



# Trustworthy Science Advice: The Case of Policy Recommendations

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## Abstract

This paper examines how science advice can provide policy recommendations in a trustworthy manner. Despite their major political importance, expert recommendations are understudied in the philosophy of science and social epistemology. Matthew Bennett has recently developed a notion of what he calls recommendation trust, according to which well-placed trust in experts' policy recommendations requires that recommendations are aligned with the interests of the trust-giver. While interest alignment might be central to some cases of public trust, this paper argues against the significance of interest-alignment to meritorious public trust. First, political bodies and citizens can have a basic kind of well-placed recommendation trust in science advice based on an all-things-considered judgement regarding the possession of relevant competencies, responsible conduct, and a proper institutional design. Moreover, scientists' policy recommendations can be seen as open-ended and as dynamic proposals that enable inter-institutional reasoning and political deliberation. Finally, by providing conditional recommendations, scientists can expand the scope of feasible policy options from which political bodies can choose, thus making the condition of interest alignment even less significant to the trustworthy provision of recommendations.

**Keywords** Policy recommendation · Science advice · Trust · Trustworthiness · Epistemic trust · Experts

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## Introduction

Public policy relies on scientific evidence concerning a wide range of topics in the form of empirical generalizations (e.g., estimations of the minke whale population), causal claims (e.g., the relative contributions of human activity to climate change), and predictions (e.g., the likelihood of earthquakes or landslides). Accordingly, philosophical discussions of public trust in science have mainly revolved around *epistemic trust* and what it means for citizens and policymakers to have well-placed and rational trust in the testimony of scientists. However, science advice does not only amount to the provision of evidence relevant to public policymaking and deliberation, but also recommendations about what should be done. Scientific advisory bodies are often explicitly asked by way of mandate to develop, describe, evaluate, and rank feasible policy proposals. For instance, national and international scientific advisory bodies are asked to provide recommendations on such things as the management and conservation of minke whales (IWC 2018), on whether, when, and how people should wear face masks in public places during the COVID-19 pandemic (WHO 2020), and on how the international community can limit global warming to 1.5 °C (IPCC 2018). Such recommendations play a crucial role in policy areas that are technical, complex, and urgent, even to the point that policymakers and citizens *depend* upon scientists for those recommendations. Despite their political importance, the role and nature of expert recommendations are understudied in the philosophy of science and social epistemology (for notable exceptions see Bennett 2020; Birch 2021). This paper examines the nature of public trust in scientists' policy recommendations and what makes them trustworthy.

To grant scientists the mandate to provide policy recommendations is often upheld as being problematic by scientists and science studies scholars alike. Making policy recommendations could be viewed as being *unscientific* by functioning as a form of policy advocacy, in which scientists use their scientific authority to promote policies based on vested interests and non-epistemic values in a way that conflicts with central scientific norms such as objectivity, disinterestedness, and neutrality (see Oppenheimer et al. 2019). Moreover, one could argue that proposing measures and policies involves competencies of a political, economic, ethical, and legal nature, which are outside the domain of scientific expertise. Also, scientists' recommendations may be deemed *undemocratic* in that they give scientists excessive power and undue influence over public policy in a way that conflicts with such democratic values as equality. By providing recommendations, scientists not only exert influence over the knowledge base for public policy, but also over the policy alternatives available to policymakers and thus the content of policies. One might also argue that although it is not problematic per se that scientists make recommendations, it is very hard to realize conditions for well-placed trust in recommendations in practice due to the difficulties in aligning the policy recommendations with the goals, values, and interests that political institutions and citizens endorse. Bennett (2020) has recently argued for such a view by developing a notion of what he calls 'recommendation trust', according to which well-placed trust in policy recommendations presupposes that *recommendations are aligned with the interests of the trust-giver*. Bennett's account amounts to

a demanding standard for trustworthy expert recommendations, and, accordingly, he concludes that it will be difficult to bring about and cultivate in practice.

Herein I propose a different and less demanding approach to trust in scientists' policy recommendations that avoids a pessimistic conclusion about the prospects of well-placed trust. While it could be ideal for recommendations to be aligned with public interests in some cases, I will argue that scientists' recommendations can be viewed as trustworthy without being aligned with public interests or in harmony with the endorsed values.

I will develop my approach to trust in policy recommendations in three main ways. First, I will build on the distinction between basic and enhanced public epistemic trust developed by Irzik and Kurtulmus (2019). According to the view I am developing here, political bodies and publics can have well-placed recommendation trust in a basic sense without there being an alignment between the normative premises and risk assessments underlying the recommendation and the interests and values of the trust-giver. Here, trust is being directed towards the advisory body in question and the extent to which it satisfies a set of conditions, such as scientific and political competency, responsible conduct, and proper institutional design. Second, I will argue that recommendations function as open-ended proposals as part of inter-institutional deliberation and that there is less need for any simple and binary decision whether to follow the recommendation based on an assessment of whether it aligns with the interests of trust-givers. Third, I will show how the toolbox that scientists have at their disposal of providing recommendations in a conditional manner further reduce the need for interest-alignment.

