

Managing a special report

Reflections on the genesis of the Austrian assessment on health, demography and climate change

National assessment reports provide a broadly accepted scientific base, for instance for climate policy-making. In this Design Report, we reflect on the 18-month process of managing the Austrian Special Report Health, Demography and Climate Change involving more than 60 authors. We discuss the efficacy of management tools and the extent to which the assessment resonated in the policy arena.

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Abstract

The Austrian Panel on Climate Change (APCC) was established in 2016 for the purpose of issuing comprehensive assessment reports and special reports applying standards and procedures like the International Panel on Climate Change (IPCC). All of these assessment reports essentially aim at providing an authoritative synthesis of policy-relevant knowledge, with an emphasis on undisputed statements. In this article, we describe the one-and-a-half-year process of generating the scientific assessment for the *Austrian Special Report Health, Demography and Climate Change (ASR18)*. 60 authors from different disciplinary backgrounds were involved in the writing process, 30 stakeholders were consulted and raised relevant issues in two workshops, and two formal scientific review loops yielded more than 2,000 comments. From the perspective of the process coordinators, we reflect on the efficacy of management tools to achieve a credible, relevant and legitimate outcome. Finally, we outline the extent to which we see our *Special Report* as an effective contribution to incorporating scientific knowledge into policy debates.

Keywords

APCC, assessment, climate change, health policies, science-policy interface

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Background and framing

Assessment reports, such as those published by the Intergovernmental Panel on Climate Change (IPCC), play a crucial role in compiling widely accepted knowledge on climate change as they review and assess the state of knowledge in a given area by broadly involving pertinent scientists with relevant knowledge from different disciplines and with different perspectives (Agrawala 1998). Author teams decide what research to include and exclude, how much space to allocate to each topic and how to deal with conflicting arguments as well as what writing style to use (Van der Sluijs 2010). Ultimately, the assessment process aims at reaching a credible, relevant and legitimate outcome that can be used as a source for policymakers and opinion leaders in public and private domains (Siebenhüner 2002) (see box 1).

The Austrian Panel on Climate Change (APCC) initiates the preparation of general assessment reports on climate change as well as special reports on specific topics. The APCC is an analogous body to the IPCC on the country level of Austria. It consists of five scientists and experts but operates without government involvement. Reports are funded and commissioned through the governmental *Climate and Energy Fund*. Acting as the supervisory body for the assessment reports, the APCC ensures compliance with the APCC standards for assessment reports.¹ According to these standards, the entire scientific community is invited to contribute, and assessment reports are subject to a multi-level stakeholder and review process. The *Austrian Special Report Health, Demography and Climate Change (ASR18)* was the first of its kind released in 2018 (APCC 2018).

The following *Design Report* is a self-reflection based on the authors' experience as the two process coordinators of the *Special Report*. First, we provide some background on the goals, the structure and the process of preparing the *Special Report*. Then, we present a survey conducted among the authors involved in

1 Cf. <https://ccca.ac.at/en/climate-knowledge/apcc/apcc-products-and-standards>.

the process. Based on our reflections, we draw lessons so that we can provide guidance to coordinators and authors of future comprehensive assessment and special reports on climate change in Austria and elsewhere that can also be applied to assessments of other societal challenges. Finally, we discuss the efficacy in the policy arena ex-post.

Goals, structure and process

Goals and success criteria

The call of the *Climate and Energy Fund* required that applications for special reports address the complex challenges prevailing at the interplay between climate, health and demographic trends in Austria. With regard to the process, the APCC's formal standards (see below *Discussing efficacy of management tools*, p. 97) provided guidance for managing multiple draft stages and review phases including stakeholder consultation. The co-chairs and coordinators set four goals for the *Special Report*, namely 1. a well-integrated *compilation* and consolidation of the knowledge of complex topics, 2. the fruitful *networking* of science and stakeholders, 3. actionable knowledge that provides good *guidance* for action, and 4. national and international *visibility*.

