Intergovernmental Expert Consensus in the Making: The Case of the Summary for Policy Makers of the IPCC 2014 Synthesis Report

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Kari De Pryck[*]

Abstract

This article investigates the practices through which consensus is reached on policy-relevant scientific conclusions in intergovernmental assessment bodies. Using the case of the Intergovernmental Panel on Climate Change and the production of the Summary for Policymakers (SPM) of the Synthesis Report published in 2014, it sheds light on the procedural, visual, and rhetorical arrangements in the weaving of an intergovernmental expert consensus. Drawing on ethnographic methods, the main point of the article is that the consensus emerging from the approval of the SPM is best understood as an accumulation and juxtaposition of scientific/diplomatic consensuses. It shows that these consensuses result from a layering of compromises negotiated at various stages in the assessment process and contingent on the issues at stake and the strategies of actors. In this context, consensus is not reached on individual statements but on the document as a whole, as both authors and diplomats seek to have their perspectives reflected. Finally, the article draws attention to the entanglement between the scientific and diplomatic rhetoric in the fabric of the SPM, which tends to construct climate change as a decontextualized and nonpolitical problem.

The Synthesis Report of the Fifth Assessment Report (AR5 SYR) by the Intergovernmental Panel on Climate Change (IPCC) was a much-awaited document. The IPCC chair claimed that it would "provide the roadmap by which policymakers will hopefully find their way to a global agreement to finally reverse course on climate change" (Pachauri 2014b). The SYR was released in 2014 a few months ahead of the twentieth Conference of the Parties (COP20) to the United Nations Framework Convention on Climate Change (UNFCCC), which was to pave the way for the negotiation of the Paris Agreement.

While the actual influence of the IPCC on policy is debated (Compagnon and Bernstein 2017; Lidskog and Sundqvist 2015), its reports remain a key mechanism to communicate expert knowledge to policy makers. A key function of its Summaries for Policymakers (SPMs) is to bring IPCC member states to agree on policy-relevant scientific conclusions,

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under the guidance of the authors who drafted them. The production of SPMs is the main raison d'être of the IPCC as an intergovernmental organization and a unique occasion to bring together international experts and diplomats. Besides, it is commonly accepted that, once endorsed, their content should not be renegotiated in the UNFCCC, thus granting their messages a "perceived binding force" (Riousset et al. 2017, 263). As the IPCC seeks to transform scientific facts into "diplomatic facts" informing international and domestic agendas (Ruffini 2017, 120), it is not surprising that SPM approval is a contentious process.

This article studies the practices and processes through which an intergovernmental expert consensus is reached in the IPCC SPMs. It explores the debates that go into the construction of a *consensual* position on the state of the knowledge, revealing the multiple compromises, conflicts, and asymmetries in the making of governmentally negotiated scientific documents. Such a focus is particularly relevant given the centrality of consensus in the construction of the authority of the IPCC, which claims to speak with a unified scientific and political voice (Pearce et al. 2018).

This article's contribution is twofold. Empirically, it offers a firsthand analysis of the inner workings of the IPCC through an ethnography of the approval of the SPM of the AR5 SYR. It draws on direct observation of the fortieth session of the IPCC (IPCC-40), personal accounts from IPCC participants, interviews with insiders, documents from the IPCC website, and the Earth Negotiations Bulletins. Theoretically, it proposes an understanding of the SPM as an assemblage of negotiated compromises, black-boxed at multiple stages by various procedural, visual, and rhetorical strategies. The final version of the SPM does not necessarily resolve all disagreements but rather lays out the multiple and sometimes contradictory interests of both experts and government delegates in a document that stands as the position of the IPCC *as a collective group*. This contrasts with a definition of consensus as the reflection of scientific evidence or as the convergence toward a unanimous diplomatic position.

In the first part of the article, I review the literature on the role of expert knowledge in global environmental politics and discuss theoretical considerations relevant to studying the making of intergovernmental expert consensus. In the second part of the article, I discuss the role of the IPCC in the climate regime and the writing process leading up to the approval of the SPM of the AR5 SYR. The core of the article is dedicated to the analysis of the procedural, visual, and rhetorical strategies used to reach a general agreement on the SPM.

The Production of Expert Knowledge in Global Environmental Politics

The literature on global environmental problems has fostered a rich understanding of the role of expert knowledge in establishing and maintaining international cooperation (Jasanoff and Martello 2004; Mitchell et al. 2006; Paterson 1996). The intertwinement between science and politics has been documented in different contexts, including forests

(Dimitrov 2003), transboundary air pollution (Lidskog and Sundqvist 2002), biodiversity (Vadrot 2014), and climate change (Allan 2016; Miller 2001). While earlier studies focused on the role of epistemic communities in influencing state interests (Haas 1992), more recently, attention has been devoted to the knowledge produced by these expert groups. A growing number of scholars have emphasized the proximity between knowledge and power, examining struggles among competing interpretations of scientific knowledge (Bernstein 2001; Epstein 2008; Litfin, 1994). The debate has centered on the mechanisms through which expert knowledge can be influential and facilitate the achievement of collective goals. Several factors have been identified, including the role of knowledge brokers (Litfin 1994), the design and institutional embeddedness of expert bodies within environmental regimes (Compagnon and Bernstein 2017), and the shared understandings that they create (Lidskog and Sundqvist 2015). It is generally acknowledged that, to be influential, expert knowledge should be perceived as salient, credible, and legitimate by its audiences (Mitchell et al. 2006).

