INTEGRATING SCIENCE INTO CLIMATE CHANGE POLICYMAKING: AN OVERVIEW OF INSPIRING REAL-WORLD PRACTICES

INSPIRATION AND LESSONS LEARNED

Ingrid Coninx, Nienke Nuesink, Carlos Brazao Vieira Alho
Wageningen University & Research

Photo by IISD/ENB | Mike Muzurakis

WHO CAN BENEFIT FROM THIS DOCUMENT?

ARE YOU A CLIMATE CHANGE SCIENTIST INTERESTED IN ENGAGING IN THE POLICY PROCESS?

OR A POLICYMAKER WHO WANTS TO MAKE MORE USE OF SCIENTIFIC EVIDENCE AND IS LOOKING FOR BETTER WAYS TO INTERACT WITH SCIENTISTS?

ARE YOU LOOKING FOR GOOD PRACTICES WITH REGARD TO INTEGRATING CLIMATE CHANGE SCIENCE INTO THE POLICY-MAKING PROCESS?

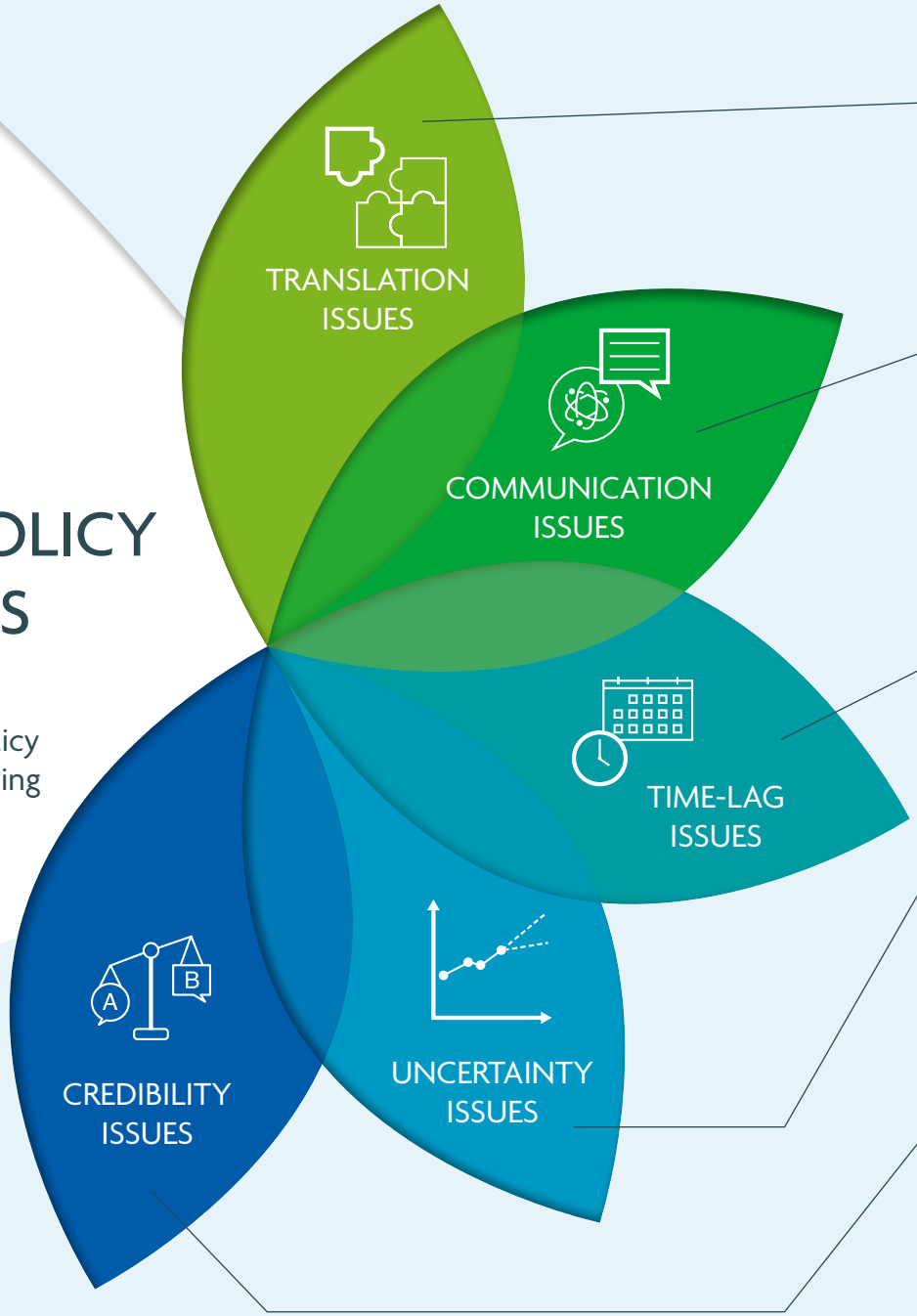
IF YOU ARE, KEEP ON READING!

PREPARED BY THE SINCERE PROJECT

This guidance document is prepared as part of the EU-funded SINCERE project. The SINCERE project aims to strengthen international cooperation on climate change research. One of the project's tasks involves gathering real-world practices about integrating climate change science into policy. A stocktake of real-world inspiring practices is needed more than ever before. Whereas a growing amount of funding is being directed to climate change science projects, several challenges prevent some of these results from being directly usable in the policymaking process. This document contributes to efforts to deal with these challenges. The document will be used to provide recommendations to JPI Climate about its future project portfolio.

FIVE KEY CHALLENGES IN SCIENCE-POLICY INTERACTIONS

A quick review of Science-Policy Interactions shows the following 5 most persistent challenges:



SCIENTIFIC RESULTS ARE NOT DIRECTLY USEFUL FOR POLICYMAKERS

Scientific findings are driven by research questions which do not match policy questions fully. As a result, scientific findings must be translated into a policymaking context, to make them more policy relevant. This challenge refers to the extent to which scientific results are relevant for decision makers and the problem they deal with (Van Ernst et al. 2014).

SCIENTIFIC RESULTS ARE NOT ACCESSIBLE

Often, scientific language is not easy to understand because of the complexity of many scientific methods and tools. Not least, policymakers may not have the time required to understand the information provided by scientists. This makes it difficult for policymakers to adopt scientific results. And many research results are still in scientific articles that are not open access to the general public.

IT TAKES TIME TO PROVIDE THE SCIENTIFIC RESULTS TO THE POLICYMAKERS

Funding, starting and finalising research projects takes time, but policy-makers are often looking for results in a shorter term.

