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3rd Consultation Report

Bouncing Forward Sustainably: Pathways to a post-COVID World

Strengthening Science Systems

David Kaplan, Elena Rovenskaya, and Sergey Sizov

28 September 2020

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Introduction

This report provides an account of the process and content of the 3rd Consultation of IIASA-ISC Consultative Science Platform "Bouncing Forward Sustainably: Pathways to a post-COVID World". IIASA and ISC are committed to ensuring appropriate levels of transparency. This report is made publicly available in light of this commitment.

The report is in three parts. The first part of the report outlines the process of the 3rd Consultation. The second part of the report provides a summary of the general discussion and the discussions in two break-away groups which were grouped around the *draft recommendations* put forward in the Third Background Paper. Input to the 3rd Consultation (link) produced for the 3rd Consultation. The discussions at the 3rd Consultation addressed only some aspects within each draft recommendation. In some cases, the discussion covered aspects which were not originally included in the Third Background Paper. This report presents only what was discussed in the 3rd Consultation. This report should be considered as complementary to the Background Paper (link), the 1st Consultation Report (link), the Second Background Paper. Input to the 2nd Consultation (link), and the 2nd Consultation Report (link). Correspondence and off-line discussion with the participants, as well as work to analyze collected material continue. Hence this report should be treated as a work-in-progress.

Participants are encouraged to provide further comments and suggestions.

About the authors

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Acknowledgments

The authors are thankful for the input provided by the participants of the 3rd Consultation: Dante Cid, Alessandra Colecchia, Olga Contreras, Andreas Diensthuber, Mark Ferguson, Tarja Halonen, Hiroshi Kuniyoshi, Amy Luers, Antonella Mei-Pochtler, Shantanu Mukherjee, Ana Persic, Vladimir Ryabinin, Carthage Smith, Veerle Vandeweerd, Timo Vuori, and Doug Wilson. We are especially thankful to Lidia Brito for chairing of the 3rd Consultation and break-away session 1, and for her contribution, as well as to Geza Toth for chairing break-away session 2. We also thank Nikita Strelkovskii for his assistance with the survey and production of Figures 1 and 2 for this report.

The Process

The 3rd Consultation was a 3-hour webinar that took place on 7 September 2020. The meeting brought together seventeen representatives of the policy-making and decision-making community at national and multinational levels, representatives of the private sector, experts providing scientific advice to policy, as well as members of the IIASA-ISC Team (Annex 1). **The aim of the 3rd Consultation was to reflect and critically review the draft recommendations that emerged from the discussion in the 1st and 2nd Consultations and from the review of literature conducted by the IIASA-ISC Strengthening Science Systems Team.**

Based on the deliberations of the 2nd Consultation, the ISC-IIASA team has further developed the draft recommendations and presented them in the Third Background Paper. Input to the 3rd Consultation (link). This document served as the basis for discussion in the 3rd Consultation. It presented a total of ten draft recommendations clustered in five groups: Access to and diffusion of scientific knowledge, Collaboration and partnerships, Research focus and funding, Public understanding and trust in science, and Science as an input into policy.

Prior to the meeting, the participants received the Third Background Paper. Input to the 3rd Consultation; the Reports on the 2nd Consultation; the list of participants, a listing of the break-away groups; and an Orientation and Extended Agenda which outlined the issues for discussion and the expected outcomes (Annex 2).

The 3rd Consultation included a general plenary session, two break-away sessions, and another short plenary. Participants were assigned to break-away groups based on their major area of expertise. Defined times were allocated for discussions of every recommendation in each break-away group. The break-away group 1 'Science for policy' was chaired by the Consultation Chair and the break-away group 2 'Enhancing the contribution of the private sector' by a participant representing the private sector.

In the first plenary session, the participants had the opportunity to comment on all draft recommendations presented in the Third Background Paper; the discussion was mainly focused on recommendations that are most relevant for the expertise of the participants, that is science-policy interface and science in the private sector. Break-away sessions were followed by a second plenary session that featured short summaries of the deliberations in each group presented by rapporteurs.