More recently, the attention has been directed to the practices through which expert knowledge is produced by exploring the practices, assumptions, and objects that underpin expert authority (Allan, 2018). Drawing on science and technology studies (STS), expert knowledge is conceptualized as a social process through which knowledge is assembled, negotiated, and presented in documents to inform decision-making (Farrell et al. 2001). The notion of co-production, as introduced by Jasanoff (2004, 38), perfectly illustrates this perspective, arguing that we should attend to the mutual articulation of natural and social orders and stressing "the constant intertwining of the cognitive, the material, the social and the normative." Such hybrid processes contribute to the framing of social and technological questions and make certain outcomes more likely than others, "delimit[ing] the universe of further scientific inquiry, political discourse, and possible policy options" (Jasanoff and Wynne 1998, 5).

In the study of intergovernmental assessment bodies (and of the IPCC in particular), scholars have focused on the production of expert knowledge and its appropriation by multiple audiences. Studies have shown how normative judgments, group dynamics, and institutional factors influence how expert statements are written and communicated (O'Reilly et al. 2012). They have also shown how concepts, tables, and graphics work as "boundary objects," enabling collaboration between experts and diplomats (Lahn and Sundqvist 2017; Mahony 2015; Star and Giesemer 1989). In this context, specific concepts and terminology become enmeshed in political struggles over their meaning and use in other multilateral forums, for example, the UNFCCC (Fogel 2005; Hughes and Vadrot 2019). More generally, Vadrot (2014) has drawn attention to the epistemic selectivity at play in intergovernmental assessment bodies and to the dominance of certain narratives and problem perceptions. Finally, Bourdieuan scholars have highlighted the struggles for authority and control over the assessments at multiple stages (Hughes 2015; Hughes and Paterson 2017).

Focusing in particular on the role of governments in assessment bodies, studies have highlighted their influence in shaping the knowledge produced, sometimes at the risk of watering down their conclusions (Esguerra et al. 2017; Siebenhüner 2003). Disagreements exist in the literature about how the interactions with governments should be designed. According to Haas and Stevens (2011, 131), for instance, "the more autonomous and independent science is from policy, the greater its potential influence." STS scholars, instead, see greater potential when science is co-produced with politics.

These studies have drawn attention to the practices that shape the construction of particular concepts, statements, and figures. Less attention has been devoted to the production of scientific/diplomatic documents *as a whole*, that is, as all-encompassing reports that need to reflect a commonly agreed position between experts and governments. In this context, individual statements and figures become enmeshed in broader struggles to assemble documents that embody a settlement between multiple and sometimes contradictory interests. This article thus adds to the existing literature by unpacking the strategies put in place to reach such general agreement in the approval of the IPCC SPMs. It reveals the multistage organizational and discursive practices deployed to "get everyone on board" (Haug 2015, 556). The next section further discusses these strategies with regard to the making of intergovernmental expert consensus.

The Making of Intergovernmental Expert Consensus

Consensus is not only a central means through which expert knowledge is communicated but also a process through which collective decisions are made (Guston 2006; Urfalino 2014). It should be apprehended not only as an outcome but also as a decision procedure, as a set of practices through which actors negotiate a general agreement with which they all can live. According to Moore (2017, 126), it reflects their consent to let a document stand as the position of the group, while leaving "considerable differences at the level of the personal beliefs or intentions of those party to it". It implies not necessarily a uniformity of belief but a decision *across difference* and a "suspension of disagreement . . . signaled by the absence of objections to a consensus proposal" (Moore 2017, 127).

When it comes to intergovernmental assessment bodies, two views of consensus coexist. On one hand, studies of the production of expert consensus have shown that experts tend to privilege a view of consensus "in the singular," that is, a view that reduces the diversity of expert judgments by converging on the most robust and unanimous conclusions (der Sluijs et al. 2010; Oppenheimer et al. 2019). Such understanding of consensus may lead to minority statements being excluded or downplayed (despite their relevance). On the other hand, in the study of intergovernmental organizations, consensus is viewed "in the plural" as the juxtaposition of a plurality of perspectives to accommodate the concerns of all parties (Kouw and Petersen 2018; Sabel 2006, 335). The outcome is thus "a package deal that encompasses a large number of implicit and explicit bargains and trade-offs" (Buzan 1981, 339). This consensus is also not exempt from weakness, as it may lead to least-

common-denominator statements. Both types of consensus are entangled in intergovernmental assessment bodies.

Consensus is not reached spontaneously and requires the deployment of a series of procedural, visual, and discursive techniques (Beatty and Moore 2010; Buzan 1981). First, consensus is structured by written and unwritten rules that guide the deliberations and underpin the legitimacy of the process. Deviance from these rules may threaten the transparency of the process and the acceptability of its outcome. Still, consensus building remains a dynamic and creative process contingent on the issue at stake and bound to the arguing and bargaining strategies of actors (in a situation in which each party has veto power). Second, the search for consensus mobilizes techniques of construction and deconstruction, as governments and experts scrutinize statements and figures (Miller 2001). Consensus can be reached through techniques of aggregation and simplification (Hulme 2010; Livingston et al. 2018) but also through clarification and specification. Finally, consensus can be found in the wording and tone of statements, as careful attention is devoted to the nouns and to the verbs and adjectives that qualify them (Latour and Woolgar 1979). Ambiguous formulations and weasel words, for instance, allow reaching an agreement that remains amenable to different interpretations (Iklé 1964; Shackley and Wynne 1997).