I will not examine trust in scientific experts in general, but trust in science advice that is institutionalized in the form of panels, bodies, or commissions with a mandate in a political system. In the first section, I will therefore describe the role of science advice in terms of its formalized role in political systems, its two main modes of output to policymakers and publics and their bearing on trust, and the rationale of granting science advice a role of providing policy recommendations.

Science advice: the mode of informing and the mode of recommending.

Science advice, as I understand it here, refers to institutions, such as expert panels, committees, boards, and advisory commissions, in which scientists are given a mandate to provide policy-relevant information or policy recommendations to political bodies and citizens (Gundersen 2018; Salter et al. 1988). While science advice institutions may involve experts from several academic disciplines—be it from the social sciences, the humanities, and law—as well as the contribution of policymakers and representatives from civil society—I will mainly focus here on the contribution of experts from the natural sciences.

For the purposes of examining trust in science advice, then, one must take into consideration the formalized way in which science advice institutions function as a part of a broader political context. The scientists that contribute to science advice institutions are constrained by a mandate and set of guidelines as to how they are to provide output to policymakers, political bodies, and publics. Trust in science advice is thus best understood as a form of institutional trust. This form differs from paradigmatic relations of interpersonal trust, in which one person trusts another person to perform some tasks in line with expectations of common morality and social norms

(Gundersen and Holst 2022). Moreover, science advice bodies most often arrive at their output—in the form of reports and statements—via deliberations among a group of experts. The trust-givers may also involve several actors in society, be they politicians, political bodies, civil society, international organizations, and individual citizens. Trust in science advice can thus be understood in terms of the following triadic relation: A (e.g., policymakers and citizens) trust B (a science advice institution) to C (inform and recommend).

The term ‘advice’ deserves some attention. A noteworthy feature of science advice is that it can be given in different ways and using different modes of communication. As long as scientific advisory bodies leave the final decision to political bodies or citizens, their role can in principle be performed in a plurality of ways. For example, science advice institutions may provide systematic overviews of the current state of knowledge (Oppenheimer et al. 2019), conduct surveys and measurements, act as sentinels by warning the public of some imminent danger or risk (Oreskes 2020), urge policymakers to plan for some future scenario, recommend a single policy, advocate for a policy, evaluate existing policies, develop new policies, and pose questions to policymakers that might help them identify relevant knowledge and political concerns. The myriad ways in which science advice can be performed is analogous to the heterogeneous nature of advice in interpersonal relations. This notion of advice has been articulated by Habgood-Coote (2022), who argues that advising is not best understood as one single speech-act but rather as an heterogeneous and diverse activity which can involve ‘the provision of propositions, directions, and of questions’ (Habgood-Coote 2022, p. 23).

Among the several ways in which science advice can provide output to policymakers, the two main modes of output can be couched in terms of an *informing mode*, in which science advice provides policy-relevant knowledge about some issue, and a *recommending mode*, in which science advice develop and rank policies (Gundersen 2018). These two modes of outputs are typically found in the statements of advisory bodies in the form of reports, summaries, briefings, white papers, press releases, and press conferences.

In the *informing mode* scientific advisory bodies are mandated to provide factual knowledge to policymakers and citizens, for instance, by detecting a potential threat, assessing an effect of a phenomenon or intervention, or predicting future outcomes. Commonly, science advice does not amount to performing new scientific research. Rather, science advice informs public policy by way of *expert assessments*, in which scientists with relevant expertise collaboratively gather, summarize, and review the current state of knowledge regarding a policy-relevant issue (Oppenheimer et al. 2019, pp. 8–9). This approach has a rather long history. Already in the 19th century, there was use of expert assessments in public policymaking, for instance, in the issue of mandatory vaccination and regulation of new technology (see Oppenheimer et al. 2019 for an historical overview). With the significant increase in public funding of science after the Second World War there has been a substantial rise in the number expert assessments that provide advice to the government (Douglas 2009). As opposed to earlier forms of expert advice, current science advice is not merely dependent upon the competence and commitments of the contributing experts but is formalized in terms of political mandates and institutional design for how the assess-

ment should be performed and its role in the policymaking process. As already mentioned, expert assessments are most often performed by groups of scientists, and, in several cases, by large international teams of scientists (Oppenheimer et al. 2019, pp. 8–9). Such international expert assessments have been particularly important in the environmental sciences. In the case of climate change, the paradigmatic example of science advice by providing an expert assessment is the Intergovernmental Panel on Climate Change (IPCC), which informs the world's governments by providing voluminous and comprehensive expert assessments of the state of knowledge on climate change and its scale, causes, impacts, adaptation, and mitigation.

