2

Origin and Design

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Overview

This chapter discusses the precursors and origin of the Intergovernmental Panel on Climate Change (IPCC), with a particular focus on the developments that led to the panel's intergovernmental design. When the IPCC was established in 1988 as an intergovernmental body, the design choice was both novel and risky and came to have significant consequences for the panel's subsequent operation and impact. The chapter summarises some prominent events from the early scientific discovery of a possible human influence on global climate to the various international science–policy initiatives of the 1970s and 1980s that preceded the IPCC's establishment. It then draws attention to a set of factors that can explain the decision to deliberately establish the IPCC as an inter*governmental* body.

2.1 Introduction

When the IPCC was established in 1988 as an intergovernmental body, this design choice had significant consequences for the panel's operation and impact (see, for instance Agrawala, 1998a,b). On the one hand, the IPCC's intergovernmental status gave policymakers a direct channel of influence on its work, thus potentially undermining the panel's scientific authority (Agrawala, 1998a; Bolin, 2007). On the other hand, this design also provided a direct and powerful channel of communication between governments and the scientific community. In a conversation with Agrawala, Jean Ripert, chairman of the Intergovernmental Negotiating Committee (INC), stated that 'the intergovernmental nature of the IPCC was in large part responsible for educating many government bureaucrats about the problem which made them more willing to come to the negotiating table' (Agrawala, 1998a: 611). In 2022, moreover, it is possible to speculate that this design feature has also been a contributing factor to the IPCC's subsequent success

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in keeping the climate issue on the international political agenda and in maintaining its relevance in the climate policy debate.

It was not obvious that an intergovernmental design would be appropriate for a scientific assessment body such as the IPCC. First, there was no precedence for this level of policy involvement in the large-scale scientific assessment processes that preceded the IPCC. Second, while controversial (then and now), it is a commonly held belief that science and politics are and should be separated (see, inter alia, Jasanoff, 1987; Skodvin, 2000b; Oppenheimer et al., 2019; also see **Chapter 22**). Thus, for example, Haas and Stevens (2011: 131) have argued that 'the more autonomous and independent science is from policy, the greater its potential influence'. So why was an intergovernmental design chosen for the IPCC?

This chapter discusses the origin of the IPCC with a particular focus on the developments that led to the panel's intergovernmental design. After a very brief history of scientific assessments presented in Section 2.2, Section 2.3 explores pathways to the IPCC's establishment. Focusing on the nature of science–policy interactions, the section summarises some of the prominent events from the early discovery of a possible human-induced climate change to the various climate initiatives of the 1970s and 1980s that preceded the IPCC's establishment. Section 2.4 then directs attention more specifically to a set of key factors that can contribute to explaining the decision to establish the IPCC as an intergovernmental body.

2.2 A Very Brief History of Scientific Assessments

Scientific assessments are not a new phenomenon. With the growth of science as a professional activity, Oppenheimer et al. (2019: 3) trace 'early forms of the modern scientific assessment' to the nineteenth century. Interestingly, vaccination was 'a major domain of expert assessment' during this period (Oppenheimer et al., 2019:4). In the United States, scientific assessments were particularly associated with an 'increased alignment of the focus of scientific investigations with the goals of the national security state' after 1945 (Oppenheimer et al., 2019: 9). The aim of early scientific assessments, however, was not very different from modern assessments. This is understood by Oppenheimer et al. (2019: 3) to be 'any attempt to review the state of expert knowledge in relation to a specific question or problem, judge the quality of the available evidence, and offer findings relevant to the solution of the problem'. As assessments became increasingly institutionalised, they also grew in size. Thus by the late twentieth century, when environmental assessments became increasingly common, 'large-scale, organised, and formalised assessments of the state of scientific knowledge had become a feature of the scientific landscape' (Oppenheimer et al., 2019: 9).

Environmental assessments were closely associated with the emergence of environmental multilateralism in the early 1970s (Jabbour & Flachsland, 2017). Jabbour and Flachsland note that an increasing awareness of large-scale environmental phenomena and 'the imperative to comprehend the potential consequences and threats to human well-being' contributed to increased recognition of international scientific cooperation (Jabbour & Flachsland, 2017: 195). Another contributing factor to this development was the establishment of the United Nations Environment Programme (UNEP) in 1972, which was given the explicit mandate 'to facilitate the monitoring, reporting and ongoing assessment of the state of the global environment' (Jabbour & Flachsland, 2017: 195).