When consensus is reached, the "disagreements that went into the decision" (Moore 2017, 129) are masked but may resurface in future discussions. This article thus contributes to reveal the negotiations that went into the production of the SPM of the AR5 SYR and the various strategies used to find a general agreement. After reviewing the proximity between the IPCC and the UNFCCC, I discuss the various stages through which the SPM was assembled using primary sources and my observation of IPCC-40. I then discuss the production of consensus at three levels: first, at the level of the practices which guide the production of the SPM; second, at the level of the figures, which have become crucial objects through which information is communicated to policy makers; and third, at the level of the language, which borrows from the rhetoric of both science and international diplomacy.

The IPCC and the UNFCCC

Established in 1988 under the auspices of the World Meteorological Organization and the United Nations Environment Programme, the IPCC provides regular assessments of the scientific knowledge on climate change. It is composed of three Working Groups (WGs)—WG I (the scientific basis), WG II (impacts, adaptation, and vulnerability), and WG III (mitigation)—and a Task Force on National Greenhouse Gas Inventories (TFI). The IPCC conducts its activities thanks to the work of thousands of volunteer experts (mainly scientists but also practitioners) nominated by the member states and observer organizations and selected by the IPCC Bureau. The Bureau, which supervises the assessment, is composed of the IPCC chair and vice chairs, the WG/TFI co-chairs, and the

WG vice chairs. More than a hundred national delegations actively participate in the Plenary sessions, the main decision-making body of the organization. They are composed of government officials and experts from different institutions, including meteorological agencies, environmental ministries, departments of foreign affairs, and embassies. The level of scientific and diplomatic literacy thus varies greatly between and within the delegations.

As a precursor of the climate regime, the IPCC has developed a close relationship to the UNFCCC and is one of the main providers of scientific information. IPCC reports are considered by the Subsidiary Body for Scientific and Technological Advice (SBSTA), which provides recommendations to the COPs. The SBSTA is often seen as the "real" interface between the IPCC and the UNFCCC (Compagnon and Bernstein 2017, 821), "a space where governments (and to a lesser extent NGOs) can deliberate the ground rules by which scientific experts and knowledge claims receive accreditation within the institutions of the climate regime" (Miller 2001, 251). In the work of the SBSTA, statements, tables, and graphs taken from IPCC reports are supposed to act as boundary objects facilitating cooperation between the IPCC and the UNFCCC.

Given the proximity between the IPCC and the UNFCCC, it is not surprising that governments carefully scrutinize the implications of IPCC findings for UNFCCC negotiations. Agreement between SBSTA delegations is, however, difficult to reach, and few substantive recommendations are made to the COPs. The COPs usually take note of IPCC reports, express gratitude for the work of the IPCC, and encourage the organization to continue its activities. In the case of AR5, the COP established a structured expert dialogue to facilitate the intake of IPCC conclusions by the SBSTA. Yet, once again, no formal agreement could be found between countries that wished for matters of substance to be included in the recommendations (e.g., the Alliance of Small Island States and the Least Developed Countries) and those that preferred to keep it "procedural" by merely taking note of the report (e.g., Saudi Arabia and China) (Earth Negotiations Bulletin [ENB] 2015, 35). While the SBSTA rarely derives substantive collective decisions from IPCC reports, the conclusions of these reports ultimately find their way into the UNFCCC through the individual positions of governments. The IPCC reports (including their SPMs) are means through which governments can make claims and raise issues in the UNFCCC.

The Path to the Approval of the SYR SPM

Aligning the views of thousands of experts and government representatives from different institutions and countries is far from straightforward. Building a robust agreement between so many viewpoints demands huge mediation efforts and an array of negotiation techniques that the organization has refined and consolidated over time. Consensus is not found during the last approval sessions, when the SPM is presented to member states. Rather, agreement is gradually built through the whole assessment process.

The decision to produce the AR5 SYR was made in April 2008, when initial exchanges on its contents were discussed (Figure 1). Its outline was deliberated in two scoping meetings, which brought together both experts and government representatives. This process is an essential part of the assessment, as it predetermines the overall structure of the report (defined through headings and bullet points). When the outline is approved, amendments are more difficult to make. The final draft of the outline included five topics: observed changes and their causes, future changes (in the short and long term), responses, transformation and changes in systems, and science supporting UNFCCC Article 2 (linked to the definition of what constitutes "dangerous" climate change).