To guide the process, as coordinators, we implemented criteria related to the success of an assessment drawing on the literature (cf. Conrad 2009, Siebenhüner 2002, Cash et al. 2002) and shared them with the authors (table 1, p. 96). While relevance, credibility and legitimacy may have a variety of meanings in science-policy interfaces (Heink et al. 2015), we understand and use them as quality attributes that, when established at appropriate levels, increase the probability to create “ownership” of the process (Kunseler et al. 2015), to enable trustworthy knowledge (Gustafsson 2019) and to create durable action (Cash and Belloy 2020). However, tensions between being inclusive (legitimacy) and providing transformative knowledge (relevance) can be expected (Van der Hel 2016), since inclusiveness of stakeholders with vested interests or even scientists in the sphere of these stakeholders can impede certain options for action. Trade-offs might also occur when different expectations exist, such as timely outputs versus in-depth assessments, or supply-driven versus demand-driven results (Sarkki et al. 2014).

Structure

The *Special Report* was structured, among other things, according to the expertise involved and the defined roles. Thus, three co-chairs had the scientific responsibility for the entire *Special Report* and its dissemination. One of the co-chairs, together with a process manager, hereafter called the two process coordinators, who are the authors of this article, were responsible for managing the various steps in the genesis of the *Special Report*, including meeting deadlines and ensuring satisfactory exchange processes amongst authors, reviewers and stakeholders. Each chapter had two coordinating lead authors, four to five lead authors and one responsible co-chair. The coordinating lead au-

BOX 1: Intergovernmental Panel on Climate Change assessment reports

As a background for the *Austrian Special Report Health, Demography and Climate Change*, we summarize the key aspects that are relevant to our process management:

The Intergovernmental Panel on Climate Change (IPCC) prepares assessment reports which compile, summarize and assess the most up-to-date state of knowledge on climate change with the aim of providing an authoritative synthesis of undisputed, policy-relevant knowledge (Brooks et al. 2014). They are generated in multi-level processes that systematically appraise and synthesize the evidence and robustness of the state of knowledge. They include the overall scientific community with researchers from different backgrounds. Authors are organized in formalized roles, each with specific responsibilities. Reports are reviewed several times and a panel oversees the compliance with process standards.

Assessment reports make statements on the “level of agreement/consensus” and the “amount of evidence” using a graduated scale from low to high (Moss and Schneider 2000, p. 45). The premise is being “policy relevant but not policy prescriptive” (Shaw and Robinson 2004, p. 85).

While the IPCC has gained decent authority, several criticisms have been voiced throughout its history discussing its norms and practices, the role of scientists and governments, consensus and its representation of uncertainty, its impact on public discourse and knowledge production, and emerging ideas of global environmental governance (Edenhofer and Seyboth 2013, Haas and Stevens 2011, Hulme and Mahony 2010). The bias towards both geophysical sciences and developed countries has been criticized and led to a better inclusion of social sciences and developing countries over time (Vasileiadou et al. 2011). In addition, grey literature and indigenous knowledge is hardly covered, since issues are solely seen through the scientific lens of peer reviewed articles (Ford et al. 2016, Hulme et al. 2011).

thors, together with the co-chairs, shared the overall scientific responsibility for the *Special Report*. Their main task was to coordinate the compilation of a chapter and the handling of review comments. The lead authors worked in teams to produce the content of the chapter and were responsible for the production of designated sections and the chapter as a whole. Contributing authors provided smaller parts and were responsible only for their own contribution. The compilation process was supported by three junior researchers. An independent review manager handled the review process. Review editors ensured that all comments were adequately addressed and advised authors on how to handle controversial issues.

Altogether, more than 60 scientists (38% females, 62% males) from diverse backgrounds contributed as authors. Their recruitment was started by a small group of authors via open calls in scientific communities. At the same time, scientists who had published at the intersection of climate and health or individuals in expert organizations who were seen as crucial to improve

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2 The latter being the process of enabling people to gain more control over, and improve, their health.

TABLE 1: Success criteria for assessments: credibility, relevance, and legitimacy (own compilation based on literature).

CRITERION	QUESTION	COMMENT	DESCRIPTION
CREDIBILITY	<i>Is the information credible, and which authorities are involved?</i>	refers to the report document	Stakeholders and scientists consider an assessment to be credible “when the facts, causal beliefs and options outlined in the assessment are regarded as ‘true’ or, at least, worth using instead of other, competing information” (Siebenhüner 2002, p. 413). Statements need to be perceived as meeting the standards of scientific plausibility and technical adequacy. Credibility is challenged when uncertainty and scientific disagreement about facts or causal relationships are considerable (Cash et al. 2002).
RELEVANCE	<i>Is the information relevant for decision-making?</i>	refers to process and report	Refers to how relevant information is to decision-making bodies, stakeholders or “publics” (Cash et al. 2002, p. 2), and whether the informational needs of policymakers for decision-making situations are to be satisfied (Siebenhüner 2002).
LEGITIMACY	<i>Is the process fair, and how are concerns put on the table?</i>	refers to process	Stakeholders and scientists need to perceive the process as unbiased, meeting the standards of political and procedural fairness, and considering appropriate values, concerns and different perspectives. Audiences judge legitimacy on who participated and who did not, the processes for making these choices, and how information is produced and disseminated (Cash et al. 2002).

