy options. The primary aim of sound science-based policy advice is to strengthen the evidence base for policymaking. This is based on expertise – broad scientific understanding – in specific subject areas. However, scientific advice cannot be aimed at individual interests (lobbying), nor is supporting certain solutions (advocacy) central. Direct actions to influence public opinion (activism) cannot be the goal of scientific advice due to a lack of political legitimacy. Particularly in the case of transformative research (Box 1), there are connections to the three other functions (Figure 1), such as taking certain thematic perspectives or approaches such as action research. However, science-based advice must focus on scientific quality and commitment to the common good in order to maintain scientific credibility. The question of the role in dealing with political decision-makers (where and in what form might more confrontational disputes take place?) is important for policy advice – and ultimately a decision that must be weighed up repeatedly. From the perspective of science, the interaction has the following functions and objectives:

Scientific basis: While in politics and the administration arguments are usually based on experience, the task of science is to incorporate new empirical evidence into the communication process with policymakers. Research creates new insights, and old knowledge becomes obsolete. This is its primary objective. This is explicitly not about strategic communication ("spin"), but about content-related insights. Politically relevant fundamental knowledge is also made available in order to be able to provide politicians with in-depth knowledge in the run-up to current, important events and decisions or in the context of upcoming decisions. Medical research was an example of basic research which suddenly became relevant for decision-making during the COVID-19 pandemic. Other examples would be climate research or conflict research with a view to reconstruction in Ukraine.

Figure 1: Schematic distinction between advisory activity and other forms of engagement



Source: Author's own illustration (following Start & Hovland 2004)

Strategic advice: Perspectives, concepts and strategies that can be incorporated into specific policy issues are developed on the basis of original research. This also involves combining different disciplinary or regional perspectives in order to be able to make informed decisions in a changing world situation. Examples include work on fluctuations in international commodity markets and their effects in various regions of the world or on the strengths and weaknesses of European external relations. Work on the connection between democratisation and the social and environmental performance of societies should also be mentioned. Successful advice also requires (and creates) new knowledge about factors for the success of political changes.

Developing guiding visions and narratives for policymaking: Science condenses empirical observations and theoretical debates into interpretations and narratives that can be taken up by politics, for example under buzzwords such as "Global Powers", the "Global South" or the "Great Transformation towards Sustainability". These narratives then enable social discourses on complex challenges and provide actors and citizens with a kind of map to help them navigate complex situations.

Deciphering complex issues: Especially in interdisciplinary cooperation, explanatory patterns emerge that promote coordinated action (policy coherence) and can reinforce cross-departmental action concepts. Coherent German or European external relations require consideration of development, foreign, security, environmental and external economic policy perspectives.

Strengthening the long-term orientation of politics through agenda setting and global discourses: In an accelerated and multipolar world, it is important to assume the functions of an early warning system for European and international politics. In addition, global discourses beyond day-to-day politics are being shaped in cross-border (knowledge) partnerships. This promotes engagement with future topics, e.g. new constellations of actors in international politics, the transformative effects of digitalisation and artificial intelligence, changes in supply chains as well as knowledge and cooperation systems in the Global South or the effects of climatic changes on (sub)-regions and global networks.

Providing contextual knowledge: The analysis and contextualisation of international debates and controversies for German and European politics is important for global issues as well as for bilateral cooperation, and requires the establishment and maintenance of international networks in order to be able to classify regional or national characteristics of discussions, their disciplinary anchoring and practical effects. At the same time, scientific institutions, as publicly funded institutions, have a ***responsibility to educate society*** in addition to their accountability. They therefore also contribute their findings to the public discussion, which poses particular challenges under conditions of polarised debates.

Requirements for institutions and individuals

For public scientific institutions, their role as scientific institutions already entails a **responsibility to provide advice**. Researchers must always be able to publicly explain their subject matter, their underlying normative assumptions, their methods and their uncertainties. Application-oriented institutes operate in different contexts – science, politics and the public – each with its own logic of action as well as its own communication styles and channels.