International assessments – often referred to as Global Environmental Assessments (GEAs) – became dominant during the late twentieth century. GEAs are 'global' in the sense of possessing at least one, and often all, of three key features: 'they may address environmental problems caused by actors in more than one country; they may address problems that have implications for decision makers in more than one country; or they may simply involve participants from more than one country' (Clark et al., 2006: 4). GEAs include 'iconic examples' such as climate change, stratospheric ozone depletion and biodiversity loss (Jabbour & Flachsland, 2017: 193).

The institutionalisation of scientific assessments from the 1970s and onwards was accompanied by an increasing focus on scientific consensus, which 'appears to provide a way of signalling the agreement of experts about what knowledge is important enough and sufficiently settled to inform policy-making' (Oppenheimer et al., 2019: 11). The notion of consensus as a demarcation criterion between established knowledge and contested knowledge claims is subject to a continuing discussion among science philosophers and students of science and technology studies.[1] One incentive for adopting a consensus approach in environmental assessments is suggested to be that 'expert disagreement, or even the appearance of it, can undermine public confidence in those experts and the science they are trying to communicate' (Oppenheimer et al., 2019: 17). An equally important motivation may be that policymakers and other actors called upon to abate environmental degradation may see lack of consensus as a warrant for delaying action (see **Chapter 19**).

Sometimes the IPCC is erroneously referred to as the *International* Panel on Climate Change (see, for instance, Boehmer-Christiansen, 1995), but the distinction between 'international' and 'intergovernmental' is important. Whereas an *international* (or 'global') scientific assessment usually refers to a process that includes an international group of scientists, an *intergovernmental* design indicates that the members are states, not individual scientists. While scientific participation in an intergovernmental assessment process is often based on scientists' individual

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scientific merit, this choice is left to the discretion of the states that nominate them and implies that scientific merit is not necessarily the key selection criterion used (see **Chapter 7**).

2.3 Pathways to the IPCC Establishment

The discovery of a potential human-induced greenhouse effect is often attributed to the Swedish scientist Svante Arrhenius in 1896 (Agrawala, 1998a; Bolin, 2007). Arrhenius' discovery 'was discussed for a few years, but there was not enough data to tell whether he was right or wrong' (Bolin, 2007: 7; Weart, 2008). Even though climate-related research during the next 50 years consisted of curiosity-driven side projects, important scientific discoveries were made in this period, including Charles Keeling's method and measurement of atmospheric carbon dioxide in 1957 and Roger Revelle's and Hans Suess' conclusion the same year that 'human beings are now carrying out a large scale geophysical experiment' (cited in Weart, 2008: 29).

Within the nascent field of post-World War II climate science,[2] two important modes of science–policy interaction should be mentioned. First, with military funding and support, meteorology was transformed from a subjective undertaking, where forecast weather maps were 'created completely by hand based on the forecaster's best judgement', to '[mathematically computed] prognostic weather maps which predicted large-scale atmospheric motion' (Harper, 2003: 667). Numerical weather prediction techniques are precursors of the more advanced Global Climate Models (GCMs) that have played a key role for our understanding of the climate system since the 1960s (Harper, 2003; Weart, 2008).

Second, an important framework for science–policy interaction in the immediate post-war era was science's role as a vehicle for 'peaceful internationalism', when 'fostering transnational scientific links became an explicit policy of the world's leading democracies' (Weart, 2008: 30–31). In the United States, policymakers reportedly used 'the political neutrality of science and technology as an instrument in the construction of liberal international organizations' (Miller, 2001a: 170). Intergovernmental harmonisation and international cooperation in scientific research were two key modes of interaction that were pursued (Miller, 2001a). The latter was particularly important within geophysics, which is interdisciplinary and international by nature, and which by the early 1950s had become 'intolerably fragmented' (paraphrasing Weart, 2008: 33). As a result of coordinated efforts by a group of prominent scholars, the International Geophysical Year (IGY) of 1957–1958 was launched. Miller describes the IGY 1957–1958 as 'the first large-scale example of intergovernmental cooperation in scientific research and a model for numerous subsequent efforts to address global issues' (Miller, 2001a: 199).

During the 1950s and 1960s there was an increasing awareness that scientific discoveries could be associated with a risk to public health[3] (Jasanoff, 1987; Weart, 2008). The 1972 UN Conference on the Human Environment in Stockholm seems to have been particularly instrumental in bringing about a shift in perceptions of what was at stake with regard to climate change. Bolin notes that the authors of that conference report 'felt that human global interdependence was beginning to require a new capacity for global decisions and attention and that coordinated efforts for overview and research were required' (Bolin, 2007: 28).