the link between the two fields in future were approached. As demographers were important for this link, they were encouraged to participate as well. After a few first open meetings for proposal development, about two thirds of the authors were nominated. Others joined during the scoping phase by direct invitation from authors already involved. In addition to the authors, another 30 scientists were involved as reviewers. An open call for stakeholder participation was announced, and 30 stakeholders from public and private sectors followed our invitation. They commented on drafts, raised relevant issues and participated in two consultative workshops. The first workshop focused on the comprehensive coverage of topics and the second on the relevance of topics and key messages. In total, more than 150 people were involved.

To carry out the assessment, a steering group consisting of the three co-chairs, the process manager and a junior scientist was set up. Three of the five members of the steering group were women. This group also had meetings with the APCC for process and quality control.

Based on a mental model representing the complex relationship between climate and health, the steering group together with the authors structured the report into chapters (figure 1). Authors were asked to contribute to the various chapters. The author group of the chapter on *Changing health determinants* was the most diverse one involving climatologists, demographers, geographers, sociologists, economists and experts for the health care system. The next chapter on *Health effects of climate change* was written by a more homogeneous group of authors like medical scientists specializing in environmental health, nutrition, psychiatry, epidemiology as well as public health and health promotion². The chapter on *Measures relevant to health and climate* involved scientists from environmental impact and risk assessments, (social) ecology, environmental history, environmental health and health promotion. A climatologist and a health promotion researcher coordinated the final chapter on *Synopsis and conclusions*. The mental model was proposed by the co-chairs

and approved at the first workshop with the authors. With regard to scientific disciplines, the three co-chairs were rooted in environmental health, demography and social ecology.

Process

The *Special Report* pursued a process with given APCC standards and the success criteria of table 1, yet smaller in scope than the IPCC reports. According to the APCC standards (see below *Discussing efficacy of management tools*, p. 97), we as coordinators followed a step-by-step process including phases of writing drafts, stakeholder consultations and scientific review (figure 2, p. 98). In addition, we conducted a survey among the authors at the very beginning to understand whether there was sufficient consensus on the specific nature of the report (see next section). As a national report, the *Special Report* is available in German, while the *Synthesis Report* and the *Summary for Policymakers (SPM)*³ were finalized both in German and English to reach out to the transnational health and climate community.

Reflections and lessons learned

Verifying a common understanding

From the beginning, it was clear that we had to coordinate an assessment with scientists from various disciplines with differing science cultures and evaluation conventions (cf. Bergmann et al. 2005). We therefore used questionnaires to ask the authors whether the goals and success criteria were shared. The survey was conducted at the beginning, when 30 scientists were participating in the writing process, and all but the five steering group members (n=25) were invited to respond. The response rate was 80% (n=20). Our survey revealed an encouraging picture regarding the acceptance of goals and criteria (figure 3, p. 99).

³ <https://austriaca.at/8430-0>

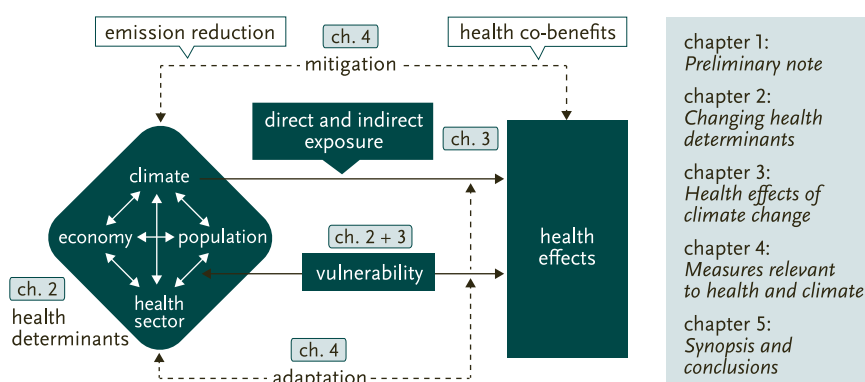


FIGURE 1: Mental model of the complex relationship between climate and health used to structure the content of the Austrian Special Report Health, Demography and Climate Change (ASR18).

chapter 1:
Preliminary note

chapter 2:
Changing health determinants

chapter 3:
Health effects of climate change

chapter 4:
Measures relevant to health and climate

chapter 5:
Synopsis and conclusions

Only visibility had a low approval rate (60%), which did not concern us much as coordinators, since dissemination was not a pressing issue at the start of the process. Nevertheless, this approval rate seemed sufficient to us with no further communication efforts required.