From the perspective of an application-oriented research institution with an advisory mandate (a think tank), various actors, addressees and intermediaries can be assigned to the areas of **politics, society and science**. All three areas – with their respective subsystems – are important for think tanks and must be considered in communication.

Institutions are often firmly rooted in a particular policy area, in the logic of which their central points of contact also lie – that is, for development policy research institutions, the respective ministerial administrations for development or envi-

ronmental policy, etc. However, these institutional affiliations are neither fixed nor exclusive. Beyond the central contact points, there are other actors who are relevant to certain topics, such as other **government departments**. In addition, engagement can take place **at different levels**: national, regional, European and international. This results in whole bundles of institutional counterparts whose internal operating logics and systemic roles must be understood and brought together.

In addition, long-term interactions between global and local challenges in the face of rapid change mean that think tanks go beyond their original **subject area** and involve a wider range of activities. Trust in an institution's broader expertise develops only over time, through experience with its reliable information.

Institutions can also **facilitate learning processes** by connecting different (specialist) communities ("convening power"). To this end, researchers need knowledge of institutions and processes in addition to subject-specific expertise. Furthermore, they are expected to have a wide range of communication skills, from mastering scientific discourse to communicating with the general public in a generally understandable form. Advisers operate in a range of roles (see Box 2). Scientific substantiation is essential for all different kinds of requirements.

Box 2: Roles of advisers

There are many requirements for individual advisers. Role expectations are sometimes in conflict with each other, exist in parallel or are in temporal sequence.



Expert: Scientific development of findings and advice for individual stakeholders

Committee member: Participation in advisory boards and processes

Intermediary: Co-designing transformative processes together with other actors

Public intellectuals: Participation in (discipline-specific) public debates

Trainer/Coach: Education and skills development

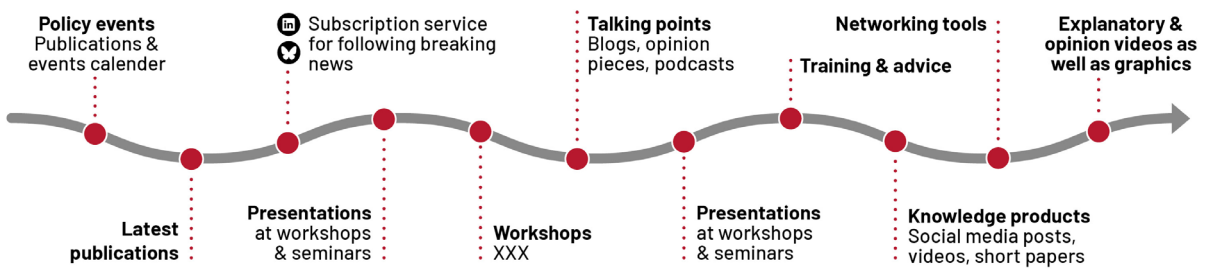
Scientists providing advice in politics must be aware of the various reasons for which scientific expertise is sought in the policymaking process. These can serve different interests: legitimation, persuasion, orientation; the delay or avoidance of decisions; the justification of unpopular measures; the mediation of conflicts; the clarification of scientific controversies as well as the moderation of conflicting problem perceptions of administrative units.

Box 3: How does policy advice work?