In this period, science–policy interactions on climate change were intensified and developed within a context with a distinct intergovernmental component (see, for instance, Agrawala, 1998a; Hulme & Mahony, 2010). In 1961 and 1962, the UN General Assembly agreed to use satellites for weather observations and called on the intergovernmental World Meteorological Organisation (WMO) and the non-governmental International Council of Scientific Unions (ICSU)[4] to collaborate in the further development of the scientific opportunities that had emerged (Bolin, 2007; Zillman, 2009). In November 1967 the Global Atmospheric Research Programme (GARP) was launched with a Joint Organising Committee (JOC) whose members were appointed by the two parent organisations, WMO and ICSU. In 1974, the UN General Assembly called on the WMO 'to undertake a study of climate change', resulting in an expert report issued in 1977 where the 'general scientific expectation of greenhouse warming' was reaffirmed, 'trigger [ing] the WMO decision to convene a World Climate Conference in 1979' (Zillman, 2009: 143). This was swiftly followed by the establishment of the World Climate Programme.

The 1985 Villach conference convened by UNEP, WMO and ICSU has been referred to as a 'historic turning point' (Weart, 2021) in which the forthcoming ICSU assessment by the Scientific Committee on Problems of the Environment (SCOPE 29), edited by Bert Bolin, served as a 'basis for the much-quoted conclusions regarding the prospects of climate change reached by scientists and politicians' in Villach in 1985 (Rodhe, 2013: 3). Following the Villach meeting, UNEP, WMO and the ICSU decided to set up the Advisory Group on Greenhouse Gases (AGGG) in 1986, to which each organisation nominated two experts (Agrawala, 1998a; Bolin, 2007). While the AGGG did important work during the 1980s, key actors such as UNEP, WMO and the United States did not consider the AGGG 'to have the status and composition that would be required in view of the major issues that were emerging' (Bolin, 2007: 47). With the strong support and influence of the United States, the IPCC was established by a resolution of the WMO Executive Council in May 1987, which 'requested the Secretary General of the WMO, "in coordination with the Executive Director of UNEP to establish an *intergovernmental* mechanism to carry out internationally coordinated scientific

assessment of the magnitude, impact and potential timing of climate change"' (Agrawala, 1998a: 611, emphasis in original).[5]

2.4 Factors Contributing to the IPCC's Intergovernmental Design

In a conversation with Bert Bolin in the mid-1980s, Stephen Schneider expressed scepticism that (yet another) scientific assessment would be worth the toll it would take on the scientists providing it. Bolin reportedly responded that 'right now, many countries, especially developing countries, simply don't trust assessments in which their scientists and policymakers have not participated . . . Don't you think global credibility demands global representation?' (Schneider, 1991: 25). Agrawala makes a similar observation with regard to the legitimacy of the AGGG, whose six members reportedly were compared by a close observer, unfavourably, to 'a group of private consultants to the *heads* of WMO, UNEP and ICSU' (Agrawala, 1998a: 613, emphasis in original).

An important motivation for establishing an *international* scientific assessment process on climate change in the late 1980s was thus to ensure the credibility of the conclusions and the legitimacy of the process. However, to fully understand the choice of an *intergovernmental* design for the IPCC we need to take into account the role of the United States (Hecht & Tirpak, 1995; Agrawala, 1998a).

Numerous national scientific assessments had been undertaken by several US governmental bodies and agencies since the mid-1970s (for an overview, see Agrawala, 1998a). As the country with most 'cumulative expertise both in climate change research and in assessments', the United States played an important role in the establishment and design of the IPCC (Agrawala, 1998a: 608). However, the positions on climate change among US agencies and assessment bodies varied significantly with regard to the emphasis given to scientific uncertainty and the need for regulatory policies to respond to the climate threat (Hecht & Tirpak, 1995). There were a number of factors influencing the US position – internal disagreement among US agencies, UNEP activism urging the US to take policy action to address climate change, lack of trust in the AGGG's ability to provide adequate and balanced scientific assessments, and the US Department of Energy's rejection of the Villach report because 'it was not prepared by government officials' (Hecht & Tirpak, 1995: 381). The compromise solution to these tensions was for the US to recommend that 'an "*intergovernmental mechanism*" be set up to conduct scientific assessment of climate change' (Agrawala, 1998a: 611, emphasis in original).