Regarding motivators and demotivators, the authors stated that they had a high level of personal interest in, and commitment to, the topic and that they were attracted by high-quality collaborations with colleagues and disciplines and by the expected publications ensuring broad public outreach and providing usable knowledge for decision-makers. What would discourage them was a lack of cross-chapter collaboration between writing teams, weak process management or inefficient bureaucracy, attempts of individual authors to achieve recognition at the cost of others, political interference or other unilateral top-down decisions, and failure to be relevant to political and societal target groups. For us as coordinators, the survey reaffirmed the need for coordination to pay attention to cross-chapter discussions in order to reach a common understanding on overlapping issues as well as transparent and participatory decision-making.

Discussing efficacy of management tools

In the following section, we briefly describe the management tools employed and discuss their efficacy. The tools described as “formal” are standardized requirements in the APCC guidelines¹. In table 2 (p. 99), we summarize how we ourselves as coordinators assess the contribution of the management tools to achieving the goals and success criteria. We discuss the efficacy of management tools with regard to the *Special Report*, however, the findings are potentially applicable to any other assessment report.

APCC quality control (formal): The coordinators and the co-chairs were asked by the APCC to regularly and systematically reflect on the progress and challenges. As required by the standards, the steering group met regularly with the APCC to report on the state of the report, the review and stakeholder process, on the next steps and on challenges. The APCC thus monitored the quality of the process and served as a sounding board, which was extremely helpful.

Steering group meetings: They were the centerpiece for us as process coordinators to discuss all aspects relevant for managing the *Special Report*. Being diverse in itself, the steering group helped to better understand challenges and to find appropriate responses in many circumstances. For instance, guidelines for the use of language were discussed and approved, since some disciplines refrained from using commonly understood terms (as they are seen as non-scientific). Furthermore, a concrete and sensitive intervention to improve a textbook-like chapter neglecting the interaction between health, demography and climate change inherent in the topic was carefully discussed and implemented by one of the co-chairs. Finally, co-chairs played a reconciling role to find formulations approved by all disciplines involved, identifying those parts where deviating literature must be explicitly described as dissenting in the evaluative statements. One example was the different views regarding economic growth, which was seen as necessary by some scientists and as critical by others.

Author meetings: The process coordination started with a group of 30 authors with whom we had regular plenary meetings. It was very important to create the possibility of getting to know each other and to provide and discuss information about the process, the nature of the *Special Report*, the writing style and how to communicate uncertainties. In addition to the plenary sessions, we gave ample space for chapter meetings. Furthermore, we encouraged topic-centered working groups to address cross-chapter issues and provided opportunities for designated plenary sessions for mutual presentation and the review of key messages.

Informal internal review: After a discussion in the steering group, we decided to open up the first round of reviews for all authors involved and encouraged them to comment on each other’s chapters. This informal review was an important step for achieving better integration of chapters from the very beginning of the process.

Review and review editing (formal): The review process was managed externally by the Climate Change Centre Austria (CCCA) to ensure independence from the group responsible for writing