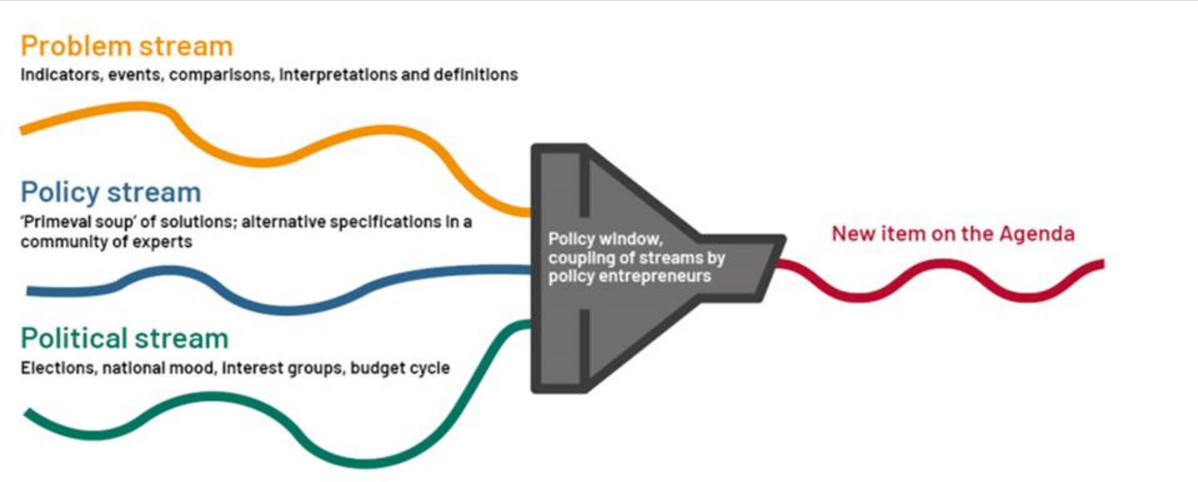
On the question of how policy advice works within pragmatic policy in the sense of Habermas, various models coexist which ultimately lead to different conclusions about the strategy for successful engagement:

Model 1: Advice as (diffuse) input into political processes ("the garbage can") (after Cohen, March & Olson, 1972). Figuratively speaking, we can imagine an overflowing mailbox of political decision-makers looking for solutions to problems in an unsorted wealth of knowledge. So knowledge is available in abundance. However, the process is shaped by individual actors' routines or by misunderstandings between actors and, overall, is rather random. Advisers aim to provide particularly useful and reliable information, in the right form and at the right time.

Model 2: an ideal-type policy cycle of problem identification, processing, impact analysis, etc. This can also be understood as a progression through successive stages (Lasswell, 1956), assuming a process of policy formulation that, while not linear, nevertheless moves forward overall. At different points in this progression, advisory institutions feed their scientific findings into the process in various formats, such as policy briefs, public contributions, or discussion forums.



Model 3: The window of opportunity: This model (Kingdon, 1984) assumes that problem areas, expert discussions and political debates coexist and that actions only arise when all three elements – problem analyses, proposed solutions and political opportunities – come together in a "window of opportunity". Through clever anticipation, such as the organisation of events in the run-up to elections or budget negotiations, "policy entrepreneurs" could bring new topics to the agenda.



As a result, Model 1 suggests placing emphasis on good timing for communicating insights and an easily accessible presentation so that the offer is "in the right place at the right time" and stands out from the flood of information. Model 2 emphasises targeted communication on various occasions. Model 3 also highlights the possibilities and importance of an active agenda setting. The three models are not mutually exclusive, but can also be combined.

Areas of tension between science and politics

The different roles of science and politics create areas of tension. From the perspective of science, the following insights into the complex interactions between politics and scientific advice point to an ongoing task. Again and again, the boundary between science and politics and thus the independence of the advice must be ensured – without damaging the close communication between the two systems.

Complexity: Future-oriented research requires demanding, often interdisciplinary research strategies and designs and can rarely provide simple answers to increasingly complex questions. For example, economic development is as much influenced by natural environments as by cultural practices and human psychology. No discipline will be able to show universally valid development paths on its own. For political clients looking for quick or clear solutions, this is often unsatisfactory. However, policy advice that lacks a sound theoretical basis and fails to meet the standards of social science would overlook the complex constellations of problems, conflicts of objectives, contradictions, tensions and ambiguities that characterise modern societies in a multipolar world order.