Towards the end of the meeting, participants were asked to complete two online surveys. The participants of the break-away group 1 'Science for policy' addressed the question: *What do you consider to be the factors that prevent scientific advice being an effective input into policy?.* The participants of the break-away group 2 'Enhancing the contribution of the private sector' addressed the question: *Which factors do you consider to inhibit scientific expertise and knowledge located in the private sector being mobilised to meet global crises?.* The results of the two surveys are presented in Annex 3.

The engagement with the participants in the 3rd Consultation continues after the meeting. Participants have been asked to provide additional written comments. The IIASA-ISC Strengthening Science Systems Team will synthesize all inputs, including those from the earlier documents produced in this process. This will serve as a basis for the Strengthening Science Systems thematic report with the resultant recommendations and their substantiation.

The Discussion

The three sub-sections below present bulleted lists of comments provided by the participants in the corresponding sessions.

General Discussion

- We need a strategic approach – what are the obstacles and how do we address these obstacles? A bolder message should be considered. It should be made clear that the focus of this project is on public sector science.
- In devising recommendations, we should distinguish between two different phases: managing of the crisis and rebuilding in a post COVID-19 word.
- The world is changing – not only because of COVID-19. Digitisation is a key disruption; this project should also consider digitalization and other major trends.
- Science can act as a catalyst of change. Science has a key role to play in policy development, policy communication and policy acceptance and approval by the society as policy making is a complex interaction process involving traditional and non-traditional institutions.
- The document takes a top down approach. More attention should be paid to the development of partnerships between key stakeholders. Instead of a "linear", unidirectional model of science informing policy, a dialogue between science and policy as two equal partners based on co-design and co-production principles should be promoted.
- In informing national policy, policy makers prefer to rely on advice coming from their own country's scientists. Science advice therefore needs to be national. It can be organized differently. In Austria, for example, there is no chief scientist but instead the government seeks input from a broader range of scientists.
- Developing countries are lacking science capacity – creation of science capacity should be in each national strategy. Partnerships between all parties based on common/shared goals should be created. Creating a common understanding precedes funding.
- Private sector science plays a crucial role in providing input to deal with the crisis. While the private sector can move quickly, it is the fundamental science that had been carried out in the public sector that underpins the advances of the private sector.
- No one-size-fits-all approach to building social resilience will work; national and cultural context matters. The project should pay more attention to the countries of the Global South – and recognise the differences between developed and developing countries and the particular challenges faced by developing countries.
- There is a trade off as between agility and reliability.

- Security at the international and national levels has formerly been seen to be related to armies, but this is not the case now. Countries must adopt a broader understanding of security including new risks. Countries that incorporate risk into their security planning perform better.
- Science is most needed when it can do least. In the early phase of COVID-19 we needed answers but we did not have data. While science speaks with multiple voices, politicians need to make decisions swiftly. Scientists need to be more transparent and clear as to the assumptions that they make in analyses.
- Trust cannot be created in the crisis. Building trust takes time – it needs to be developed over the long term. Engagement with citizens via, for example, citizens assemblies, can help induce trust in science through citizen-to-citizen communication. Ireland has used citizen assemblies to great effect: trust citizens to listen to the experts and to propose solutions. When citizens express their views, these views enjoy considerable support.
- Better predictive modelling is needed.
- There has never been better international collaboration e.g. on basic science related to COVID-19, on testing and on vaccine. But, there has been very little cooperation as to how societies are dealing with the problem locally. A stronger cooperation in "normal" times would create a good basis for agile cooperation during the crisis times. Bureaucracy is a key barrier to international cooperation; it has to be minimized.
- Open Science is very important. It should be open not only to other scientists, but also to the society. Science should be embedded in the society. This applies to all stages of the research process.
- How to accelerate peer review without loss of quality?
- In the rebuilding after COVID-19, we need a deep dive on data usage. We need to make data more accessible. Data protection legislations can be restrictive; data regulation should be reconsidered.
- Scientists currently do not see it as their role to engage in a conversation with society. The current system of the performance assessment in science is old-fashioned and needs to be updated. New metrics to assess the performance of scientists and scientific institutions are needed. Efforts of scientists to communicate science to the public, to engage with citizens and to adhere to Open Science should be rewarded.
- It is not clear if intermediaries can be helpful in communicating science; scientists themselves should be more engaged in communicating their science.