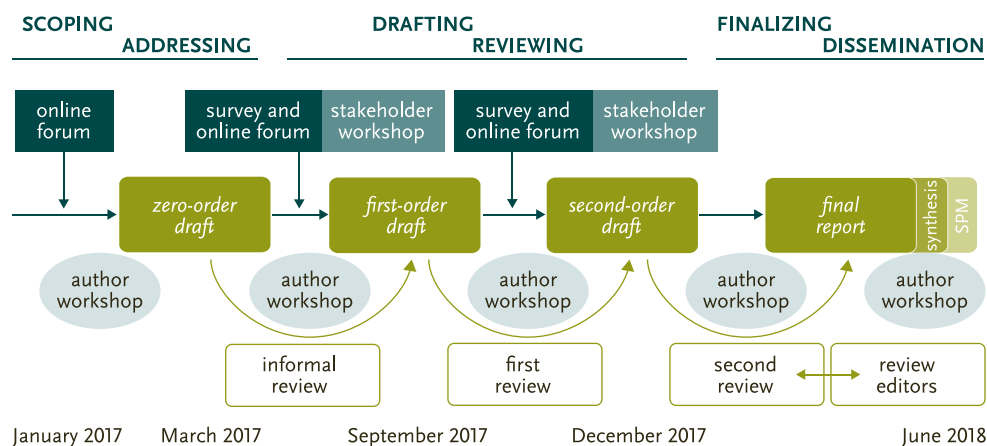


FIGURE 2: Multi-stage process of compiling the *Austrian Special Report Health, Demography and Climate Change (ASR18)*. SPM = Summary for Policymakers.

the report. The two formal rounds of reviews resulted in 250 comments for the *first-order draft* and 2,200 comments for the *second-order draft*. Initially, the comments focused mainly on editing, such as typos, rather than reviewing text. After consultation with the APCC, we asked reviewers with a broad background of experience, alongside reviewers with special expertise, to comment on the overall framing, the storyline, clarity of messages and relevance of the *Special Report*. In the end, the comments provided new information, added clarity or contributed to a better framing of messages and triggered increased communication amongst authors, which we consider a very positive effect. Especially where authors did not agree with the comments, a very constructive review editing process helped to strengthen the *Special Report*.

Early key messages: After the positive experience with the informal review process, we as coordinators were surprised how diverse the different chapters of the *first-order draft* were in terms of structure, writing style, compliance with requirements and cross-chapter references. We therefore decided to use the author workshop after the finalization of the *first-order draft* to ask chapter authors to develop and present their key messages and to receive feedback from other authors. This approach proved to be very useful and we recommend that future assessments start this exercise at an even earlier stage.

Stakeholder consultation (formal): We published a call for participation of stakeholders. Using a broad and inclusive definition of stakeholders, we asked authors, network coordinators at the national and regional level as well as scientific project leaders who had already worked with practitioners and official representatives in the past to name organizations and contacts in the climate and health sectors as well as persons from their networks they considered valuable to include in the process. In our capacity as coordinators, we identified high-priority stakeholders such as climate coordinators of the federal provinces and public officials from federal ministries, public health officials, health care organizations, NGOs in the fields of health and cli-

mate, interest groups of the elderly, sick⁴ and children and made sure, together with the Climate Change Centre Austria, that all the different groups were included. Altogether, the stakeholders were unanimous in their support for the *Special Report*, with no frictions between the different groups. In fact, they welcomed closer interactions. The main advantage of the scrutiny by the stakeholders, which proved to be very productive, was that they were not trapped in the perspectives of their disciplines and fostered cross connections between chapters and issues. From the standpoint of the process coordination, we consider this unexpected and beneficial.

Sign-off letters (formal): With the sign-off letters, co-chairs and coordinating lead authors approve the entire report, lead authors approve their chapters and contributing authors approve that their contribution has been used correctly. Together with the letter, authors have to declare that they have no conflict of interest. The sign-off procedure took place in connection with the approval of the summary for policymakers and synthesis, which was generated only by a small writing team. While there were some comments regarding the editing, all the authors provided their approval. This final step formed a sound base for dissemination activities.

Release conference: The release conference in connection with a press conference had a strong resonance. The decisive factor was the high level of interest shown by the minister responsible for sustainability, which enabled the release and the press conference to be professionally organized by a public relations agency with a high number of participants and press coverage, including the invitation of a co-chair to a live interview on the main news program on national television. The release conference allowed for an integrative conclusion where co-chairs and coordinating lead authors presented the different aspects of the assessment.

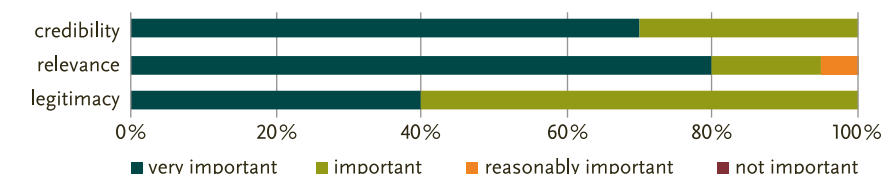
⁴ "Sick" refers here to patient self-help groups.

How important is the *Special Report* with respect to the following goals?