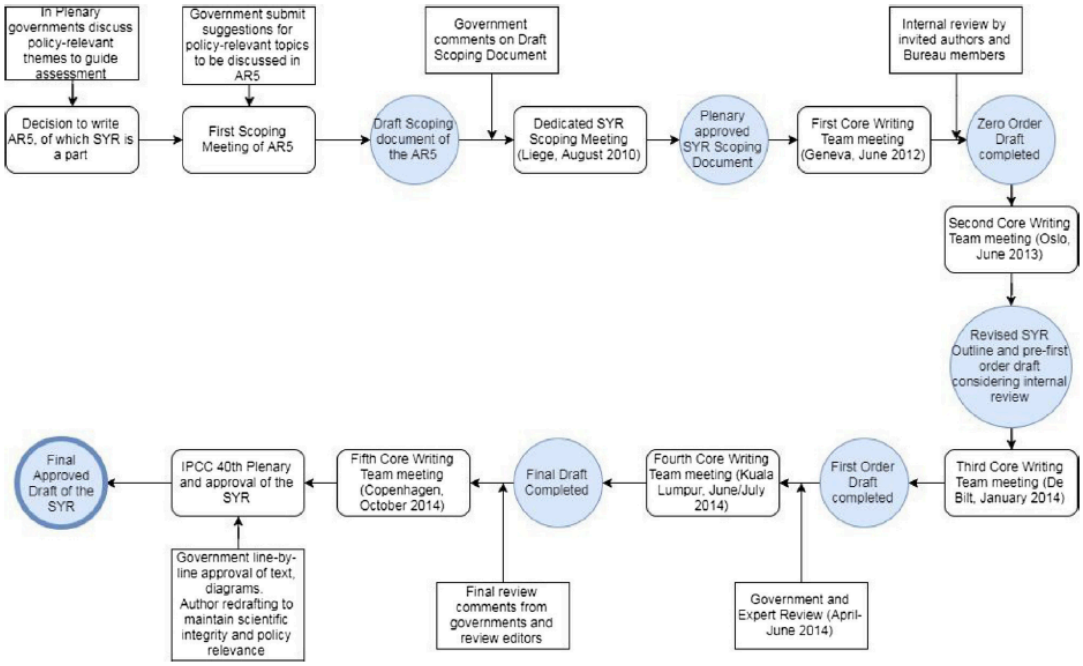

Figure 1
Process of Writing the IPCC AR5 SYR
Source: Livingston et al. (2018)

During the session that approved the outline, governments suggested topics to be added. For instance, the United Kingdom and Norway wanted a section on geoengineering, the Netherlands proposed to address the views of climate skeptics, and Saudi Arabia called for the inclusion of the spillover effects of mitigation (ENB 2010). A particularly heated discussion concerned topic 5, with several delegations arguing that a discussion of Article 2 would be too policy prescriptive. As a compromise, topic 5 became a Box on Information relevant to Article 2 of the UNFCCC. This change from a *heading* to a *box* is crucial to understand how this topic could eventually be relegated and removed following disagreements between authors and governments about what relevant information should be included (as discussed further later).

The drafting of the SYR is further shaped by developments in the production of the WG reports. While the SYR is a self-contained report, it is unlikely that topics that did not reach a consensus in the previous WG sessions will be included in the SYR, resulting in cases of self-censorship. This was, for instance, the case with material cut from the WG III SPM, including statements about the role of international cooperation (Stavins 2014) and a figure on greenhouse gas (GHG) emission trends according to country income groups (Victor et al. 2014).

Original statements produced for the SYR also compete with the "approved language" contained in the SPMs of the WG reports. This is closely linked to discussions about whether the SYR should be a "summary" (i.e., a compilation of already approved statements) or a "synthesis" (i.e., a text drawing new messages from the knowledge assessed in the WG and the Special Reports). If previously approved statements are rarely contested, one exception is Figure SPM 4 on the observed impacts attributed to climate change (discussed later). While the map had already been agreed on during the WG II approval session, its approval was reopened at IPCC-40 by several delegations that deplored the underrepresentation of climate impacts in developing countries (Hansen and Cramer 2015).

The draft SYR was produced by a Core Writing Team nominated in 2012 by the IPCC chair, which included authors from the three WGs. The process leaves the authors and WG co-chairs significant flexibility in the selection and framing of the conclusions to be included, which are closely tied to the narratives that they seek to advance. According to Livingston et al. (2018, 85), "the strength of the scientific community, and the body of science available as a result, [also] played a large part in the distinction of major and minor findings." This is why, in their view, ocean acidification is more prominently featured in the report than other issues, such as air quality. At that stage, authors may also already anticipate governments' comments and privilege uncontentious formulations that are more likely to be accepted (Broome 2020). The draft report underwent three reviews between January 2013 and October 2014 (Table 1).

Table 1

Number of Comments Received for the AR5 SYR

SYR Drafts	*Comments Received*	*Reviewers*
Zero Order Draft	N/A	internal review
First Order Draft	5,406 (2,281 for the SPM only)	70 experts and 41 governments + EU
Final Draft	2,116 (1,305 for the SPM only)	35 governments + EU

The data have been extracted from the PDFs of the review comments available on the IPCC website, using a series of regular expressions to count the number of comments submitted by experts and governments.

A small number of governments took part in the review process and sent their comments ahead of the approval session. The top five reviewers were the United States (819 comments), the Netherlands (795), Canada (528), Germany (496), and Norway (360). India

(159), Saudi Arabia (128), and Bolivia (110) were the most active reviewers among developing countries. This process, from the scoping meeting to the approval session, aimed at bringing a wide range of perspectives into the report. Yet, not all issues were resolved ahead of the approval session, and it remained difficult for authors and government representatives to anticipate all the disagreements that would emerge.