COMMUNICATION ABOUT UNCERTAINTY OF THE CLIMATE SCIENCE RESULTS

Uncertainty is inherent to climate change science, which calls for practices on how to communicate uncertainty in a way that policymakers can act upon it. This challenge also concerns managing expectations of each other's roles and responsibilities in the Science-Policy Interaction.

POLICYMAKERS MAY DOUBT THE CREDIBILITY OF THE SCIENTIFIC RESULTS

It may be the case that scientific results are not considered credible by policymakers despite them being the result of objective scientific research. This means that there is the perception that the research results do not meet the standards of scientific plausibility and cannot be trusted (Van Ernst et al. 2014). It may also be the case that research results are contradictory and cause dissente, and the scientist very quickly finds himself in the middle of a polarised debate.

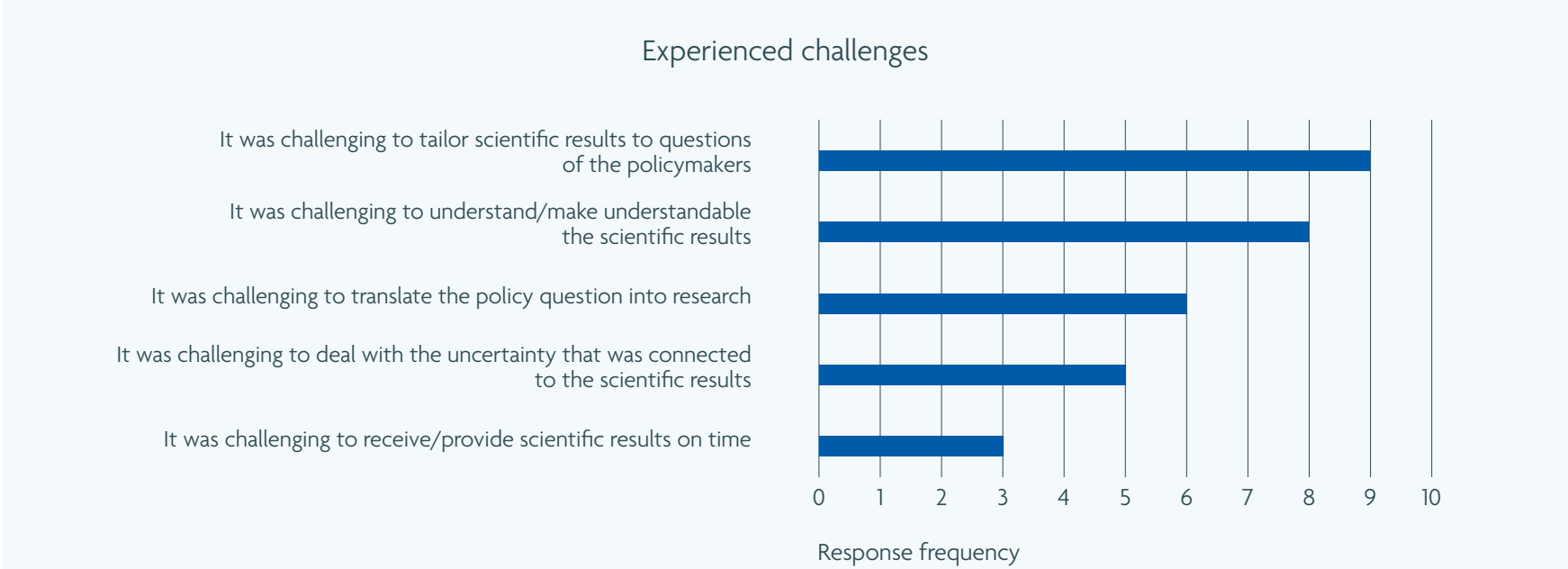
Common to the five challenges above are the limited capacity that both scientists and policymakers have with regard to engaging in a dialogue, and the different context in which scientists and policymakers operate. Building capacities inevitably requires bridging, linking and supporting each other's understanding, as explained by Sundqvist et al. 2017. Here, we document real-world good practices that help build these bridges. All these practices are structured according to the five challenges outlined in the previous page. Although we link one individual good practice with one of the five challenges above, most good practices are relevant to more than one challenge.

At the end of 2020, we carried out a survey among national IPCC focal points and other individuals who work in the science-policymaking "space". We received 19 responses from all over the world, from which we obtained a clear understanding of good practices with regard to integrating climate change science into policy. We document these good practices and supplement our description with data gathered by means of interviews, desk-based research and the feedback obtained from the participants in the 'JPI Climate Scoping Forum', which took place in December 2020.

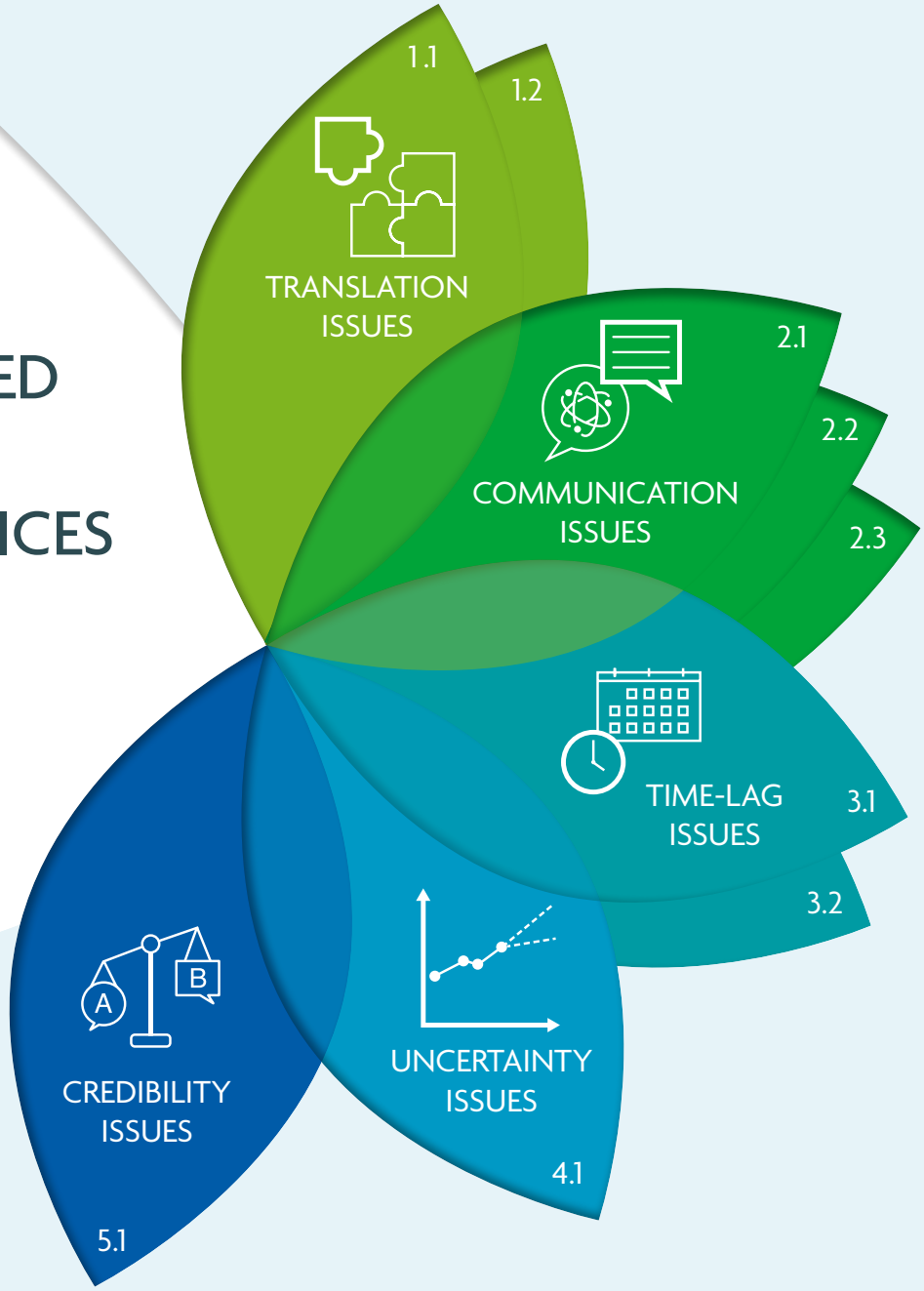
Joint sessions of IPCC Working groups • Photo by IISD/ENB | Mike Muzurakis