FIGURE 3: Authors' responses (n=20) on goals and success criteria of the *Austrian Special Report Health, Demography and Climate Change (ASR18)* pursued by the process coordinators. The survey was conducted at the beginning of the process.

How important are the following criteria for the success of the *Special Report*?



Ex-post dissemination activities: After the release conference, an overwhelming interest, in particular in the health community, led to more than 100 invitations to workshops, professional and scientific conferences and invitations to single authors to contribute to book chapters. Booklets by the Austrian environmental protection agency for health professionals were expanded with content from sections of the *Special Report* (see below *Efficacy in the policy arena*, p. 100).

Comparison of our reflections with insights from other assessments

We have learned that early formulation of key messages is important for consistency and early detection of dissent in order to formulate a consensus in time. Other reflections suggest involving communication specialists from the beginning of the drafting process to promote more effective communication for diverse audiences (Connors et al. 2022, Lynn and Peeva 2021). As for conclusions in the IPCC assessments, especially where substantial uncertainties exist, Mach et al. (2017) find that revised

guidance for author teams that incorporate expert judgment improved the development of balanced messages on scientific evidence across disciplines. Our experience confirms this finding, while involving communication specialists too early could shift the attention to simplification of messages instead of deeper understanding of different, sometimes conflicting scientific perspectives.

Another experience from IPCC demonstrates that chapter scientists, who are mainly scientists in their early career stage, can provide substantial technical and logistical support so that authors can focus on their core scientific tasks (Schulte-Uebbing et al. 2015). We involved a small number of junior scientists and found their support extremely useful. According to the co-chairs or coordinating lead authors, the time taken for their proper introduction to the tasks and guidance was rewarding for the report and provided qualifications for the scientists.

With regard to stakeholder consultation, experience has shown that inclusiveness across geographies and stakeholders does not per se guarantee greater credibility, salience and legiti-



TABLE 2: Assessment of the efficacy of the different management tools based on the experience of the two process coordinators. Efficacy of management tools in relation to goals and success criteria. + satisfactory, ++ good, +++ very good intended effects, () unintended positive side effects.

MANAGEMENT TOOLS	GOALS				SUCCESS CRITERIA		
	compilation	networking	guidance	visibility	credibility	relevance	legitimacy
APCC quality control	+		+		++		+++
steering group meetings	+++	+	+		+++		
author meetings	+++	++	++		+++		
informal internal review	+++				+++	+	
review and review editing	(++)					++	+++
early key messages	+++				+++	+	
stakeholder consultation	(+++)	++	++	++	+	+++	+
sign-off letters	++				++		++
release conference		++	++	+++	+	++	++
dissemination activities		+++		+++		+++	

macy of the knowledge production process as the stakeholders' available resources and capacities limit the practical implementation of inclusiveness (Yamineva 2017). In our case, this could particularly be the case for self-help groups that have little resources and are spread across the country. This issue needs further attention in future assessment reports.

Lynn and Peeva (2021) describe innovations in IPCC outreach activities, such as targeting interested stakeholders beyond the core audience of policymakers. Based on our experience, such activities are extremely important but generally underfinanced. Consequently, follow-up activities depend on the motivation of key scientists and the question whether they provide credits useful for their career development.

Efficacy in the policy arena

Even five years after the publication of the *Special Report*, experts involved in policymaking regarded the assessment as credible, relevant and did not question its legitimacy, which was very beneficial for further developments. With regard to efficacy, the results were more mixed. While the first *Austrian Assessment Report* on climate change published in 2014 (APCC 2014, see also Kromp-Kolb et al. 2014) had not even been mentioned by a government-commissioned preparatory study for an integrated energy and climate strategy (*Green Paper*) in 2016 (Plank et al. 2021), the prominent presentation of the *Special Report* together with the then minister for sustainability was a very visible support for counteracting climate-change-related health risks and for utilizing health co-benefits of climate action. Health then appeared more prominently in the *Austrian Climate and Energy Strategy* called *#mission2030* (BMNT and BMVIT 2018), at least with regard to mobility, and in the more technical *Integrated National*

Energy and Climate Plan (BMNT 2019) for air pollution, active mobility and heat.