The kind of trust that the public has in the science advice that informs public policy through the provision of factual knowledge is a form of *epistemic* trust: 'To invest epistemic trust in someone is to trust her in her capacity as provider of information' (Willholt 2013, p. 233). An important feature of epistemic trust is that it provides trust-givers a reason to believe the knowledge claims which the experts assert (Irzik and Kurtulmus 2019, p. 4). Epistemic trust depicts a form of trust wherein someone depends upon others for knowledge that they do not have the time and resources to gather and evaluate for themselves. Since only a few scientific experts have the competency and understanding required for developing and evaluating knowledge claims in esoteric and technical matters, be it climate change (Almassi 2016), the COVID-19 pandemic (Birch 2021), vaccination (Goldenberg 2021), or whaling (Roll-Hansen 1994), policymakers and citizens depend upon scientists in these areas for knowledge. Epistemic dependence is, however, not identical to epistemic trust. We might depend on an expert to perform a certain task, without really trusting her to perform that task properly. I might depend on an incompetent doctor to perform an operation in an urgent situation or a corrupt judge to order my sentence without trusting them at all. Trust in others, on the other hand, also involves a positive attitude towards their competence, commitments, and reliability (O'Neill 2018). Understood thusly, trust in science advice institutions involves confidence in the contributing scientists' competence and their commitment to providing reliable knowledge in a morally and socially responsible manner (Rolin 2021), as well as the institutional design of the science advice institutions by enabling a degree of expert autonomy, independence from political bodies, and transparency (Gundersen and Holst 2022). In short, trust in science advice in its informing mode can be understood as a form of *institutional epistemic trust*.

In the recommending mode of output, on the other hand, science advice institutions are mandated to develop, assess, rank, and propose measures and policies to policymakers and the public. Based on their expertise, scientists provide proposals that facilitate the fulfilment of political goals. In policy issues that are technical, complex, and urgent, citizens and policymakers might also depend on the scientists' policy recommendations similarly to how they depend on scientists for evidence. Our dependence on scientists' recommendations is illustrated by the COVID-19 pandemic, in which experts made crucial recommendations on preventive measures (physical distancing and quarantine) as well as vaccine rollout and vaccine prioritization. In environmental policy areas, such as biodiversity, climate mitigation, use of chemicals in agriculture, regulation of commercial fishing and whaling, scientists'

recommendations have long played an integrated role in public policy to such an extent that policymakers are dependent on the scientists' recommendations.

The distinction between the informing mode of output and the recommending mode of output is not as clear cut as one might initially think. Scientists' policy recommendations are based on empirical knowledge of the issue at hand, and recommendations could thus partly be understood as a way of informing political institutions and citizens. For this reason, trust in scientists' policy recommendations also presupposes epistemic trust in science advice institutions. One cannot have well-placed trust in a policy recommendation if the factual knowledge upon which the recommendation is based is not reliable and accurate. Conversely, as many philosophers of science now claim, to inform policymakers and citizens about some issue is unavoidably tied to moral and political values (see also Bennett 2022 for this point). According to the argument of inductive risk, which is generally considered the most effective argument against the value-free ideal in science, non-epistemic values play an unavoidable role in the decision to accept or reject an empirical claim (Rudner 1953), and whether it is worse to accept false claims or reject true ones. Several philosophers add that such values play a legitimate role in this decision (Douglas 2000; Kitcher 2011). In so far as the argument from inductive risk is correct, then, there is a similarity between providing information and recommendations about what should be done, in that both modes depend on ethical or political values.

Nevertheless, there are good reasons to claim that recommendations stand out as significant and distinct from knowledge provision in the context of science advice. I want to point out two main distinctive features of recommending as opposed to mere informing. First, as it is understood here, all forms of policy recommendations have in common that they count as a form of directive speech (Ross 1968, p. 38). A policy recommendation presents a line of action to influence the actions and decisions of those at which the recommendations are directed. Thus, the distinction between informing and recommending corresponds to the difference between indicative and directive speech. While recommending counts as a form of directive speech, the way in which that person or institution seeks to influence the actions, behaviours, and practices of others can vary substantially in force and purpose. The sought influence can be indirect and mild or direct and strong. For instance, by providing a recommendation by *strongly recommending* political bodies to act in a certain way, scientists may seek to persuade policymakers by instilling a sense of urgency. Recommendations can be used paternalistically or self-servingly to influence others to pursue a particular line of action, or they can be used in a more deliberative and enabling manner by broadening the scope of feasible lines of action. I will argue later in this paper that by providing recommendations in an open-ended and deliberative manner, scientists can engage with political bodies in a form of inter-institutional reasoning that can be trusted without the recommendation being aligned with any particular interest or values that trust-givers have. Second, the distinct nature of policy recommendations is also tied to the fact that the provision of recommendations typically involves the articulation and development of policy options that governments and politicians can decide to follow, give weight to, build upon, or ignore. Policy will be understood here in line with standard usage as referring to the *content* of political decision-making (Pielke 2007), which may include the description of political

problems, values and goals, and lines of action (Gosepath et al. 2008, p. 998). Thus, the contribution of science advice institutions that provide policy recommendations counts as a genuine form of political labour, which we normally find in governments, bureaucracies, parliaments, political parties, civil society, and think tanks. The political nature of the labour performed by science advice institutions is particularly evident when they develop and articulate new policies that would otherwise not have been available to political bodies and citizens. In summation, while recommending is distinct from informing, the difference is not tied to the diverging roles of interest and non-epistemic values, but rather to the directive nature of recommendations and the political labour it involves in making them. By providing policy recommendations, scientists take on the political task of influencing and enabling public policy, thus subtly challenging the established division of labour between science and politics.