WHO ARE THE RESPONDENTS THAT PROVIDED REAL-WORLD GOOD PRACTICES?

19 people completed the survey: 37% scientists (7), 37% scientists and policy makers (7), 11% policymakers (2), 16% other: funder, science communicator and government officials. Half of the people considered Science-Policy Interaction as doable to mostly difficult. The other half considered it as neutral to mostly easy. The scientist respondents seem to struggle a bit more with Science-Policy Interactions, compared to the respondents who are (also) policymakers. We also asked about the most challenging aspects in the Science-Policy Interaction: Most people find tailoring scientific results to the policymakers' context challenging and also making the results understandable (see figure).



THE COLLECTED REAL-WORLD GOOD PRACTICES ARE:



1 • PRACTICES TO MAKE SCIENTIFIC RESULTS MORE USEFUL FOR POLICYMAKERS

- 1.1 • KNOWLEDGE BROKERAGE
- 1.2 • TRANSDISCIPLINARY PROJECTS

2 • PRACTICES TO FACILITATE THE ACCESS TO SCIENTIFIC RESULTS

- 2.1 • VIDEOS, VISUALS, INFOGRAPHICS, PODCASTS, BLOGS, EXHIBITIONS, SUMMARY FOR POLICYMAKERS, NEWS ITEMS
- 2.2 • KNOWLEDGE HUBS AND KNOWLEDGE PORTALS
- 2.3 • PERIODIC NATIONAL DIALOGUE AND SEMINARS ON NEW SCIENCE, CONFERENCES, LUNCH MEETINGS, (AWARENESS) WORKSHOPS

3 • PRACTICES TO DEAL WITH THE TIME GAP BETWEEN START OF THE RESEARCH AND THE RESULTS

- 3.1 • INVOLVING POLICYMAKERS IN RESEARCH PROJECTS
- 3.2 • PERIODIC SCIENCE ASSESSMENTS

4 • PRACTICES TO COMMUNICATE UNCERTAINTY INTO ACTION

- 4.1 • CLIMATE SERVICES AND DECISION SUPPORT TOOLS

5 • PRACTICES TO MAINTAIN THE CREDIBILITY OF SCIENTIFIC RESULTS

- 5.1 • INSTITUTIONALISED TECHNICAL COMMITTEES

1 • PRACTICES TO MAKE SCIENTIFIC RESULTS MORE USEFUL FOR POLICYMAKERS

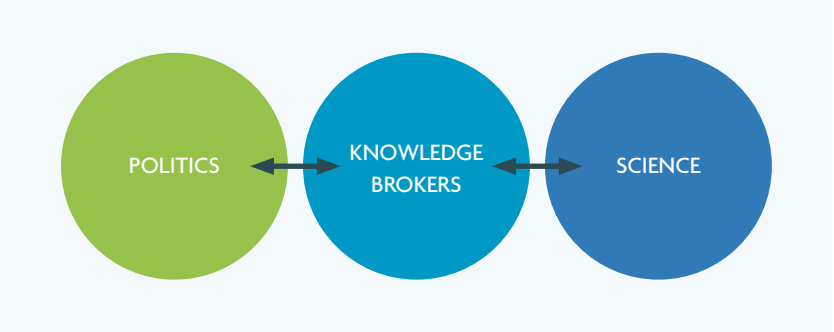
1.1 • KNOWLEDGE BROKERAGE OF IPCC AND IPBES

Knowledge brokers are people who facilitate the use of scientific results in policymaking. They know the context of the scientists and they know the context of the policymakers. In this way, they are in the right place to make the scientific results useful to policymakers and translate the policy questions into research questions. The Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) rely on national Focal Points that function as knowledge brokers. The national focal points help to translate policy questions to scientists. When answers are received back from scientists, the national focal points extract the most important and relevant facts and organise them in a communicable way to policymakers. Via this process, policy-relevant questions and policy-relevant answers emerge. The role of focal points is crucial because policymakers and scientists have their own language.

"IN THE CURRENT VOCABULARY, WE HAVE CO-DESIGN (TO ASK QUESTIONS) AND CO-PRODUCTION (FOR POLICY ADOPTION)."

Jose Romero, Swiss national focal point for IPCC and IPBES.

The respondents indicated that Science-Practice Interactions are a continuous learning process. Success is achieved when both sides are ready to listen and to learn. It is also important that both can stay within their key responsibility. Therefore, the knowledge broker can serve as the interface between scientists and policymakers. In this way, science can maintain full independence. Politicians can never influence the results of IPCC or IPBES. This is the ultimate value for policymaking: the integrity of the science-based facts. Policymaking is about making choices/preferences and finding consensus. A full account of science is not always possible, and trade-offs must be made.