Break-away group 1: Science for policy

R4: **Scientific cooperation** at the regional and global scale should be developed.

- A lot of international scientific cooperation is taking place already; however, the ambition should be to further enhance its breadth and depth.
- The goal of the international cooperation should be to not only propel scientific excellence, but also to significantly enhance the practical usefulness of science insights through activities aimed at finding solutions promoting the contribution of science to decision making.

- International cooperation can also facilitate a convergence of diverse views of scientists on controversial subjects. IPCC can serve as a good model for that.
- Principles of funding joint research should be carefully designed. The participation of scientists in international research activities based on funding available in their own countries may limit the quality of science; however, it is recognized that in the current political environment countries have a strong preference to fund their own scientists.
- It is particularly challenging to maintain and develop international scientific cooperation between developing countries. Cooperation among countries within one region that are at a similar development stage and have similar cultural backgrounds can be particularly promising.
- Digital platforms provide efficient ways to maintain and develop collaboration; we still have to fully harness their potential.
- To quickly react to a rapidly emerging crisis, one has to rely on national (or even sub-national) funding. However, long-term institutionalized multi-lateral funding should be made available to support research aimed at finding ways of effective rebuilding after a crisis.
- UN institutions are effective mechanisms to facilitate international cooperation; they should be used and "defended".

R6: **Critical risks and the resilience** of socioeconomic-environmental systems should be a key focus of **future research**.

- R4 and R6 are interlinked: for developing countries, it is impossible to develop a sufficient science capacity in regard to a variety of risks in the near future; some "division of labor" through international cooperation can be a practical solution to compensate the lack of capacity. Investment in the global capacity to respond to risks and crises are needed, rather than expecting each developing country will develop an own strong system, which is not realistic.
- Disaster Risk Reduction program, Sendai Framework for Disaster Risk Reduction and other major earlier initiatives should be utilized and built upon in moving the risk and resilience research agenda forward.
- In developing science-based solutions, it is essential that scientists engage with policy- and decision-makers in a co-design fashion.
- Complexity is an important phenomenon that needs to be better understood; in particular, more research should be done on how high levels of complexity can lead to system collapses.
- Volatility, Uncertainty, Complexity, and Ambiguity (=VUCA) are key characteristics of the modern times. Science should be able to aid policy making in the VUCA world.
- Uncertainty is a particular challenge. Approaches that IPCC used to comprehend and communicate uncertainty arising from different models and different studies can be useful in other areas.
- Horizon scanning exercises and futures studies should be supported.
- A greater inclusion of under-represented groups in research on risk and resilience is needed.

R8: **Public understanding of science** should be enhanced.

- Misinformation is a big problem, especially in countries where scientific literacy is low.
- Civil servants and politicians should be trained to understand science and its limitations. This however does not imply that they have to become experts in multiple disciplines.
- The usefulness of science translators should be further investigated as opposed to scientists communicating their research and insights by themselves. A pre-requisite for an effective science translation is that it is customized for target audiences.
- In communicating science, it is important to be clear on areas of broad consensus of scientists and indicate where there is still disagreement.
- Visual tools to communicate science in general and uncertainly in particular should be utilised more.
- Science journalists definitely play a crucial role in raising public understanding of science.

R10: **Institutions for science advice** should be strengthened.

- Transparency of science advice is important, and furthermore, ways to achieve some accountability should also be explored.
- There can be different models of how the advisory role of science can be institutionalized. One model relies on a chief scientist who coordinates various science inputs and processes which feed into political decisions. Another model engages more diverse voices to reach policy makers directly through various dialogue platforms. There are benefits from embedding scientists directly into government, but it can also be a good idea to keep them outside of the government. Pros and cons of each approach should be further analysed using the experience of COVID-19. Different models may be best-suited to different stages of a crisis and post-crisis dynamics.
- The recommendations on science advice to policy made in this report should be compared to those coming from other processes and projects, such as for example the work of INGSA.