The main rationale for granting science advice institutions a central role in public policy is that scientists possess relevant expertise: ‘Scientists are our designated experts for studying the world. Therefore, to the extent that we should trust anyone to tell us about the world, we should trust scientists’ (Oreskes 2019, p. 56). In so far as scientists are specialists in an area of research, performing their expert role amounts to informing public policymaking by assessing, translating, and disseminating the current state of knowledge. To grant science advice institutions the mandate to provide policy recommendations, however, is somewhat more controversial due to the scientific and democratic reasons I mentioned in the Introduction. Recommendations have a different direction of fit (world to word) than mere knowledge provision (word to world), which differs from how the aim of science is commonly understood, for instance in central forms of empiricism or scientific realism (see for instance, Psillos 2005; Van Fraassen 1980). For this reason, one could argue that it is simply implausible that scientists have any expertise or authority in prescribing how the world should be and what political bodies should do. Moreover, in so far as the content of policies can and should be shaped by experts at all, the kind of experts we should seek are not mainly *scientific* experts, but rather policy experts with a background in politics and public administration, professionals with experience of the street-level consequences of policies, such as medical doctors, philosophers with expertise in clarifying and assessing normative and ethical reasoning and principles (Wolff 2012), economists with expertise in cost–benefit analysis (Sunstein 2018), and experts in law and technology. Put bluntly, scientists have no special expertise or authority with regard to the political, ethical, and legal aspects of policymaking. For these reasons, one might opt for the pessimistic view that entrusting scientists a recommending role in public policy is rarely, if ever, warranted.

However, the rationale for granting scientists a central role in providing policy recommendations can be formulated in more modest ways. Let me briefly sketch out some plausible reasons that justify granting scientists a role of providing recommendations without assuming that they have political, moral, or legal expertise. First, scientists are particularly well-positioned to *connect scientific evidence to policies*. If we assume that any well-informed development of public policy is partly based on a firm understanding of the relevant empirical premises, and, further, that these are difficult to understand for most policymakers and citizens, we might reasonably expect that scientists due to their expertise may play a unique role in normative



political reasoning in those technical issues. Scientists therefore have the potential to make policies more evidence-based. Second, and related, scientists' expertise is also central to *establish whether measures are called for* given a certain goal and enabling a proper assessment of central good-making features of policies, such as whether they are effective, targeted, and feasible. Laypeople typically find it difficult to assess the feasibility of policies in technical and complex issues. Third, scientists' policy recommendations may play a *constructive and innovative role* in policymaking. By granting scientists the mandate to provide recommendations, scientists might develop new policies in a constructive manner, partly by bringing technical issues and political values into closer contact than non-experts are able to, and thus enhance policy formation and expand the scope of policies, measures, and actions. Formulating policy recommendations amounts to a constructive process that generates new policy options that are well-informed by science. In summation, by providing recommendations, science advice institutions can contribute to making policies science-based, more effective, and more innovative without assuming that they have any political, ethical, or legal expertise.

So far, I have sketched out how I conceive science advice and the distinction between the informing and recommending modes of output to policymakers and political bodies. Epistemic trust seems to capture the kind of trust we have in science advice in the informing mode. Now, how should we understand the kind of trust involved when scientists are to provide policy recommendations? In the next section I will present Bennett's view that trust in expert recommendation demands a different kind of trust, which he coins as 'recommendation trust'.

## Recommendation Trust as Interest-alignment: Bennett's Proposal

Bennett holds the view that recommendation trust differs from epistemic trust. While epistemic trust gives someone a reason to believe that something is true, recommendation trust gives someone a reason to act in a certain way: 'I recommendation-trust someone when I believe I should do something because they have told me I should' (Bennett 2020, p. 248). According to Bennett, it is not sufficient for well-placed trust that the experts making the recommendation base their recommendation on what *they* take to be good reasons for citizens and policymakers to act in a certain way. Scientists' views of what citizens and policymakers should do might diverge substantially from what citizens and policymakers themselves view as being good reasons to act. Moreover, scientists might even have ill-founded, untenable, or downright unethical notions of what citizens and policymakers should do (Bennett 2020, p. 251). If recommendations about what should be done are based on these unsubstantiated and untenable notions of public interests, citizens and policymakers should not trust these recommendations, according to Bennett. He argues that we need a more demanding principle of well-placed recommendation trust, which I shall refer to as the principle of interest alignment: '...If A has good reasons to believe B has good reasons to believe that a certain action is in A's interest, then A has good reasons to believe that they should perform that action' (Bennett 2020, p. 252). According to this definition, in order to place trust in the WHO's recommendation to wear a face mask in public



places during the COVID-19 pandemic (WHO 2020), I must have good reasons to believe that the WHO has good reasons to believe that mask-wearing is in my interest (for instance, to avoid getting ill, be able to go shopping, maintain social contact, general mitigation of the spreading of the virus). It is not sufficient that I have good reasons to believe that the expert takes central moral and political principles into consideration. Only if I have good reasons to believe that the evidence is reliable and that the recommendation is based upon my interests, I have a reason to follow the recommendation, according to Bennett. The person receiving the recommendation must have good reasons to believe that the expert is able to tap those interests and use them as normative premises in the recommendation. What makes this a more demanding kind of trust than epistemic trust is that 'it requires that we have good reasons to think that the expert issuing the recommendation understands what is in our interest' (Bennett 2020, p. 252). Trustworthy experts must then have both a rather accurate notion of what is in the interest of citizens and be able to incorporate these in a meaningful way into the very content of the recommended policies and actions.