Knowledge brokers as interface between scientists and policymakers

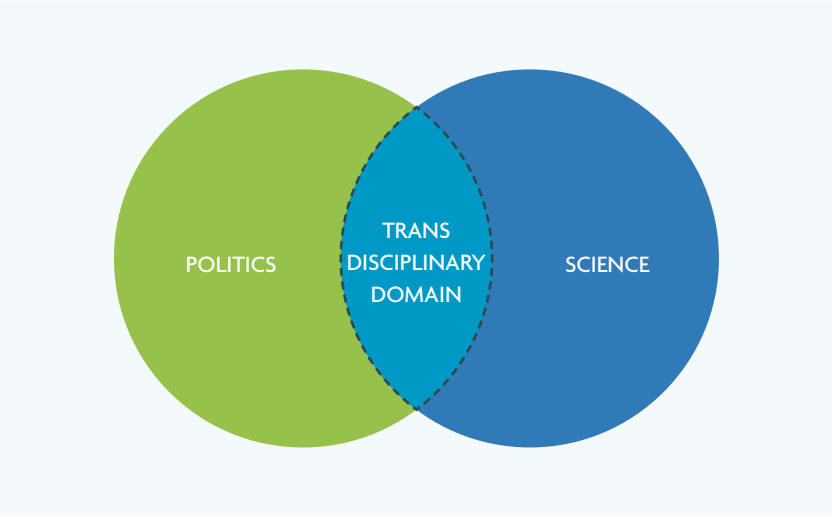
Other examples of knowledge brokerage organisations between science and policy are UKCIP (UK) and ONERC (FR) (Hanger et al. 2013).

Another suggestion in line with the knowledge brokerage is to establish a scientific advisory board or a taskforce that follows up on the state of the art in scientific development and new research findings and advises government policymakers on the applicability of scientific results in the respective sectors This advisory board therefore plays an active role in making scientific results useful for policymakers and linking the results to policy needs.

1.2 • THE REAL-WORLD PRACTICE OF TRANSDISCIPLINARY PROJECTS

Transdisciplinary projects are projects where scientists, policymakers and society jointly participate in the analysis and development of scientific results. A trusted relationship emerges and facilitates communication as well as the use of the research results. Furthermore, all actors can contribute to the process, and co-produce knowledge that goes beyond the knowledge that individual actors could provide.

One suggested good real-world practice is the Hindu Kush Himalaya Assessment. This assessment is open-access science results on sustainable mountain development. This highly transdisciplinary participatory process



Transdisciplinary domain: joint participation of scientists and policymakers

involved researchers, experts and policymakers as authors. They were brought together by Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) under the coordination of the International Centre for Integrated Mountain Development (ICIMOD).

Another example of transdisciplinary collaboration that is currently trending are living labs such as the USYS TdLab. The TdLab conceptualises and tests

educational and research approaches to tackle complexities of sustainable development. A Living Lab is an inspiring and creative learning space where people from a range of backgrounds meet, share ideas, and create new knowledge in the context of sustainability.

A third real-world practice is the Bolin Centre Climate Arena from Stockholm University. This Bolin Centre Climate Arena aims to support cross-sector work aimed at "bending the curve" of climate change by developing long-lasting relationships between academic, public, business and policy sectors; these relationships enhance the impact and utilisation of knowledge and research, and pro mote climate education for the future.

But transdisciplinary projects may also have disadvantages. Because of the close relationship between science and policymakers, the credibility and independence of scientists may be contested. Furthermore, it takes time to achieve good transdisciplinary collaboration.

"EXISTING FUNDING PROGRAMMES LACK DEDICATED FUNDING AND TIME TO DO TRANSDISCIPLINARY RESEARCH (TDR). TDR REQUIRES MORE TIME THAN TRADITIONAL RESEARCH. THE FUNDING PROGRAMMES SHOULD ACKNOWLEDGE THIS BY PROVIDING DEDICATED TIME AND PERSONNEL TO DEVELOP TDR".

Wolfgang Pfefferkorn, Chair of the JPI Transdisciplinary Advisory Board.

Communication in transdisciplinary research takes longer than in mono-disciplinary research because the different actors need to learn each other's language and trust each other. These communication efforts are often not reflected in budgets (both on the science and policy side). Conflicts of interest and tradeoffs may emerge.

2 • PRACTICES TO FACILITATE ACCESS TO SCIENTIFIC RESULTS

2.1 • CIENCE COMMUNICATION BY MEANS OF VIDEOS, VISUALS, INFOGRAPHICS, PODCASTS, BLOGS, EXHIBITIONS, SUMMARY FOR POLICYMAKERS AND NEWS ITEMS

If scientists are not in close and direct interaction with policymakers, there are still plenty of options for scientists to communicate science results to policymakers.

"THE KEY OF SCIENCE COMMUNICATION IS TO PUT COMPLEX THINGS IN A MORE UNDERSTANDABLE WAY".
Anonymous respondent.

This is often done by summaries for policymakers, that are added to the science publications.

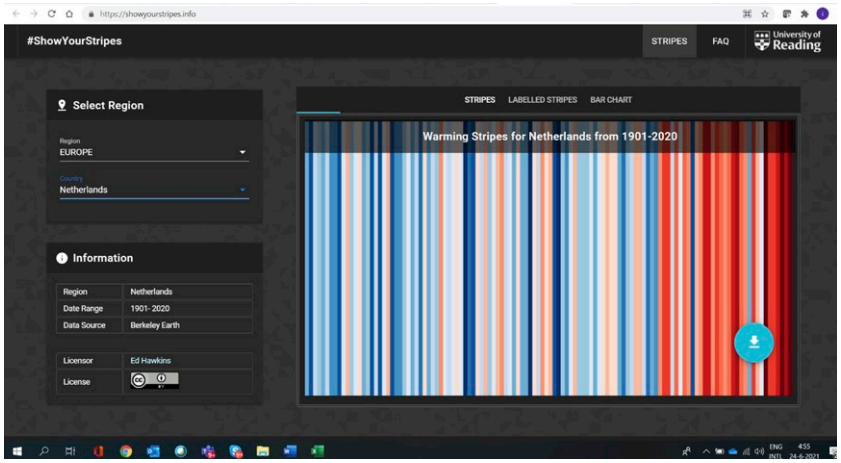
The respondents promoted the use of audio-visual communications to communicate science to policymakers. Example videos are the video on Smart Energy Systems on YouTube. Several other examples of videos can be found on the ECCA2021.

Visuals also work well for science communication such as the '*Show your stripes*', an illustration of annual temperatures via blue/red strips.