Uncertainties: In research, theories and models serve to reduce complexity. They necessarily capture only parts of reality, both by design and because not all relationships and developments are fully understood. Data is always interpreted using impact models. It is therefore important to make limitations and also uncertainties explicit. In particular, future scenarios cannot be understood as precise predictions for political or technological developments in ten or twenty years' time – even if decision-makers wish to do so, as they are currently setting the course. Risks and uncertainties must be weighed up. The future also includes unrecognised interactions or changes which are still unknown. This applies both to social sciences and to scientific phenomena, such as the causes and effects of El Niño, which can have different consequences in subsystems and thus consequences for food security or natural disasters.

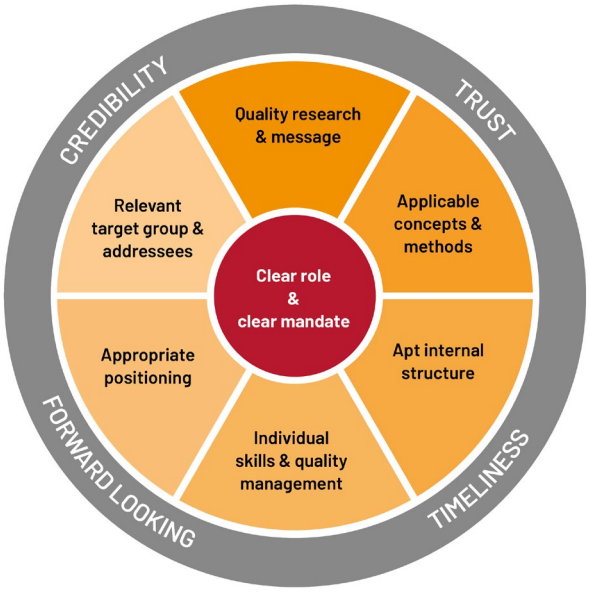
Logics of action: Application-oriented research institutes operate both within the system of science and in political processes. The aim must be to combine scientific excellence with policy-relevant research, even though research and policymaking follow different logics and quality criteria. Political decision-makers are often interested in substantive analyses as well as problem-solving, orientation and action-relevant knowledge. However, the demand for policy advice is also often characterised by short-term interest in current topics and instruments which need to be effective quickly. One motive may also be to legitimise political decisions. Science-based advice ideally aims at a better basis for decisions, but it does not undertake any social negotiations or reconciliation of interests.

Time horizons: Above all, the actors involved differ in their time horizons. Political actors often work under external pressure to act and also always with parliamentary majorities – and thus within the framework of legislative periods. Their need is more oriented towards quick solutions. Science, on the other hand, requires one thing for evidence-based research: time. It requires the development and narrowing down of the question, a literature review and often methodically complex data collection and evaluation. Recommendations can only be developed afterwards.

Conclusion

In the sequence "Problem perception – advice – political decision", interests, values and knowledge are of great importance. At the same time, researchers use rigorous methods to scrutinise prior assumptions and prevent them from biasing data collection. Good advice is therefore based on good science, which is theoretically anchored and methodologically stringent, while also addressing practical applications.

Figure 2: Aspects of successful advisory institutions



Source: Author

The interaction between science and politics must be constantly (re)balanced. For decision-makers who seek advice, different models of advice are often mixed in practice, such as those offered by universities, consulting firms, implementing organisations or units dealing with strategic policy issues. Close dialogue with those seeking advice is crucial so that decision-makers and scientists understand each other's logic of action. This also includes a shared understanding of the *function* of advice, which is not always clear and not always explicit. A deep understanding of political institutions ("polities") and their processes ("politics") on the part of the scientific adviser is therefore crucial for successful advice.

This places demands on scientific institutions that are involved in the provision of advice. Credibility and trust are developed over the longer term. In addition, producing timely research and forward-looking recommendations poses a substantial institutional challenge which should not be underestimated, and which requires a highly qualified and flexible workforce.

For those who work in scientific policy advice, challenges arise which are (or should be) taken up and dealt with through a quality assurance process. Political directives prescribing research methods or outcomes are incompatible with an understanding of what science is. At the same time, scientists cannot demand that their results lead directly to political action, since the negotiation processes of politics are beyond their mandate. Both sides need to respect each other's roles, since cooperation does not alter their different modes of operation.

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