While elections led to a new government and the Corona pandemic has dominated health policy, stakeholders and especially experts involved in policymaking have shown an increased interest in the links between health and climate. Official invitations to the co-chairs to participate in government committees on the Austrian Health Targets followed, as did other invitations from stakeholders or municipalities to discuss strategic questions for future action. However, health sector stakeholders have become far more attentive to climate issues than stakeholders in the climate sector to health issues. It can be assumed that the key to this development was the strategic involvement of health experts from health institutions as authors in the *Special Report*. A more recent outcome that can be linked to these activities, at least indirectly, is the establishment of the Competence Centre for Climate and Health at the governmental Austrian National Public Health Institute. In retrospect, the broad involvement of experts and the careful process were a very important basis, however, the continued commitment of the authors and stakeholders after publication was equally necessary to make an impact in various arenas.

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References

- APCC (Austrian Panel on Climate Change). 2014. *Österreichischer Sachstandsbericht Klimawandel 2014: Austrian Assessment Report (AAR14)*. Wien: Verlag der Österreichischen Akademie der Wissenschaften.
- APCC. 2018. *Österreichischer Special Report Gesundheit, Demographie und Klimawandel (ASR18)*. Wien: Verlag der Österreichische Akademie der Wissenschaften.
- Agrawala, S. 1998. Context and early origins of the Intergovernmental Panel on Climate Change. *Climatic Change* 39: 605–620. <https://doi.org/10.1023/A:1005315532386>.
- Bergmann, M. et al. 2005. *Qualitätskriterien transdisziplinärer Forschung*. ISOE-Studientexte 13. Hamburg: Institut für sozial-ökologische Forschung.
- BMNT (Bundesministerium für Nachhaltigkeit und Tourismus). 2019. *Integrierter nationaler Energie- und Klimaplan für Österreich*. www.bmk.gv.at/dam/jcr:032d507a-b7fe-4cef-865e-a408c2f0e356/Oe_nat_Energie_Klimaplan.pdf (accessed March 10, 2023).
- BMNT, BMVIT (Bundesministerium für Verkehr, Innovation und Technologie). 2018. *#mission2030 – Die Klima- und Energiestrategie der österreichischen Bundesregierung*. www.ztk.at/dl/mission2030_Klima-und-Energiestrategie.pdf (accessed March 14, 2023).
- Brooks, T. M., J. F. Lamoreux, J. Soberón. 2014. IPBES ≠ IPCC. *Trends in Ecology & Evolution* 29/10: 543–545. <https://doi.org/10.1016/j.tree.2014.08.004>.
- Cash, D. et al. 2002. *Salience, credibility, legitimacy and boundaries: Linking research, assessment and decision making*. KSG Working Papers Series RWP02-046. <https://doi.org/10.2139/ssrn.372280>.
- Cash D. W., P. G. Belloy. 2020. Salience, credibility and legitimacy in a rapidly shifting world of knowledge and action. *Sustainability* 12/18: 7376. <https://doi.org/10.3390/su12187376>.
- Connors, S. L. et al. 2022. Co-developing the IPCC frequently asked questions as an effective science communication tool. *Climatic Change* 171/10. <https://doi.org/10.1007/s10584-021-03248-0>.
- Conrad, J. 2009. Climate research and climate change: Reconsidering social science perspectives. *Nature and Culture* 4/2: 113–122. <https://doi.org/10.3167/nc.2009.040201>.
- Edenhofer, O., K. Seyboth. 2013. Intergovernmental Panel on Climate Change (IPCC). In: *Encyclopedia of energy, natural resource, and environmental economics*. Edited by J. F. Shogren. Amsterdam: Elsevier. 48–56. <https://doi.org/10.1016/B978-0-12-375067-9.00128-5>.
- Ford, J. D. et al. 2016. Including indigenous knowledge and experience in IPCC assessment reports. *Nature Climate Change* 6/4: 349–353. <https://doi.org/10.1038/nclimate2954>.
- Gustafsson, K. M. 2019. Learning from the experiences of the Intergovernmental Panel on Climate Change: Balancing science and policy to enable trustworthy knowledge. *Sustainability* 11/23: 6533. <https://doi.org/10.3390/su11236533>.