Another way to make climate science available for non-scientists is by means of podcasts. An award-winning climate change podcast is, for example, TILClimate podcast, made by Massachusetts Institute of Technology.

Scientists can also connect with journalists who can help them to translate the scientific results in a way that makes sense to policymakers and the general public.

These real-world practices really help to overcome the challenge that science results are difficult to access. By communicating the results in a way that is familiar to policymakers and at fora that are visited by policymakers, they create access to the scientific results.



Show your stripes: an illustration of annual temperatures via blue/red strips.

2.2 • KNOWLEDGE HUBS AND KNOWLEDGE PORTALS

Knowledge hubs and knowledge portals are online websites where the latest science is collected and presented. This facilitates access to scientific results because policymakers have a one-stop shop to look for the latest findings. Knowledge hubs also support the credibility of the scientists. Five real-world practices on these knowledge hubs were provided by the respondents.

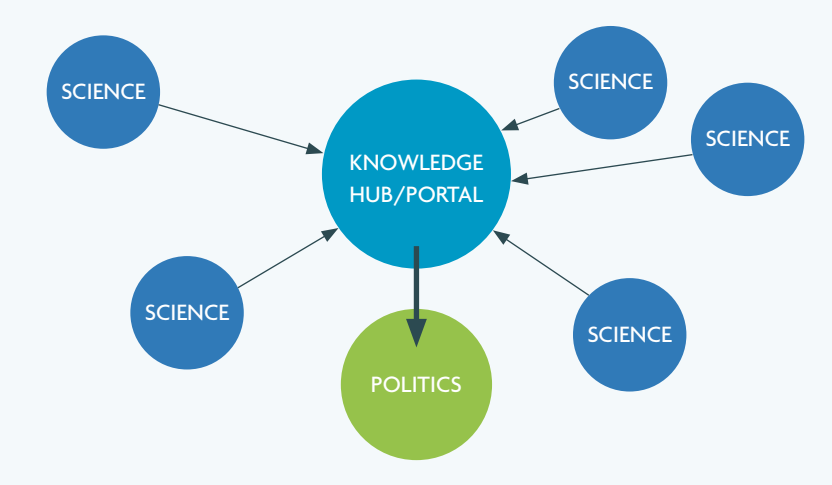
The first practice is the System of Environmental Information of Colombia. This is a space for the communication of scientific information produced by those responsible for science to policymakers. You can consult it here: www.siac.gov.co/

Another real-world good practice is the European Environment Agency which periodically assesses the state of the art on environmental topics in Europe in order to support European, national and local policymakers. The European Environment Agency has built up a high level of credibility over the past decades and is considered as the knowledge hub for all environmental science in Europe. The periodic assessments provide easy access to the latest findings.

The third example is the Nepalese Climate Change Knowledge Management Centre. This Centre is a collaboration between the Nepal Academy of Science and Technology (NAST) and the Ministry of Environment (MoE). The vision is to establish a strong and effective knowledge management centre to ensure the production and dissemination of climate change knowledge information in the country. It also aims to strengthen the capacity of various stakeholders by providing them with the required information to respond to challenges posed by climate change. You can consult it here: www.ncckmcnast.org.np

The fourth suggestion is to create synergies with scientists (partnerships and collaboration) and the establishment and sustaining of observatories with the required information in accessible formats.

The last suggestion is the UMFULA portal. The Future Climate for Africa Programme has the objective to improve science about climate change to inform policymakers about sustainability policies.



Knowledge hub or portal: a one-stop shop for scientific findings

2.3 • BUILDING TRUSTED RELATIONSHIPS BY PERIODIC NATIONAL DIALOGUES AND SEMINARS, CONFERENCES, LUNCH MEETINGS AND AWARENESS WORKSHOPS

Scientists and policymakers can build trusted relationships by periodic meetings, for instance in think tanks, and during national dialogues, seminars, conferences, lunch meetings and awareness workshops. In this way, scientists can present the results and have a dialogue about it with policymakers. Policymakers can ask additional questions to better understand the results. It is important to invite the policymakers that can benefit from the results, to attend the meetings. Once these trusted relationships have been established, requests can also be made to researchers to develop public messaging that can assist in the process of supporting policy change.

Dialogues and seminars: opportunities for engagement and communication.

The respondents provided two real-world practices of periodic meetings of this kind. The first practice is the Norwegian Partnerforum. This is a collaboration between the University of Oslo, the Norwegian School of Management and the central Norwegian state administrations. Partnerforum is a meeting place for knowledge development, sharing experiences and a network for partners. The Partnerforum generates arenas for introducing, distributing and exchanging new research and work experiences. This Partnerforum endeavours to stimulate new research that involves the challenges of different government areas, and to create collaborations between university scholars and partners. The Partnerforum supports progress in governmental sectors. The annual fee is 119,000 NOK (about 12,000 euros) and this gives free admission to all events. PF arranges seminars of current interest, seminars for top leaders, breakfast meetings and conferences. The partners also participate in a special seminar prepared specifically for them.

Another periodic meeting between scientists and policymakers takes place within the scope of the UNEP science-policy dialogues. It is a solutions-focused community of 3,500 powerful multi-sector actors convened by UNEP to promote green technology innovation, empowering policies and sustainable funding. This forum organises issue-based consultations, roundtables, themat ic conferences and in-depth negotiations, showcase solutions, takes stock of policies and investments and presents results of consultations to high-level institutions for incorporation in policy documents.

3 • PRACTICES TO DEAL WITH THE TIME GAP BETWEEN START OF THE RESEARCH AND THE RESULTS

3.1 • INVOLVING POLICYMAKERS IN RESEARCH PROJECTS

The consequences of the time gap in research can be reduced by more closely involving policymakers in the research projects. Researchers also benefit from close involvement because they can better understand what is happening in the policy context. Complementing that with individually tailored relationships also helps. Given the changes that take place in administrations, it is advised to mainly involve middle-level bureaucrats who carry on the work. These bureaucrats can help to present the research results in a way that is more relevant for policymakers.

Several suggestions are made on how to involve policymakers more closely in research projects. Scientists can involve policymakers more closely in research projects by asking policymakers sign a memorandum of understanding or a declaration about the intention to use the results. In this way, policymakers are more aware of the expected time frame to provide preliminary scientific results. Early involvement of policymakers encourages 'togetherness' in the research process. The open lines of communication and the emerging trust relationship facilitate the use of research results before the project ends. Furthermore, by presenting results in steps, policymakers can remain up to date on research results while the project evolves. Scientists can also be more trans parent by announcing the partial results at every stage along the agreed timeline until the very end. It was also suggested that policymakers should fund their own research; they can then set the timeline for return of the results.