Break-away group 2: Enhancing the contribution of the private sector

R5: Mechanisms to enhance cooperation between public science and the private sector should be identified.

- It is important to ensure that data possessed by the private sector is made available. In addition, tools and protocols to make such data accessible and reusable are required.
- Education is key to the private sector recognising and being willing to satisfy social goals. A critical issue is how to change education such that the private sector incorporates broader social objectives and not only Return-on-Investment.
- What is required is an alternative to the market based economy: the development of a new economic paradigm; one that is places less pressure on the environment for example.

- In Finland, for example, the private sector and the universities work together very well. One reason for that is that business people sit on the boards of universities and that people move between business and the public sector.
- The term "relational professionals" requires clarity. Relational professionals are unlikely to play a significant part in bringing science in the public and private sectors together.
- There are a range of new types of partnerships between the public and the private sectors. There are also new institutions that seek to build partnerships between public and private sectors. One possibility for enhancing partnerships between public and private sectors sciences is to strengthen such institutions.
- Digital connectivity is an essential requirement if we are to engage the business sector in developing countries. Enhanced connectivity as well as stronger capacity are required.
- The greatest opportunities for cooperation are often in high risk areas. Here government funding can be utilised so as to match private funding in order to motivate companies to enter high risk areas. In this context, there is an important role for governmental agencies.
- Even prior to the provision of funding, it is necessary to secure a shared understanding of priorities as between public and private science. Partnerships can be created between the different parties based on common/shared goals. The creation of a common understanding precedes the provision of funding.
- Tax breaks and training support can have an important impact – for example in aligning company strategies to the SDGs.
- The mere setting of social targets for companies to follow is unlikely to be effective in changing behaviour in the private sector.
- Businesses respond very largely to monetary incentives. There will be very limited movement on the part of business unless there is money to be made in making this movement. The race for the vaccine is a case in point – this is a race for profit, not for social benefit.
- Business thinking and strategies will only change where there are binding regulations that impact on business.
- The social sciences have a key role to play in proposing how to change business behaviour. The social sciences also have the key role to play in helping understanding how consumers change behaviour.

Cited papers

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Annex 1

List of Participants

Chair: Lidia Brito, Director, UNESCO Regional Bureau for Sciences in Latin America and the Caribbean

- **Dante Cid**, Vice-President of Academic Relations - Latin America, Elsevier
- **Alessandra Colecchia**, Head, Science and Technology Policy Division, Organisation for Economic Co-operation and Development (OECD)
- **Olga Contreras**, Deputy Director of Innovation, Technology Transfer and Entrepreneurship, National Secretariat for Science and Technology, Guatemala
- **Andreas Diensthuber**, Founder and Managing Director, Solgenium OG, Austria
- **Mark Ferguson**, Chief Scientific Adviser to the Government of Ireland and Director General, Science Foundation Ireland (SFI), Ireland
- **Tarja Halonen**, 11th President of Finland; Member, Council of Women World Leaders
- **Hiroshi Kuniyoshi**, Deputy to the Director General, United Nations Industrial Development Organization (UNIDO)
- **Amy Luers**, Global Director, Sustainability in the Digital Age, Future Earth
- **Antonella Mei-Pochtler**, Special Advisor to the Federal Chancellor of Austria; Head, Think Austria – Strategy Unit of the Federal Chancellor, Austria
- **Shantanu Mukherjee**, Chief, Policy and Analysis Branch of the Division for Sustainable Development, United Nations Department of Economic and Social Affairs (UN DESA)
- **Ana Persic**, Chief of Section a.i., Science Policy and Partnerships, United Nations Educational, Scientific and Cultural Organization (UNESCO)
- **Vladimir Ryabinin**, Assistant Director General, United Nations Educational, Scientific and Cultural Organization (UNESCO)
- **Carthage Smith**, Head of Global Science Forum, Organisation for Economic Co-operation and Development (OECD)
- **Geza Toth**, Global Lead, Carbon and Forest Program, Barry Callebaut Sourcing AG, Switzerland
- **Veerle Vandeweerd**, Founder and Executive Director, Platform for Transformative Technologies; Founder and former policy director of the Global Sustainable Technologies and Innovation Conference Series, USA
- **Timo Vuori**, Secretary General, Chief Executive of the International Chamber of Commerce of Finland, Finland
- **Doug Wilson**, Director, Government Office for Science COVID-19 Response, United Kingdom