Agreeing Through Negotiating Practices

From Monday, October 27, to Saturday, November 1, 2014, IPCC member states gathered in Copenhagen to approve the SYR SPM. Agreement in the room was expressed by silence and the absence of requests to take the floor. It conveyed a collective satisfaction with the outcome, but not necessarily individual satisfaction, as concessions were made "in the spirit of compromise" (excerpt from observation 2014). Consensus was built through various stages, each of which did not necessarily involve the consent of all participants.

The discussions were dominated by a small number of countries—about three dozen[1] (out of the 131 delegations officially present). Delegations took the floor to support the suggestions of the authors or to suggest modifications. The authors, acting as "topic facilitators" and taking turns on a podium, assessed if the proposals were consistent with their understanding of the literature and conveyed the appropriate (un)certainties. At this stage, the discussions focused less on the broad substance of conclusions than on the details of their wording and the strength with which they were conveyed. When an agreement could not be found, the chair of the session (the IPCC chair, Rajendra K. Pachauri) established a formal contact group (to be held in an adjacent room) or an informal contact group (to gather in the back of the room). Formal contact groups were led by two co-chairs (one from a developed and one from a developing country) chosen among delegations on the basis of their neutral position on the issue at stake. They were responsible for managing debates in smaller settings and encouraging disagreeing parties to find compromise. Contact groups ran over a day or more, depending on the divisiveness of the issue. When an agreement was reached, a written proposition was brought back to the Plenary and approved. It was implicitly accepted that an issue that had been approved in a contact group should not be reopened in the Plenary.

In some cases, a compromise could not be found. While the IPCC procedures allow for the recording of disagreements in the SPM, governments are reluctant to be publicly named and can instead argue to remove the controversial statements from the document. This was the case with the Box on Information relevant to Article 2 of the UNFCCC. The writing of the box had already proved to be a challenging exercise (Livingston et al. 2018), and the lack of time during the approval (the box was introduced on the fourth day) complicated the

[1] I noted repeated interventions by Australia, Austria, Belgium, Bolivia, Brazil, Canada, China, Germany, India, Japan, the Netherlands, New Zealand, Nicaragua, Norway, Saint Lucia, Saudi Arabia, Switzerland, the United Kingdom, the United States, and Venezuela.

resolution of the issue. On Saturday, the final version of the box proposed by the authors was met with caution by several countries, which questioned the transparency of the process that led to the new proposition, as many felt that they had not been consulted enough. The Plenary eventually agreed to remove the box from the SPM. Deploring the loss of the box, the IPCC vice chair, Jean-Pascal van Ypersele (a strong supporter of the box), explained that while the authors may have the last word on the scientific accuracy of the report, "they do not have the last word on what is *not* in the report."[2]

This well-guided process, however, allows for some flexibility. For instance, the decision to have an informal or formal contact group fell to the appreciation of the chair. While informal groups are more flexible and do not undermine the credibility of the process in case of failure, they may put into question its transparency if their proceedings are not properly communicated. Another example is the discretionary decision by the chair and the authors to project the suggestions made by delegations onto the screen. Several delegations from developing countries complained during the week that the proposals by developed countries were more often projected, while theirs were discussed without accompanying visual representation.

The process was also not exempt from disturbance. Right from the beginning, developing country delegations criticized developed country delegations for slowing down the process to leave less time for the more contentious questions related to adaptation, mitigation, and sustainable development. Over the week, the negotiations extended through the night. The chair also criticized the multiplication of contact groups, which made it difficult for small delegations to be simultaneously present in these parallel meetings and the Plenary, forcing them to rely on coalitions to defend their positions. More obvious bargaining strategies were also visible as some delegations obstructed negotiations on one (or several) issues and traded resolution against concessions elsewhere ("a package deal," in their own words). A delegation, for instance, blocked progress on several issues until it was certain that a paragraph on the negative impacts of climate policies on fossil fuel exporters would be inserted.

Agreeing on the Figures

Figures have become crucial communicative devices in global assessments. The SYR SPM alone contains fourteen tables, maps, and graphics, many of which triggered intense debate during the approval session. In the search for compromises, delegations and authors deconstructed and reassembled these figures, sometimes leaving elements of their reconstruction visible to all. The following examples describe the negotiation of Figures SPM 1 and SPM 4, which were discussed in contact groups. These examples are illustrative of the variable power balance between authors and government representatives, which

[2] Mooney, Chris "Why two crucial pages were left out of the latest U.N. climate report," *Washington Post*, November 14, 2014, emphasis added.

tipped in favor of the authors for Figure SPM 1 and in favor of developing countries for Figure SPM 4.

Telling a Story

Figure 2, which is reproduced from Figure SPM 1, shows four graphics representing the increase in temperature, sea level, and GHG concentration (graphs a–c, respectively) and CO_2 emissions (graph d). The relationship between graphs a, b, c and graph d was deemed not "relevant" by several delegations, which suggested that the figure should either be deleted or split (with graph d moved elsewhere). The authors, on the other hand, considered the graph important for bridging findings from WG I and WG III (ENB 2014). It became clear that the problem concerned the implications conveyed by the figure and the singling out of CO_2 emissions. For the authors, "focusing on CO_2 as the main driver of climate change was appropriate as it has a long atmospheric lifetime" (ENB 2014, 6). The authors also praised the communicative dimensions of the figure and its ability to "tell a story" (the anthropogenic cause of climate change).