"THERE IS NOT A BIG GAP BETWEEN THE TIME AND RHYTHM OF SCIENCE AND POLICYMAKING. BECAUSE POLICYMAKING IS ALSO INERTIAL. FINDING CONSENSUS TAKES TIME."

Jose Romero, Swiss national focal point IPCC and IPBES
Photo by IISD/ENB | Mike Muzurakis

Real-world good practices provided by the respondents are, for instance, the national research agenda for sustainable development of Cambodia, which you can consult here: https://ncsd.moe.gov.kh/ and several projects funded by the European Commission or the European Space Agency.

Involvement of policymakers can also help to deal with the challenge to improve the use of research results. Policymakers can, for instance, prepare annual knowledge and competence plans to highlight existing knowledge gaps. Scientists use these plans as a starting point to develop research questions and projects. Policymakers can fund research themselves and in this way can directly benefit from the most relevant research results. Scientists can also make use of existing policies to link and frame the research results.

3.2 • PERIODIC SCIENCE ASSESSMENTS

Periodic assessment is carried out by IPCC and IPBES. The benefit of periodic assessment is that policymakers are guaranteed access to the most recent scientific results during the policymaking process. This periodic communication and feedback among scientists and policymakers helps to reduce the time gap. References to the science sources are made, which increases the credibility of the assessment. However, these science assessments can still be very technical and time consuming to access. Therefore, summaries for policymakers are extremely valuable to increase the use of the research results. IPCC, for instance, uses short, straightforward, clear and strong sentences that are designed according to the pyramidal approach: clear powerful statements first, followed by more detailed explanation endorsed by science. In this way, policymakers know that they need to act. Furthermore, one of the respondents indicated that IPCC SR1.5 is the best example that policymakers were engaged in science research and that they had access to scientific results. This threshold of 1.5 is well accepted by policymakers and they make use of it to decide on the mitigation and adaptation policies.

In addition, the periodic assessment of National Determined Contributions (NDCs) has been suggested as real-world good practice because many sectors of society participated; it can therefore be concluded that there was good communication and access to scientific information. The format of the process itself ended in decision-making by policymakers, after all the available information had been weighed up.

Periodic science assessments

4 • PRACTICES TO COMMUNICATE UNCERTAINTY INTO ACTION

4.1 • CLIMATE SERVICES AND DECISION SUPPORT TOOLS

Climate change results are uncertain due to insufficient data, large variations in results or too small a sample. This uncertainty needs to be carefully communicated so that policymakers do not ignore it or are paralysed and fail to take action. If you do not communicate uncertainty, you are making a trap for policymakers because they risk losing the trust of the people. Policymakers rely on research results that are uncertain without being aware of the limitations of the research. It was recommended that scientists advise policymakers on how to take into account the level of uncertainty in designing investment programmes. Where uncertainty does creep in, contingency measures should be put in place to deal with the implications of this.
Another approach is to make use of the precautionary principle when considering uncertainty in scientific results. Policymakers are familiar with this principle.

One suggestion is:

"APPROACH THE IMPACTS OF CLIMATE CHANGE AS AN ASSESSMENT OF RISKS – THE ROLE OF THE SCIENTIFIC RISK ASSESSOR. AND ADAPTATION AS THE RISK MANAGEMENT ANSWER TO THE RISKS – WHICH IS THE ROLE OF THE DECISION/POLICY-MAKER."

Hans Sanderson, scientist at Aarhus University.

Risk assessment should be scientifically sound and included in the available literature and evidence. Scientists need to use risk language when communicating results. Climate change impacts should be presented as risks and probabilities as policymakers understand this language.

"WHEN UNCERTAINTY IS APPROACHED AS RISK, POLICYMAKERS WILL LOOK FOR WIN-WIN OR LOW-REGRET ACTIONS AND INTERVENTIONS AS MUCH AS POSSIBLE. SEEKING CO-BENEFITS AND EXPLOITING THESE ARE ALSO A WAY TO WORK AROUND UNCERTAINTY"

Amy Pieterse, Council for Scientific and Industrial Research, South Africa.

Currently the most common way to communicate uncertainty is in terms of probability, as is done in the IPCC reports, translating numbers into words as very likely, likely or unlikely. This helps policymakers to think about the trade-offs. Policymakers deal with uncertainty all the time. Scientific uncertainty is just another uncertainty and the fact that scientific uncertainty is quantified is very helpful. It was also suggested that the level of certainty, rather than uncertainty, should be communicated in a simple manner. Scenarios that are not too detailed should also be used (as was also proposed by Schenk & Lensink, 2007).

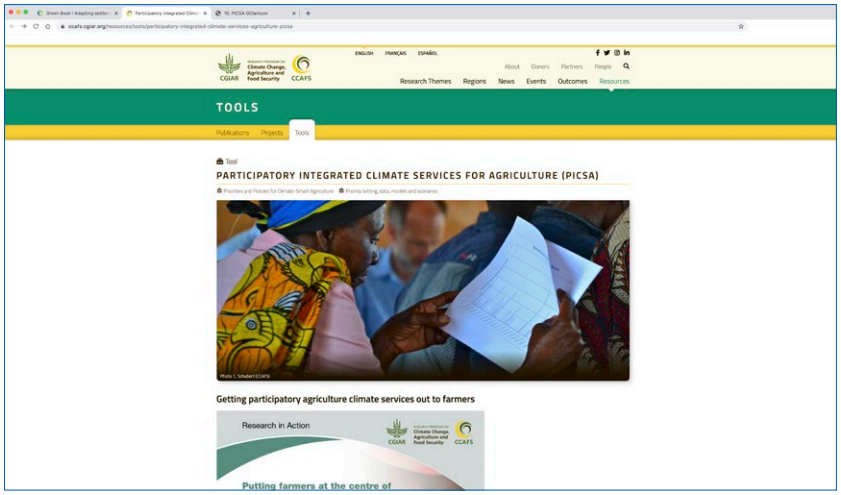
Climate services and decision support tools are ways to communicate uncertainty while guiding towards certain actions. These climate services and decision support tools also facilitate access to scientific information and make it useful for policymakers.

The Participatory Integrated Climate Services for Agriculture in Malawi (PICSA tool) was developed by a team from the University of Reading as part of the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS) and with the support of the Global Framework for Climate Services project. This tool was developed to access and utilise climate information for agriculture in Malawi and policymakers (mainly extension agents) and farmers are the target group of this tool.