IIASA-ISC Strengthening Science Systems Team leadership

- **David Kaplan**, Senior Research Specialist, ISC
  Team Co-Leader
- **Elena Rovenskaya**, Program Director, Advanced Systems Analysis Program, and Acting Program Director, Evolution and Ecology Program, IIASA
  Team Co-Leader
- **Sergey Sizov**, Science Diplomacy Officer, IIASA
  Team Alternate Leader

IIASA-ISC Consultative Science Platform leadership and Team

- **Benigna Boza-Kiss**, Research Assistant, Transitions to New Technologies Program, IIASA
  IIASA-ISC Cross-cutting Champion on Poverty and Inequality
- **Luis Gomez Echeverri**, Emeritus Research Scholar, IIASA
  IIASA-ISC Consultative Science Platform Leadership Team member, IIASA-ISC Cross-cutting Champion on Trust
- **Steffen Fritz**, Deputy Program Director, Ecosystems Services Management Program, IIASA
  IIASA-ISC Cross-cutting Champion on Data and Privacy
- **Flavia Schlegel**, Special Envoy for Science in Global Policy, ISC
  IIASA-ISC Consultative Science Platform Leadership Team member
- **Albert van Jaarsveld**, Director General and CEO, IIASA
  IIASA-ISC Consultative Science Platform Advisory Board member

Orientation and Extended Agenda

Objective of the 3rd Consultation

The IIASA-ISC Consultative Science Platform on Strengthening Science Systems assesses how science has responded to the COVID-19 crisis and, utilizing this understanding, is advancing a number of proposals to strengthening the capacity for science to serve society in the future.

A 1st Consultation took place on 19 June 2020. This Consultation brought together eminent scientists, who advanced a number of proposals whereby the capacity of science to serve society in the context of future global crises could be enhanced. These proposals were further developed by the ISC-IIASA team as a number of draft recommendations.

A 2nd Consultation took place on 20 July 2020. The 2nd Consultation brought together representatives of science funders, science journalists, publishers and those concerned with public understanding of science to reflect on and advance these draft recommendations.

Based on the deliberations of the 2nd Consultation, the ISC-IIASA team has further defined the draft recommendations (Annex 1). These draft recommendations are the basis for our discussion in the 3rd Consultation. The 3rd Consultation brings together policy makers and the private sector (Annex 2).

Strengthening mechanisms through which science can provide advice for policy at national and international/multilateral levels, as well as enhancing cooperation between science in the public and private spheres are both critical to ensure that policy decisions are based on sound scientific evidence. While participants will have the opportunity to comment on any of the draft recommendations, the discussion will therefore focus on recommendations for strengthening science input for policy and on enhancing cooperation between public science and the private sector.

Participants are encouraged to reflect on the draft recommendations before the meeting.

Outcome

A report will be produced summarizing the discussion in the 3rd Consultation. Participants will be invited to review and provide feedback on this report. A final report on the project will then be produced.

Annex 2

AGENDA

0-5′ Welcome

5-20′ Self-introduction of participants

20-30′ Orientation: Goals of the meeting and the process

30-60′ General discussion: Comments on the Third Background Paper and discussion of all draft recommendations

60-120′ Break-away groups*

Break-away group 1: Science for policy

Chair: Lidia Brito Director of UNESCO Regional Bureau for Sciences in Latin America and the Caribbean

Rapporteur: Elena Rovenskaya, Program Director, Advanced Systems Analysis Program, and Acting Program Director, Evolution and Ecology Program, IIASA; Team Co-Leader

Recommendations to be discussed (see the Third Background Paper. Input to the 3rd Consultation (Annex 1) for details):

R4: **Scientific cooperation** at the regional and global scale should be developed.