Bennett's account of recommendation trust illuminates some of the distinct challenges facing both the scientists, who are to provide policy recommendations, and citizens, who must decide whether to follow the recommendations or not. Bennett rightly identifies some of the difficulties scientists meet when they are to provide recommendations in a way that properly reflects public interests. Moreover, Bennett's account applies well to some cases of science advice, where individual citizens must decide whether to choose between doing X or not based on expert recommendation of the form 'Do X'. In such cases, policy recommendations can only count as reasons to act if trust-givers have reasons to believe that trustees have reasons to believe that the normative premises underlying the recommendation align with their interests. In summation, it seems fair to say that in making the decision to follow the recommendation or not, individual citizens must have good reasons to believe that the policy recommendation directed at them is somehow based on taking their interests seriously into consideration.

However, while Bennett's account of recommendation trust enables us to understand how epistemic trust differs from recommendation trust, I think his account raises some worries worth taking seriously. A first worry is that the principle of interest alignment is not feasible and makes recommendation trust far too demanding in a practical sense. It simply is not realistic, given what we know about how science advice institutions work, their audience, and mandate, that they are able to align recommendations with the interests of policymakers and citizens. Indeed, Bennett is aware of this problem and concludes rather pessimistically. While he thinks well-placed recommendation trust might be fulfilled in some cases, for instance, when we ask a doctor for advice and 'expect them to tell us what is good for our health' (Bennett 2020, p. 252), he thinks that it will be difficult to cultivate well-placed trust in experts' recommendations in public policy. His account of recommendation trust thus sets the bar high—in my view too high—for well-placed trust in recommendations. While it surely could be *ideal* in some cases that scientists' recommendations align with the interests of trust-givers, there are several reasons why this will be difficult to realize in practice. Scientists might have difficulties in discerning what the interests, values, and perspectives of policymakers and citizens are in concrete issues. Citizens

also often disagree over political and ethical values and have diverging interests. In some cases, the scientific experts might not even have relevant information about potential institutions and citizens at which the recommendations are directed. For international science advice institutions, such as the IPCC and the WHO, that provide recommendations to potentially all governments and all citizens in the world, it will be all but impossible to realize the condition of interest alignment. Moreover, most citizens are arguably not familiar with central science advice institutions, let alone if and how the science advice institutions incorporate their interest when providing policy recommendations. In summation, the principle of interest alignment sets the bar too high for recommendation trust in science advice to be realized.

A second worry is that in a moral and democratic sense, the principle of interest alignment might, in some cases, not be worth aspiring to at all. Whether scientists should take certain interests into account when providing recommendations raises the issue of the acceptability and desirability of those interests. Scientific advice institutions that provide recommendations within a democratic order are surely constrained by democratic and moral principles that would make some interests unlikely candidates as acceptable and desirable premises in public policy. If the interests of some individuals or groups are unfair, harmful, and self-regarding, as opposed to other-regarding, or somehow at odds with democratic values and principles, we cannot reasonably expect scientists to base their recommendations on those interests in order to be trustworthy. For this reason, it is not always ideal that scientists' recommendations are aligned with the interests of trust-givers.

In my view, the desirability objection is easier to accommodate than the feasibility objection within Bennett's approach. In order to avoid endorsing an account of trustworthy science advice that is completely independent of the moral acceptability and democratic legitimacy of the interests and values underlying policy recommendations, we can include some minimal standard for what scientific experts should recommend. This is reasonable from the perspective of recommendation-givers in the sense that they should not be expected to satisfy harmful or undemocratic standards. It also seems reasonable from the perspectives of those institutions and individuals that receive the recommendation. In so far as they uphold unacceptable self-regarding interest without taking other persons' interest into account, they cannot reasonably expect scientific experts to align their recommendations with their interest. Thus, in order to accommodate this worry, we might reformulate Bennett's principle of interest alignment ideal by adding a clause stating that the interests upon which the scientists base their recommendations must be *acceptable and justifiable by avoiding harm to others and undemocratic and unfair actions*. In order to qualify as a condition for well-placed trust, then, the principle of interest alignment must include some distinction between acceptable and unacceptable kinds of interest, and that the science advice institution making recommendation must make a judgement in order to presuppose alignment with acceptable interest and avoidance of alignment with unacceptable interest (it lies beyond the scope of this paper to examine the issue of what acceptable means here).

In summation, Bennett's account of recommendation trust is an important contribution to the discussions of public trust in science which could in some cases be considered an ideal worth aspiring to. However, in line with the feasibility objection,

his account is too demanding. For this reason, I will provide an alternative and less demanding route along which scientists' recommendations can be taken to be trustworthy without being aligned with the particular interest of relevant trust-givers. In the next section, I will reframe recommendation trust by distinguishing between an ideal notion of well-placed trust and the minimal requirements of well-placed trust.