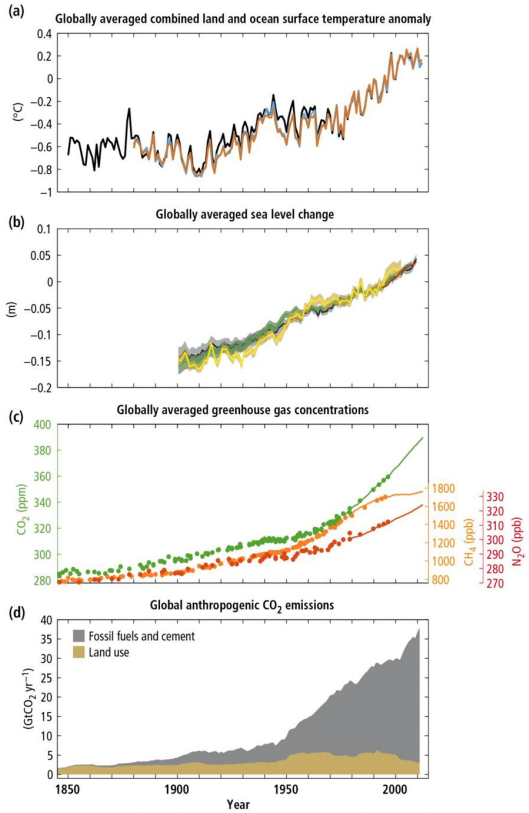

Figure SPM.1: Observed indicators of a changing global climate. (a) Annually and globally averaged combined land and ocean surface temperature anomalies relative to the average over the period 1986 to 2005. Colours indicate different data sets. (b) Annually and globally averaged sea level change relative to the average over the period 1986 to 2005 in the longest-running dataset. Colours indicate different data sets. All datasets are aligned to have the same value in 1993, the first year of satellite altimetry data (red). Where assessed, uncertainties are indicated by coloured shading. (c) Atmospheric concentrations of the greenhouse gases carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) determined from

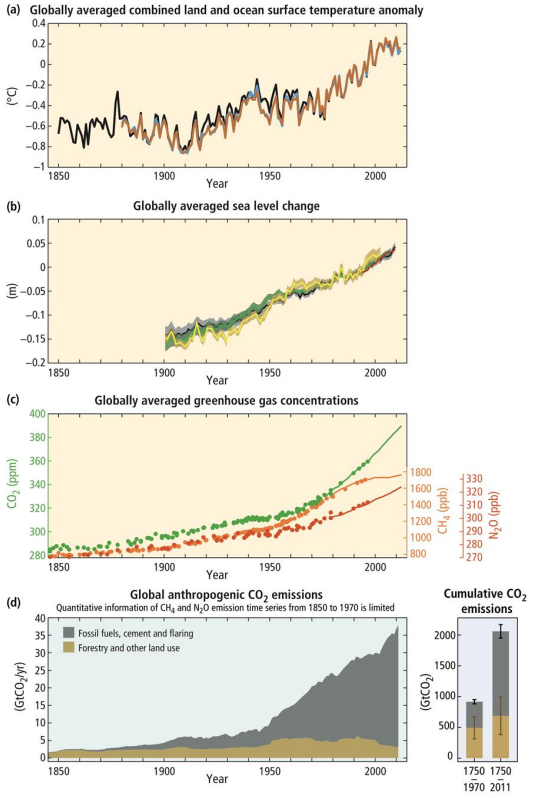

Figure SPM.1 | The complex relationship between the observations (panels a, b, c, yellow background) and the emissions (panel d, light blue background) is addressed in Section 1.2 and Topic 1. Observations and other indicators of a changing global climate system. Observations: **(a)** Annually and globally averaged combined land and ocean surface temperature anomalies relative to the average over the period 1986 to 2005. Colours indicate different data sets. **(b)** Annually and globally averaged sea level change relative to the average over the period 1986 to 2005 in the longest-running dataset. Colours indicate different data sets. All datasets are aligned to have the same value in 1993, the first year of satellite altimetry data (red). Where assessed, uncertainties are indicated by coloured shading. **(c)** Atmospheric concentrations of the greenhouse gases carbon dioxide (CO_2, green), methane (CH_4, orange) and nitrous oxide (N_2O, red) determined from ice core data (dots) and from direct atmospheric measurements (lines). Indicators: **(d)** Global anthropogenic CO_2 emissions from forestry and other land use as well as from burning of fossil fuel, cement production and flaring. Cumulative emissions of CO_2 from these sources and their uncertainties are shown as bars and whiskers, respectively, on the right hand side. The global effects of the accumulation of CH_4 and N_2O emissions are shown in panel c. Greenhouse gas emission data from 1970 to 2010 are shown in Figure SPM.2. *(Figures 1.1, 1.3, 1.5)*

Figure 2

Figure SPM 1 As presented (left) in the final draft and (right) in the approved version.
Source: ipcc.ch and IPCC 2014

The authors proposed to add cumulative emissions and uncertainties (bars and whiskers) to graph d and to change its background color to make the difference between observed changes and sources of emissions more explicit. But the discussion moved to a more substantial level when Saudi Arabia requested to add data for all GHGs (ENB 2014, 6). Because data for other GHG emissions prior to 1970 were not available, the delegation requested the inclusion of a sentence stating that information on these gases was limited and that no direct relationship should be implied between the graphs. The authors replied that sufficient data existed to prove the relationship between observed changes and CO_2 emissions and that it would be incorrect not to admit it. They suggested to add in the caption that "quantitative information on CH4 and N2O emission time series from 1950–1970 is limited" (ENB 2014, 6). Faced with a deadlock, the co-chairs of the contact group were forced to bring the issue back to the Plenary without a consensus. The figure was eventually accepted after several countries had put their veto on deleting or modifying the figure. The final caption reads that "the *complex* relationship between the observations (panels a, b, c, *yellow background*) and the emissions (panel, d, *light blue background*) is addressed in Section 1.2 and Topic 1" (emphasis added).