- The nationalization of science systems that is currently observed in many countries should be counter-acted.

R6: **Critical risks and the resilience** of socioeconomic-environmental systems should be a key focus of **future research**. A strong input from the social sciences is required as decision-making contexts, policy implementation, and societal and behavioral responses are key to the derivation of feasible policy recommendations.

- Countries – especially in the developing world – should develop their science and technology capacities across a broad range of risk areas. Research should take a multi-dimensional and integrated view on possible future risks. Complex systems can be a suitable framework for such research.
- A compelling research agenda on risk research should be designed by the science community and be advanced to governments and funders.
- A stronger involvement of social science in risk research aimed at better understanding of the soft systems – social systems and institutions – is needed to inform quantitative models and local decisions. Future research should pay more attention to specific societal weaknesses and the political, social, economic contexts and the decision-making realities of countries. Insights and practices drawn from one context may have very different and unanticipated outcomes when applied to another context.

R8: **Public understanding of science** should be enhanced.

- Civil servants should have basic training in understanding science and have direct access to scientists located in academia so as to obtain additional views as needed.

R10: **Institutions for science advice** should be strengthened. Strong institutions for science advice to policy ensuring interdisciplinarity, transparency and a capacity to draw on global science should be built.

- The involvement of the science community in an advisory role should be broadened in terms of the number of scientists involved and the range of disciplines
- The transparency of science advisory mechanisms should be significantly increased. Expert judgement and potentially even evidential basis of given recommendations should be made transparent.
- Government structures should refrain from influencing scientific advice. Ethical standards for the independence of scientific research should be respected.
- Scientific advice to policy makers should be formulated and communicated in the way best suited for this audience category. Science translators can facilitate this mutual understanding.
- Multiple perspectives and opinions coming from the science community can be confusing to politicians who need to take clear decisions and to do so swiftly. Science translators could help overcome the problem of science that does not speak with one united voice.
- Beyond the level of national governments, science advisory mechanisms should be further developed at the multilateral level.
- When making decisions, policy makers are confronted with a plethora of science-based and non-science-based considerations. Scientists engaged in providing science advice to governments should recognise and acknowledge that while their advice is important, it covers only the area of their discipline and expertise; it is the responsibility of policy makers, not scientists, to interface and integrate different pieces of advice and make policy decisions.

Break-away group 2: Enhancing the contribution of the private sector

Chair: Geza Toth, Global Lead, Carbon and Forest Program, Barry Callebaut Sourcing AG, Switzerland
Rapporteur: David Kaplan, Senior Research Specialist, ISC; Team Co-Leader

Recommendations to be discussed (see the Third Background Paper. Input to the 3rd Consultation (Annex 1) for details):

R5: Mechanisms to enhance **cooperation between public science and the private sector** should be identified. Many solutions rely on public-private research partnerships and on private sector technology platforms. Incentives for the public and private sector to share data and knowledge must be developed.

- Collaborative efficiency across the public-private interface can be enhanced through "relational professionals" that are able to communicate sensitively to both communities.
- Funding programmes should be created to facilitate collaborative engagement between scientists and industry, policymakers, and citizens.
- The proclamation of a global crisis -- perhaps by the United Nations -- should be a signal for more extensive cooperation between science in the private and public spheres. Cooperative projects will require clear agreements as to how risks and any possible future returns are distributed as between the different parties.

120-135’ Break

135-165’ Presentation of summary of deliberations at break-away groups and discussion (15’ for each break-away group)

165-180’ Final remarks, summary by the Chair and closing

Results of the Online Surveys

The participants in the 3rd Consultation were requested to complete an online survey. Those in break-away group 1 were asked to address the question: *What do you consider to be the factors that prevent scientific advice being an effective input into policy?*. Those in the break-away group 2 were asked to address the question: *Which factors do you consider to inhibit scientific expertise and knowledge located in the private sector being mobilised to meet global crises?.*

Seven pre-selected elements were provided for the survey in break-away group 1 and five – for the survey in break-away group 2. Figures 1 and 2 present the respective results.