## Basic vs. Enhanced Trust in Recommendations

Diverging lessons can be drawn from the worry that the conditions for well-placed recommendation trust become too demanding. On the one hand, one might hold the sceptical view that policymakers and citizens rarely have good reasons to trust experts' policy recommendations. On the other hand, one might hold the view that any account of well-placed trust in science advice institutions must be feasible and avoid setting the standards too high. In line with the latter, I find it reasonable to view that Bennett's account of recommendation trust in terms of the principle of interest alignment, given moral and democratic constraints, is best understood as a *higher level* of trustworthiness. It might be worth aspiring to in some cases, especially where scientific experts have reasonable oversight of the trust-givers and their interests and where there is little disagreement over what is in the public's interest. However, failure to realize the principle of interest alignment need not be viewed as a reason to ignore and distrust science advice institutions that provide the policy recommendation. Interest alignment should thus not be viewed as a necessary condition for well-placed trust, as Bennett views it. In other words, while science advice that succeed in aligning recommendations with the interests of citizens and policymakers is particularly worthy of trust, science advice that fails at realizing interest alignment might still be considered trustworthy.

In order to articulate how such a less demanding notion of well-placed recommendation trust might look, we can first distinguish between (a) the minimal requirements and conditions that well-placed trust in policy recommendations must satisfy, and (b) the regulative ideal of interest alignment that science advice should aspire to, at least in some cases (where trustees have sufficient knowledge about the interest of trust-givers, and trust-givers have good reasons to believe that trustees know what is in their interest). This way of understanding recommendation trust is similar to what Irzik and Kurtulmus (2019) refer to as basic epistemic trust and enhanced epistemic trust, respectively. This distinction provides an account of public epistemic trust in science in a way that accommodates the challenge from the argument from inductive risk, which I mentioned earlier. To recap, scientists, due to the risk of error, must make ethical and political value judgements about where to set the evidential standards for accepting a hypothesis and disseminate it in public fora (Douglas 2000). The distinction between basic and enhanced epistemic trust captures the difference between trusting scientists as reliable providers of relevant knowledge as opposed to trusting scientists as reliable providers of knowledge that also make the right value judgements when assessing the risks of error. Basic epistemic trust merely presupposes that scientists provide reliable and accurate knowledge in an honest and responsible way. Enhanced trust, on the other hand, is only realized if there is also

alignment between how the scientists assess the relevant inductive risks when asserting that something is true, and how the public assesses those inductive risks (Irzik and Kurtulmus 2019, p. 10).

The difference between basic and enhanced recommendation trust is illustrated by the fact that scientific experts might assess risks differently than citizens. When scientists are to assess whether a chemical used in food production is toxic, it will matter to their assessment whether they find it worse to assert that the chemical is toxic when in fact it is not (false positive), or whether it is worse to assert that the chemical is not toxic when in fact it is (false negative). In such cases, there might be diverging views about how to assess risks among citizens, policymakers, lawmakers, industry, and scientists. Some people might be more risk averse than others and view false negatives as particularly problematic. The food industry might find over-regulation of chemicals more problematic than consumers, and for this reason hold the view that false positives should be avoided more than false negatives. Thus, when scientists provide expert assessments of the relevant evidence in cases where there is substantial disagreement over values, some members of the public might have well-placed enhanced epistemic trust in scientists, while other members of the public might only have well-placed basic epistemic trust in scientists. In other words, if the value judgements made by scientists when making trade-offs between false positives and false negatives align with the values endorsed by trust-givers, be it policymakers or citizens, then this counts as enhanced epistemic trust.

Applied to recommendations, we might view Bennett's account of recommendation trust as a kind of *enhanced recommendation trust*. In cases where trust-givers have good reasons to believe that scientists have good reasons to believe what is in the interests of citizens and policymakers, the latter have enhanced recommendation trust in scientists. Basic recommendation trust, on the other hand, can be based on a set of more minimal requirements concerning how the scientists provide recommendations to the public. Now, what might such minimal requirements of basic well-placed recommendation trust in science advice institutions look like? Given the rationale of scientific advisory bodies of connecting technical knowledge to the content of policies, I suggest that there are three sets of conditions particularly central for well-placed recommendation trust.

First, in order to be trustworthy providers of knowledge and providers of recommendations, scientists contributing to an advisory body must collectively display the relevant expertise in the issue at hand. Given the fact that scientific advisory bodies are mandated to provide information and knowledge to other political bodies, it seems fair to claim that well-placed trust also presupposes that the scientists possess some extra-scientific competences such as political literacy (Eriksen 2020), communication skills (Keohane et al. 2014) to ensure sound cognitive uptake, and the ability to assess one's own competence (Turner 2014, p. 280). Second, just as a sense of moral responsibility is crucial for epistemic trust (Irzik and Kurtulmus 2019; Rolin 2021), the provision of policy recommendations must be done in a responsible manner. In my view, such general appeals to responsible conduct need not involve any neat alignment with the particular interest and values of those receiving the recommendation. Rather, they should focus on taking general principles such as objectivity, impartiality, fairness, and nonmaleficence into consideration. Third, given the

institutional context of science advice, it is fair to expect that science advice institutions must have proper institutional design that grants the scientists some degree of autonomy, independence from policymakers, and transparency (Gundersen and Holst 2022).