The Literature and the "Reality"

Discussions about Figure SPM 4, which had been agreed in the WG II approval session in Yokohama in March 2014, were reopened in Copenhagen (Figure 3). The map, which introduced observed impacts of climate change at continental and regional levels, was criticized for underrepresenting climate impacts in certain regions, in particular, Africa and South America. Several developing countries disapproved of the fact that impacts on glaciers, snow, ice, and/or permafrost were more prominently featured at the continental level than impacts on agriculture and food security. In their views, the map undermined the messages that they tried to convey regarding the impacts affecting their countries. They also feared that the figure could weaken their position on the negotiation of an international agreement on adaptation in the UNFCCC. Many developed countries, however, thought that the map was a crucial tool to convey the message that climate impacts were widespread.

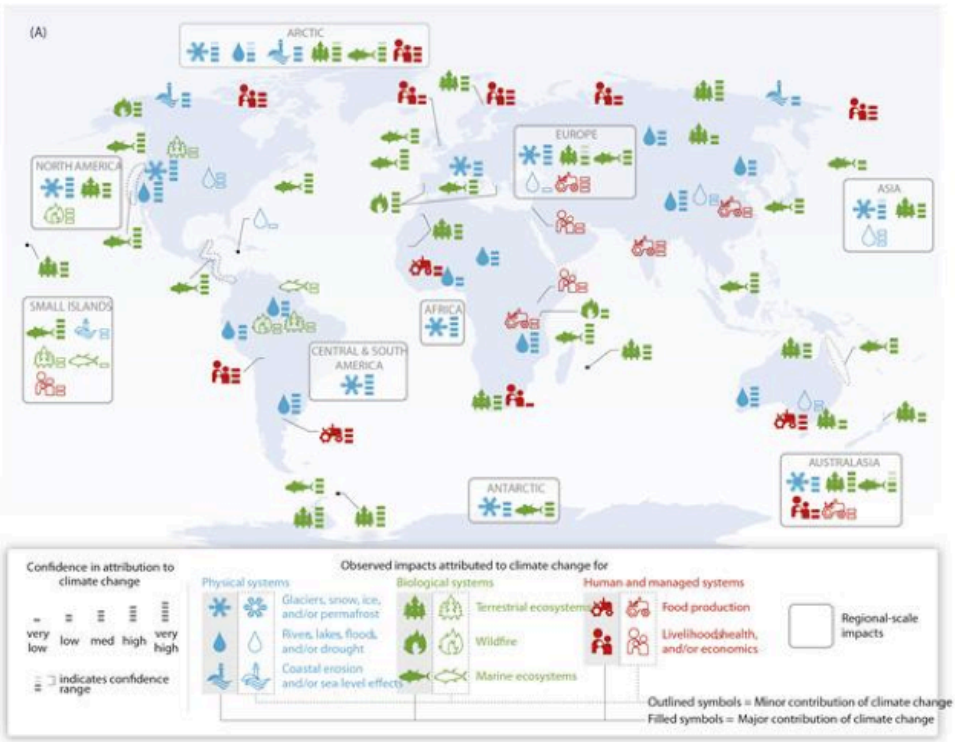

Figure SPM.2: Global patterns of observed climate change impacts in recent decades attributed to climate change, based on studies since the AR4. For categories of attributed impacts, symbols indicate affected systems and sectors, the relative contribution of climate change (major or minor) to the observed change, and confidence in attribution. (Figure 1.8)

Figure 3

Figure SPM 4 As presented in the Final Draft.
Source: ipcc.ch

The authors defended the figure, pointing to the scarcity of data and literature in English about these regions. The map thus reflected a broader inequality with regard to access to research between the Global North and the Global South. Several countries asked to explicitly acknowledge that many impacts could not be attributed due to a lack of available data. Eventually, the redesigned version of the map (Figure 4) aggregated all impacts at the continental/regional level (and not at a more down-scaled level), but also indicated the number of articles on climate change available for each region (according to Scopus). The caption recognizes that the

> absence from the map of additional impacts attributed to climate change does not imply that such impacts have not occurred. The publications supporting attributed impacts reflect a growing knowledge base, but publications are still limited for many regions, systems and processes, highlighting gaps in data and studies. (Intergovernmental Panel on Climate Change [IPCC] 2014, 7)