- Haas, P., C. Stevens. 2011. Organized science, usable knowledge, and multilateral environmental governance. In: *Governing the air: The dynamics of science, policy, and citizen interaction*. Edited by R. Lidskog, G. Sundqvist. Cambridge, MA: MIT Press. 125–161. <https://doi.org/10.7551/mitpress/9780262016506.003.0005>.
- Heink, U. et al. 2015. Conceptualizing credibility, relevance and legitimacy for evaluating the effectiveness of science-policy interfaces: Challenges and opportunities. *Science and Public Policy* 42/5: 676–689. <https://doi.org/10.1093/scipol/scu082>.
- Hulme, M., M. Mahony. 2010. Climate change: What do we know about the IPCC? *Progress in Physical Geography* 34: 705–718. <https://doi.org/10.1177/0309133310373719>.
- Hulme, M. et al. 2011. Science-policy interface: Beyond assessments. *Science* 333/6043: 697–696. <https://doi.org/10.1126/science.333.6043.697>.
- Kromp-Kolb, H. 2014. Österreichischer Sachstandsbericht Klimawandel 2014. *GAIA* 23/4: 363–365. <https://doi.org/10.14512/gaia.23.4.17>.
- Kunseler, E. M. et al. 2015. The reflective futures practitioner: Balancing salience, credibility and legitimacy in generating foresight knowledge with stakeholders. *Futures* 66: 1–12. <https://doi.org/10.1016/j.futures.2014.10.006>.
- Lynn, J., N. Peeva. 2021. Communications in the IPCC's *Sixth Assessment Report* cycle. *Climatic Change* 169: 18. <https://doi.org/10.1007/s10584-021-03233-7>.
- Mach, K. J. et al. 2017. Unleashing expert judgment in assessment. *Global Environmental Change* 44: 1–14. <https://doi.org/10.1016/j.gloenvcha.2017.02.005>.
- Moss, R. H., S. H. Schneider. 2000. Uncertainties in the IPCC TAR: Recommendations to lead authors for more consistent assessment and reporting. In: *Guidance papers on the cross cutting issues of the Third Assessment Report of the IPCC*. Edited by R. Pachauri, T. Taniguchi, K. Tanaka. Geneva: World Meteorological Organization. 33–51. http://stephenschneider.stanford.edu/Publications/PDF_Papers/UncertaintiesGuidanceFinal2.pdf (accessed March 10, 2023).
- Plank, C., W. Haas, A. Schreuer, J. Irshaid, D. Barben, C. Görg. 2021. Climate policy integration viewed through the stakeholders' eyes: A co-production of knowledge in social-ecological transformation research. *Environmental Policy and Governance* 31/4: 387–399. <https://doi.org/10.1002/eet.1938>.
- Sarkki, S. et al. 2014. Balancing credibility, relevance and legitimacy: A critical assessment of trade-offs in science-policy interfaces. *Science and Public Policy* 41/2: 194–206. <https://doi.org/10.1093/scipol/sct046>.
- Schulte-Uebbing, L. et al. 2015. Chapter scientists in the IPCC AR5-experience and lessons learned. *Current Opinion in Environmental Sustainability* 14: 250–256. <https://doi.org/10.1016/j.cosust.2015.06.012>.
- Shaw, A., J. Robinson. 2004. Relevant but not prescriptive: Science policy models within the IPCC. *Philosophy Today* 48/9999: 84–95. <https://doi.org/10.5840/philtoday200448Supplement9>.
- Siebenhüner, B. 2002. How do scientific assessments learn? Part 1. Conceptual framework and case study of the IPCC. *Environmental Science & Policy* 5/5: 411–420. [https://doi.org/10.1016/S1462-9011\(02\)00050-3](https://doi.org/10.1016/S1462-9011(02)00050-3).
- Van der Hel, S. 2016. New science for global sustainability? The institutionalisation of knowledge co-production in *Future Earth*. *Environmental Science & Policy* 61: 165–175. <https://doi.org/10.1016/j.envsci.2016.03.012>.
- Van der Sluijs, J. P. 2010. Uncertainty and complexity: The need for new ways of interfacing climate science and climate policy. In: *From climate change to social change: Perspectives on science-policy interactions*. Edited by P. Driessen, P. Leroy, W. van Vierssen. Utrecht: International Books. 31–49.
- Vasileiadou, E., G. Heimeriks, A. C. Petersen. 2011. Exploring the impact of the IPCC Assessment Reports on science. *Environmental Science & Policy* 14/8: 1052–1061. <https://doi.org/10.1016/j.envsci.2011.07.002>.
- Yamineva, Y. 2017. Lessons from the Intergovernmental Panel on Climate Change on inclusiveness across geographies and stakeholders. *Environmental Science & Policy* 77: 244–251. <https://doi.org/10.1016/j.envsci.2017.04.005>.



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