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In so far as there are any distinctive features of the conditions of well-placed recommendation trust in science advice, this could be attributed to the kind of competencies that we should reasonably expect when recommending as opposed to informing. The provision of policy recommendations requires certain competencies in political and ethical reasoning that differ from, or perhaps better, add onto, those required in the informing mode. In my view, the provision of recommendations should preferably be based on assessments of the efficacy and political feasibility of recommended policies, as well as legal and ethical constraints that public policymaking must meet in the issue at hand. To be able to do this in a trustworthy manner, we should reasonably expect that science advice bodies comprise the required *political competencies*. One could argue that this runs the risk of overburdening science advice. However, I think it is fair to assume that advisory bodies often include scientists with some experience and expertise relevant to the provision of policy recommendations. Moreover, often science advice institutions are interdisciplinary and involve a broader representation from policymakers and civil society. Since science advice institutions of some significance tend to involve such broader representation of expertise and perspectives when developing and ranking policies, political competency is a feasible condition for well-placed recommendation trust.

The conditions for recommendation trust that I have spelled out here overlap with central conditions for epistemic trust. Political bodies and citizens might rightly have basic recommendation trust in science advice institutions based on an all-things-considered judgement regarding their scientific and political competencies, responsible conduct, and proper institutional design, without strict alignment between the normative premises and risk assessments underlying the recommendation and public

interests and values. Interest-alignment is not what distinguishes well-placed recommendation trust from well-placed epistemic trust, and it is fully consistent for a political body to conclude that they find a science advice institution fully trustworthy when providing recommendation without the recommendation they provide being aligned with their interest.

## Open-ended and Inter-institutional Recommendations

My approach to recommendation trust here differs from Bennett's account in other respects, which also diminish the need of interest-alignment. First, Bennett focuses mainly on whether *individuals* should trust expert recommendations. While science advice institutions do sometimes provide output directly to individual citizens, leaving them with the decision to follow a recommendation or not, the main role of science advice is to provide information and recommendations to other bodies within a political system (e.g., agencies informing governments), or the institutions of the international community (e.g., international expert bodies, such as the IPCC, which inform the world's governments and the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC)). For this reason, I view the recommendations by science advice institutions as a case of *inter-institutional recommendations* in which science advice institutions provide recommendations to other political bodies. Second, Bennett conceptualizes trust in terms of individuals choosing whether to *follow* the recommendation given by experts or not. This is as a paradigmatic case of moral deference, in which one person defers to another person for moral judgement with a good track-record of making better moral judgements than him in the past (see Enoch 2014 for a defence of moral deference). To be sure, in some cases, citizens might be faced with the decision to defer to experts' recommendations in this way. Especially when time is scarce and the stakes are high, citizens must decide whether to defer or not. However, giving advice to others by providing recommendations can be viewed as trustworthy by the trust-giver without implying that he or she must follow the recommendation. It is fully conceivable that political bodies can place well-placed trust in science advice institutions when they provide policy recommendations without making the decision to follow the recommendation. For this reason, I find it reasonable to distinguish between placing trust in a science advice institution that provides the policy recommendations and the decision to follow that recommendation.

Moving from viewing recommendation trust in science advice in terms of individual moral deference to a more open-ended inter-institutional trust enables us to view science advice as an iterative process, which aims to solve political problems via learning and deliberation.<sup>1</sup> Similarly to how Habgood-Cote (2022) describes 'advising' as a joint deliberative process which aims to solve practical problems, science advice institutions aim to assist and enable political institutions in solving political

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<sup>1</sup> By focusing on deliberation and learning, my approach here has some affinity with the deliberative systems view (for overview see Parkinson and Mansbridge 2012) and what Edenhofer and Kowarsch (2015) call the pragmatic-enlightened model of assessment making.

problems. In short, recommendations can spur political deliberation and an iterative process of evaluation and modification before political decisions are finally made. This presupposes that the science advice institution must be based on an understanding of what kinds of problems political institutions aim to solve and the legitimate and feasible means for solving them. Political bodies must be open to deliberation with science advice institutions and citizens in an iterative and open process. In the case of recommendations, this means that the criteria of success cannot simply be to latch onto existing views, interests, and values, but to enable genuine deliberation. By developing and ranking policy proposals in response to a politically defined mandate, scientists might generate policy proposals that policymakers can debate, modify, and alter.<sup>2</sup> This seems to fit well with the way in which policy recommendations function as a part of the political system. Without being able to elaborate more on the way in which this approach fits current practice, I think it is safe to say that when science advice institutions provide recommendations about such things as mask-wearing in public places or on how to reduce greenhouse gas emissions, this often generates public discussions. Moreover, policy recommendations given by scientists, with a narrow technical expertise in some issues, should not be viewed as somehow providing ready-made policies. Rather, their recommendations should be seen as a first attempt at reaching a political decision that will have to be subjected to a democratic filtering process through a wide set of ethical, legal, and political discussion by policymakers and citizens.

In the next section, I will examine the toolbox that scientists have at their disposal to contribute to such an inter-institutional process in a way that makes the principle of interest alignment less relevant.