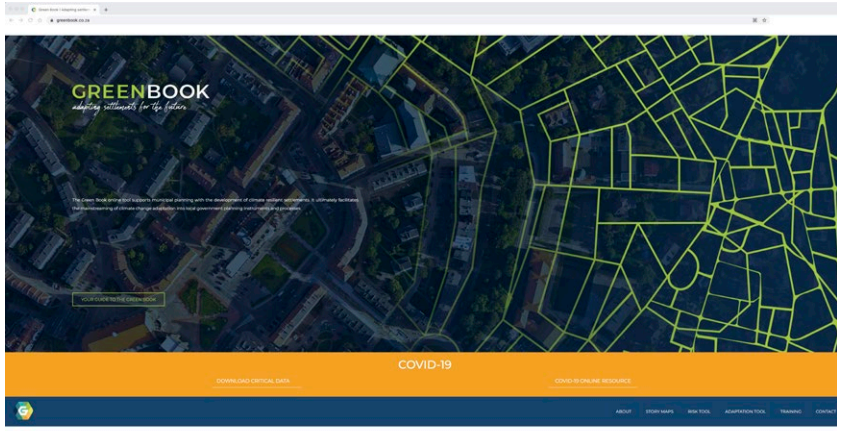
At the start of a new agricultural season, the Participatory Integrated Climate Services for Agriculture (PICSA) is used by agriculture extension staff working with groups of farmers. They jointly analyse the historical climate information and use the tool to understand seasonal and short-term forecasts. Based on their joint analysis, they participatively select the most appropriate crop, livestock and livelihood options. This tool facilitates access to scientific data and helps extension officers and farmers to prepare for the upcoming agricultural season.

The seasonal forecast results and the uncertainty are communicated in English and in vernacular language. Furthermore, the step-by-step methodology on how forecasts are generated is also communicated. It is also explained why the forecasts are expressed in probabilities, i.e. mainly because of the chaotic nature of the atmosphere. This helps to increase policymakers' understanding.

- https://ccafs.cgiar.org/resources/tools/participatory-integrated-climate-services-agriculture-picsa
- https://www.adaptation-undp.org/sites/default/files/resources/11._picsa_gclarkson.pdf



PICSA: a tool that facilitates access to scientific data and helps extension officers and farmers to prepare for the upcoming agricultural season.



Green Book: an online planning tool to support South African local communities to adapt to climate change.

Another tool is the Green Book, made in South Africa. The Green Book is an online planning tool to support South African local communities to adapt to climate change. The Green Book offers scientific evidence on current and future (2050) climate risks and vulnerability for every local municipality in South Africa (including at settlement level) in the form of climate change projec tions, multi-dimensional vulnerability indicators, population growth projections, and climate hazard and impact modelling. The methodologies are co-produced, and the scientific findings were peer-reviewed by experts and policymakers. The tool consists of several components that translate the scientific findings. The tool also makes use of story maps that help to build a narrative around the scientific findings. This story map includes geographical maps, images and statistics. Science is also translated to the local level by means of the Municipal Risk Profile Tool where a combination of communica-tion methods is used. In addition, an Adaptation Actions Tool provides access to a collection of 81 different planning and design actions for municipalities to adapt their settle ments and environments. All the information provided in the Green Book is intended to inform planners and policymakers, and it was designed to facilitate mainstreaming. The Green Book is open-access and available to policymakers and planners on all levels of government. You can access it here: https://greenbook.co.za/. The Green Book communicates uncertainty by providing the range of outputs from climate projections and offering comparative maps so that users can compare the outputs themselves.

A third practice indicated by the respondents is the Mauritius 2050 Pathways Calculator, developed by the Ministry of Environment, Solid Waste Manage ment and Climate Change with the support of the UK Foreign and Common-wealth Office through the British High Commission. The Calculator enables policymakers and users to consider feasible energy demand and supply pathways for reducing Green House Gas (GHG) emissions up to 2050. For example, users can boost energy supply by building more wind turbines and using more solar PV, or they can reduce energy demand by using LED lighting and changing travel behaviour. https://environment.govmu.org/Pages/Mauritius-2050-Pathways-Calculator.aspx

5 • PRACTICES TO MAINTAIN THE CREDIBILITY OF SCIENTIFIC RESULTS

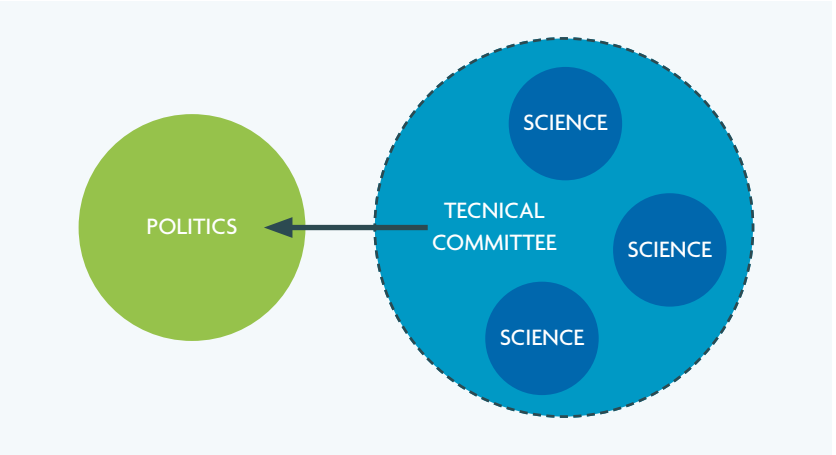
5.1 • INSTITUTIONALISED TECHNICAL COMMITTEES

Science-Policy Interaction can be institutionalised in technical committees where experts come together to support policymakers with the latest scientific evidence. These technical committees secure the credibility of the science that is brought into the dialogue because experts are often nominated. The benefit of participating in technical committees is also that scientists are much more aware of the policymaking context, as for instance in the scope of the National Adaptation Plan. This helps to make sure scientists can contribute in meaningful ways.

An example of real-world practice is technical committees in thematic areas to recommend science-based information in Nepal. These technical committees facilitate access to the latest findings and, because of the continuous dialogue between scientists and policymakers, the translation of science results to policymakers is easier.

In addition, the development of the Climate Resilient Green Economy of Ethiopia (CRGE) was based on the inclusion of 7 sectoral and science-driven technical committees. More than 50 experts from about 20 leading governmental institutions have dedicated time, effort, and resources to developing sectoral plans and an integrated federal plan (Federal Democratic Republic of Ethiopia, 2011).