One likely motivation for the United States' promotion of an intergovernmental design for the IPCC was to acquire a stronger degree of control of the process, specifically with regard to potential decisions on governmental action to abate

climate change (Haas & McCabe, 2001). In 1988, there was no strictly political body to which negotiations on this question could be channelled. The United States' involvement in the IPCC's establishment and design ensured it retained a firm grip on this discussion within the IPCC framework (Agrawala, 1998a; Haas & McCabe, 2001). During the first two years of its operation, the IPCC's WGIII was set up to assess 'Response Strategies' under US chairmanship and 'was charged with considering "legal" issues as part of its broader agenda' (Haas & McCabe, 2001: 332). The United States reportedly used this position 'to demonstrate the efficacy of US domestic efforts and the absence of any urgency for further action' (Haas & McCabe, 2001: 332–323). WGI and WGII were in charge of providing the scientific and impacts assessments, respectively.

While the United States contributed to bringing the deeply political issue of climate policy action to the IPCC, this feature may not have been altogether negative for the scientific integrity of the assessment. The old (AR1) WGIII served as an arena for pre-negotiations for the 1991 INC and thus ensured important political deliberations during a period when no such arena existed elsewhere. In this sense, the old WGIII may have served a 'buffer function' during a time when the IPCC process was particularly vulnerable to undue political influence (see Skodvin, 2000b).

2.5 Achievements and Challenges

Scientific assessments have been traced back to the nineteenth century, but international environmental assessments emerged with increasing multilateralism in the 1970s. The intergovernmental design was both novel and risky when it was adopted for the IPCC in 1988. There was no precedent for this design choice in large-scale environmental assessments that preceded the IPCC and it also ran counter to the controversial, but common view (then and now) that science and politics are and should be separate. Politics in the United States seem to have been a decisive factor in the intergovernmental design choice for the IPCC.

With the increasing politicisation of the climate issue during the 1980s, as governmental and economic actors increasingly started to comprehend the potential costs associated with major policy measures to abate climate change, it could be argued that the establishment of the IPCC can be seen as a major achievement in itself. The panel's intergovernmental status provided a direct and powerful channel of communication between governments and the scientific community. This has been important for the panel's work and its continued relevance for international climate policies. The panel's intergovernmental status, however, has also been associated with increased vulnerability to undue political influence – or at least vulnerable to *charges* of such influence. An important tool

for meeting this challenge has been to introduce increasingly specific and detailed rules of procedure (see **Chapter 3**), which have in turn led to the development of an increasingly complicated and time-consuming assessment process. Nevertheless, the IPCC has succeeded in providing six full Assessment Reports and numerous Special Reports on specific topics. It has contributed to keeping the climate change issue on the international political agenda throughout its 34-year existence.

Notes

1 For an account of the various positions in this debate, see for instance Skodvin, 2000b: pp. 29ff; for a discussion of the role of consensus in the IPCC, see Hulme, 2013; for an account of how consensus is developed in the IPCC, see De Pryck, 2021a.
2 Climate science did not exist in the vocabulary at this time. Rather, this research was the aggregate, and often uncoordinated, outcome of activities within distinct disciplines like geophysics, oceanography, meteorology, climatology etc. In fact, the IPCC establishment itself was instrumental in the development of climate science as a more unified academic field (Weart, 2008). For simplicity, however, here I use the term climate science in reference to these activities.
3 An illustrative example is the 1952 London 'killer smog' episode, when 'visibility was so impaired . . . that pedestrians were unable to see their own feet' (Martinez, 2020) and an estimated 12,000 people died from the incident (Bell et al., 2004).
4 In 1998, the International Council of Scientific Unions changed its name to the International Council for Science, but it retained its original acronym.
5 See also IPCC History, retrieved 11 January 2022 from IPCC – Intergovernmental Panel on Climate Change, www.ipcc.ch/about/history/

Three Key Readings

Agrawala, S. (1998). Context and early origins of the Intergovernmental Panel on Climate Change. *Climatic Change*, 39: 605–620. http://doi.org/10.1023/A:1005315532386

Agrawala, S. (1998). Structural and process history of the Intergovernmental Panel on Climate Change. *Climatic Change*, 39: 621–642. http://doi.org/10.1023/A:1005312331477

These two articles – although written more than 20 years ago – still provide a very good overview of the establishment of the IPCC and the first decade of its operation.

Jasanoff, S. (1987). Contested boundaries in policy-relevant science. *Social Studies of Science*, 17: 195–230. http://doi.org/10.1177/030631287017002001

Sheila Jasanoff is a pioneer in advancing understanding of complex science–policy relations in national and international decision-making. While not explicitly about the IPCC, this article presents a perspective that helps to understand some of the mechanisms at work in the IPCC process.