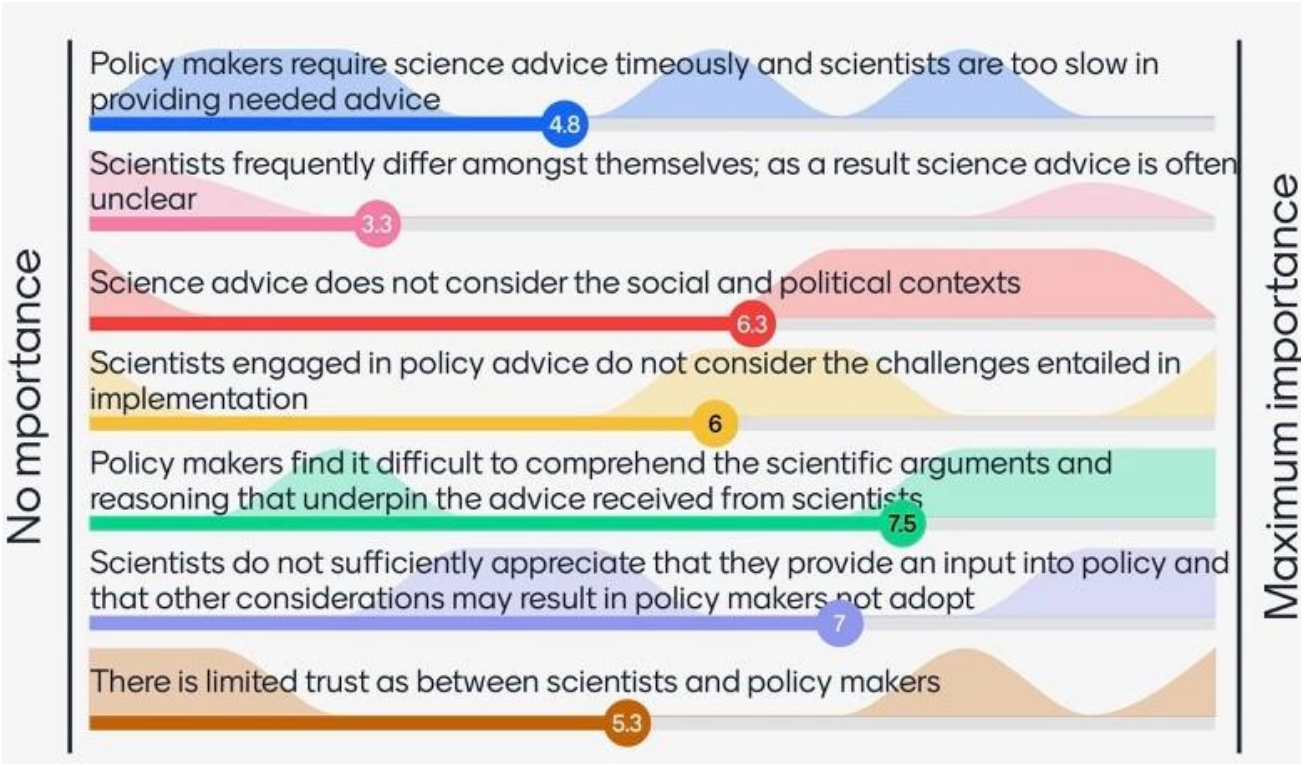

Figure 1: Survey results of the Break-away group 1. Score distribution (shaded areas) and mean scores (numbers in circles) for each of the seven presented elements based on responses by the participants. Score=1 means the lowest importance; score=10 means the highest importance. Number of respondents 4.

Figure 2: Survey results of the Break-away group 2. Score distribution (shaded areas) and mean scores (numbers in circles) for each of the five presented elements based on responses by the participants. Score=1 means the lowest importance; score=10 means the highest importance. Number of respondents 5.