To maintain the credibility of scientists, the challenge is not to put the scientist in the driver's seat of the policymaker. Scientists provide information that others use to make decisions. Scientists therefore need to be very careful when providing scientific results and responding to questions by policymakers. Peers should use the following logic: "Do I want this on the front page?" If you do not want it on the front page, you are probably not convinced that your results are scientifically sound. Policymakers often ask very broad questions and want short and clear answers. You need to be aware of this and push back if you feel you are bearing more responsibility than you should as a scientist. Scientists do not make decisions. This is the mandate for the policymakers.



Technical committee of science experts to support policymakers

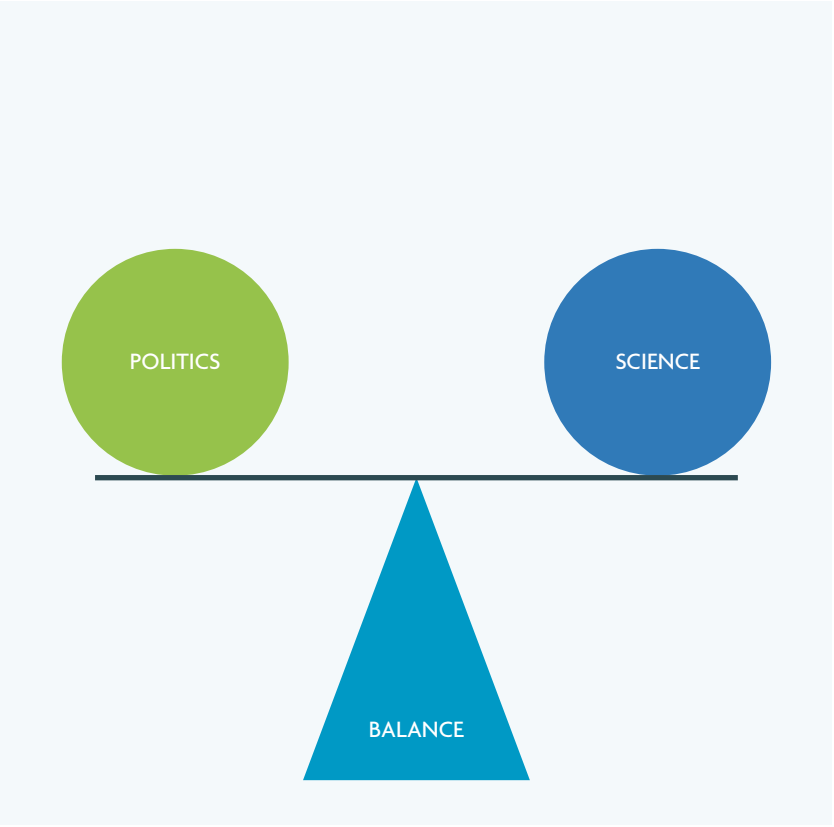
SCIENCE-POLICY INTERACTIONS: A BALANCING ACT

These real-world practices illustrate that scientists and policymakers interact with different forms of closeness. Scientists and policymakers operate in two separate worlds where communication is generally unidirectional towards policymakers. Science-Policy Interaction has therefore primarily the form of science communication. But there are also real-world practices where scientists and policymakers operate in one dynamic world and are in close interaction. These forms are mainly participatory knowledge development as, for instance, in transdisciplinary projects (Van Ernst et al. 2014). The closeness vs. separation between scientists and policymakers goes hand in hand with a well-known dilemma.

When science and policy are too close, science may lose its legitimacy. But when science and policy are two separate worlds, the use of scientific results may be hampered. This tension cannot be resolved and a balancing act is needed. Ass Sundqvist et al. (2017) indicated:

THERE IS NO SINGLE BEST SOLUTION.

When you select an inspiring real-world practice to apply in your context, you are mainly guided by the dominant view on the close relationship between science and policy in your specific context. It is through experimentation and learning that the tension is managed further (Sundqvist et al. 2017). Finally, a combination of different Science-Policy Interactions is often useful at different points in the interaction process.



ACKNOWLEDGMENT

This guidance document has been prepared as part of a European Union-funded project (Grant Agreement No 776609). The authors would like to express their gratitude to Alexandre Fernandes and Petra Manderscheid (JPI Climate secretariat) for their support in scoping out the survey, and to Dr. Daniel Puig (Technical University of Denmark) for his advice and support in designing and implementing the survey. Thanks are also extended to the Centre National de la Recherche Scientifique (France) for the review of the literature upon which the survey was based. Lastly, the authors are indebted to the IPCC Secretariat, which distributed the survey to all IPCC focal points, and to the 19 respondents who generously provided their experiences and knowledge. Not least, the authors would like to acknowledge Dr. Hans Sanderson (Aarhus University) and José Romero (Swiss national focal point for the IPCC and for IPBES), for their availability to be interviewed. We would also like to thank our colleague Annemarie Groot for reviewing.

REFERENCES

Federal Democratic Republic of Ethiopia, (2011) *Ethiopia's Climate-Resilient Green Economy – UNDP.* https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=677&menu=1515

Groot, A., K. Hollaender, and R. Swart (2014). *Productive Science-practice Interactions in Climate Change Adaptation. Lessons from practice. A CIRCLE-2 research policy brief*. Foundation of the Faculty of Sciences, Lisbon, Portugal.

Hanger S., Pfenninger S. Dreyfus M., Patt A. (2013) *Knowledge and information needs of adaptation policymakers: a European study in Regional Environmental Change. 13. Pp. 91-101.*

Hegger D., Lamers M., Van Zeijl-Rozema A., Dieperink C. (2012) *Conceptualising joint knowledge production in regional climate change adaptation projects: success conditions and levers for action. In Environmental Science & Policy. 18. 52-65.*

JPI Climate Secretariat (2020) *'JPI Climate Scoping Forum'. December 9 and 10, 2020.*

Schenk N.J., Lensink S.M., (2007) *Communicating uncertainty in the IPCC's greenhouse gas emissions scenarios. Climatic Change. 82. Pp. 293-308.*

Sundqvist G., Gasper D., St. Clair A. L. Hermansen E.A.T., Yearley S., Tvedten I.O., Wynne B. (2017) *One world or two? Science–policy interactions in the climate field, Critical Policy Studies, 12:4, 448–468.*

Van Ernst, W.I., Driessen P.J. and Runhaar H.A.C. (2014) *Towards productive science-policy interfaces: a research agenda. In Journal of Environmental Assessment Policy and Management. 16. 1.*

WAGENINGEN
UNIVERSITY & RESEARCH

SINCERE

JPI Climate

Graphic design by Jeanne Design