## The Toolbox of Science Advice: Conditional Recommendations

We can differentiate between two main ways in which science advice institutions can provide recommendations. First, science advice can provide policy recommendations *unconditionally* by merely stating ‘Do X’. Second, science advice can provide policy recommendations *conditionally* by basing their recommendations on political goals and a set of facts about the world in the following manner: Given that we assess the current situation to be S, if you want to achieve G, do P (Birch 2021; Niiniluoto 1993). This way of providing policy recommendations does not presuppose that the experts endorse or promote those political goals but explicitly leaves the decision over political aims and value judgements to policymakers and the public (see also Ross 1968, p. 44). It provides instrumental recommendations on what is considered

<sup>2</sup> This article focuses on the responsibilities of scientists in earning trust. Yet, my emphasis on the deliberative role of recommendations raises the issue of whether policymakers and publics also have certain responsibilities in how they relate to recommendations given by scientists. While there will arguably be cases where it is fully acceptable to set aside recommendations of scientists due to epistemic uncertainty, priority-setting, regulatory issues, and costs, we might think of cases where it is downright unacceptable to ignore policy recommendations due to the harms it generates. Thanks to one of the reviewers of this journal for pointing out this issue.



the available means to reach certain political goals, taking such things as empirical and causal knowledge, effectiveness, and feasibility into account.

In assessing both the potential applicatory value and the scope of choice given to policymakers and the public, it also matters whether a policy recommendation is of a singular or plural kind. Singular recommendations describe one policy while plural recommendations contain two or more policy alternatives. Birch (2021) plausibly argues that ‘single unconditional recommendations’ are the most controversial kinds of recommendations but that they might be legitimate during an urgent crisis. He points out that the British government’s main science advice mechanisms during the COVID-19 pandemic, the Scientific Advisory Group for Emergencies (SAGE), made such a recommendation—a highly influential one indeed—on March 9, 2020, when it stated that: ‘We therefore conclude that epidemic suppression is the only viable strategy at the current time’ (quoted from Birch 2021, p. 6). Plural recommendations, on the other hand, give policymakers more alternatives to choose from, thus expanding the scope of possible actions. In so far as scientists are able to explain some of the potential costs and benefits of each alternative, an expansion of alternatives might be valuable. All other things being equal, conditional and plural recommendations provide a wider scope of choice of policy to policymakers than single and unconditional recommendations.

Now, the aim of conditional recommendations is to expand the scope of feasible policy options available to policymakers, deferring the value judgements to citizens and their representatives. Pielke (2007) refers to this as honest brokering, in which science advisors defer the decision over political aims and values to policymakers and the public and provides advice on what is considered the best way to reach goals (taking several other considerations concerning feasibility, such as regulatory constraints or public opinion, into account). Thus, conditional recommendations need not involve the experts’ ability to base any single recommendation on any particular public interest.

*The following table sums up the main forms (deontic structures) of policy recommendations:*

	Single	Plural
Conditional	If you want to achieve A, given our knowledge about situation S, do P.	If you want to achieve A, given our knowledge about situation S, do P1, or P2, or P3 (etc.).
Unconditional	Do P.	Do P1, or P2, or P3.

While conditional recommendations do provide science advice with a way of giving a recommendation that defers political value judgement to policymakers and publics, this does not make their provision of recommendations value-free or neutral. For instance, conditional recommendations might involve several political goals that cannot all be realized at the same time (for this challenge, see Ross 1971).<sup>3</sup> In some cases, in most cases even, there might be more than one political goal involved. Some of these goals might be competing and conflicting. For this reason, scientists who

<sup>3</sup> I thank a reviewer and an editor of this journal for this challenge.

provide conditional recommendations must often make value judgements over trade-offs between these goals. For instance, when making recommendations concerning environmental regulation and economic growth, scientists must make normative judgements and trade-offs even when making conditional recommendations. If so, the normative premises for a conditional recommendation are not merely conditional on the articulated goal but also on one or more other goals. While this might make it more difficult to defer value judgements to trust-givers, I do think conditional recommendation diminishes the importance of interest alignment and value harmony.

## Conclusion

In this paper, I have argued that well-placed recommendation trust in science advice need not presuppose the principle of interest alignment. The principle of interest alignment makes well-placed trust too demanding in most cases, similar to what has been described as enhanced epistemic trust. I have argued that policy recommendations can be made in a trustworthy manner in a more basic sense based on an all-things-considered judgement of the trustworthiness of the science advice institutions based on epistemic, moral, political, and institutional standards. Recommendations can aim to identify effective, feasible, or promising policies and measures for realizing political goals, expand the scope of choice, and spur public debate. Policymakers might refuse following recommendations for political or moral reasons, but they might nevertheless trust the science advice institution to have had the proper competence and moral commitments and performed its role in accordance with its mandate to reach the recommendations. As a part of a system of political deliberation and filtering from other institutions and sources of expertise, policy recommendations need not lead up to a decision of whether policymakers and citizens should follow it or not. Rather, the function of policy recommendations given by science advice institutions, as opposed to granting scientists decision-making power, is to generate political deliberation and learning. Policy recommendations should thus be seen as open-ended and dynamic proposals that can generate political deliberation leading up to a final decision taken by political bodies and, in some case, by the citizens themselves. Moreover, by making conditional recommendations, scientists can base their recommendations on several values and interests, which makes the condition of interest alignment less significant.

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