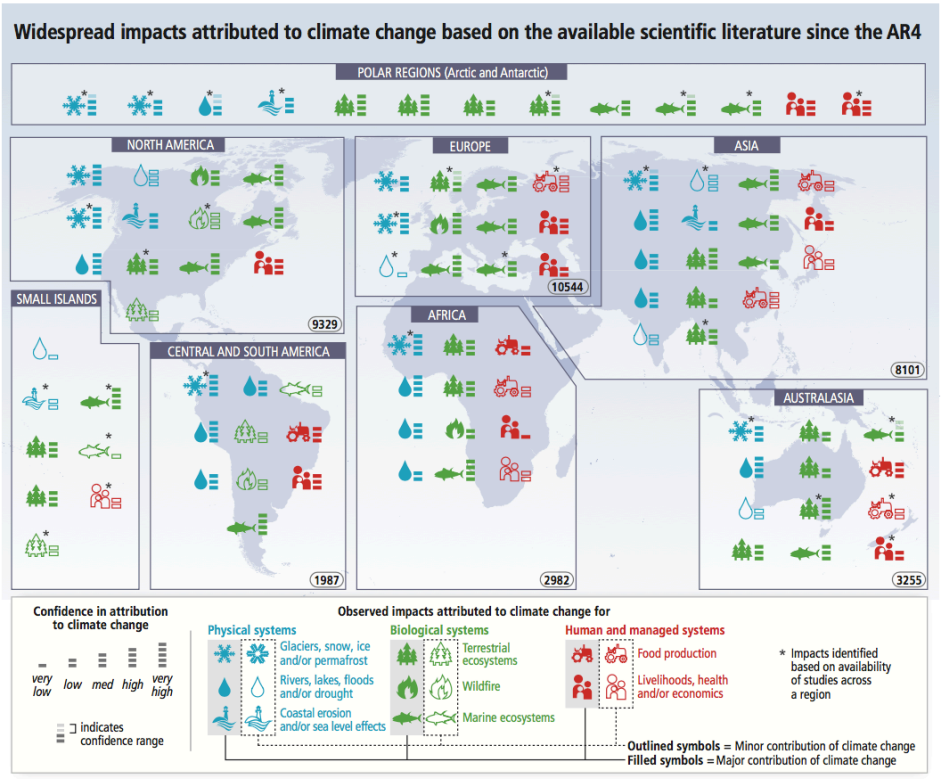

Figure SPM.4 | Based on the available scientific literature since the IPCC Fourth Assessment Report (AR4), there are substantially more impacts in recent decades now attributed to climate change. Attribution requires defined scientific evidence on the role of climate change. Absence from the map of additional impacts attributed to climate change does not imply that such impacts have not occurred. The publications supporting attributed impacts reflect a growing knowledge base, but publications are still limited for many regions, systems and processes, highlighting gaps in data and studies. Symbols indicate categories of attributed impacts, the relative contribution of climate change (major or minor) to the observed impact and confidence in attribution. Each symbol refers to one or more entries in WGII Table SPM.A1, grouping related regional-scale impacts. Numbers in ovals indicate regional totals of climate change publications from 2001 to 2010, based on the Scopus bibliographic database for publications in English with individual countries mentioned in title, abstract or key words (as of July 2011). These numbers provide an overall measure of the available scientific literature on climate change across regions; they do not indicate the number of publications supporting attribution of climate change impacts in each region. Studies for polar regions and small islands are grouped with neighbouring continental regions. The inclusion of publications for assessment of attribution followed IPCC scientific evidence criteria defined in WGII Chapter 18. Publications considered in the attribution analyses come from a broader range of literature assessed in the WGII AR5. See WGII Table SPM.A1 for descriptions of the attributed impacts. *{Figure 1.11}*

Figure 4
Figure SPM 4 As published in the SYR
Source: IPCC 2014

Agreeing on the Wording

Consensus is reached by paying attention to the language and tone of the SPM, which needs to present the information in a way that reflects the evaluations of the authors but also accommodates the concerns of governments. The language used in the SPM is thus a combination of the rhetoric of science and the rhetoric of multilateral diplomacy. The former seeks consensus by converging on the most robust findings, while the latter seeks consensus in the juxtaposition of different perspectives. The SPM needs to draw attention to the impacts of climate change and encourage action, while leaving open a diversity of

policy options and instruments and avoiding challenging countries' policies or development strategies.

In line with the rhetorical style of scientific assessments, the SPM speaks through the accumulation of evidence. Not all conclusions included in the reports, however, have the same weight. Such a difference is conveyed through a series of rhetorical devices—for example, qualifiers, modal verbs, and adjectives. In the IPCC, the use of a dictionary of predefined "uncertainty qualifiers" offers a way for experts to better communicate the certainty of their conclusions and for governments to trace the origins of the statements. The SPM text contains about two hundred qualifiers, the great majority of them expressing likelihood, high confidence, and high agreement (Table 2). Quantitative judgments related to the likelihood of certain events were more frequent in the first two sections of the report (drawing on WG I and WG II statements), while qualitative judgments about the amount of evidence and agreement in the literature were more prominent in the last two sections (drawing on WG II and WG III statements). Confidence levels (authors' assessments of the validity of a finding) are used in all sections. On rare occasions, low levels of confidence or agreement were reported: this is, for instance, the case with the remaining uncertainties related to the loss of the Greenland ice sheet (a well-known controversy reported by O'Reilly et al. 2012) or the effectiveness of the UNFCCC in stabilizing emissions. The accuracy of the qualifiers was discussed in the approval session, for instance, whether they should be applied at the level of the paragraph, the sentence, or part of the sentence.

Table 2

Occurrences of Uncertainty Qualifiers in the Sections of the SPM

Uncertainty Qualifiers	*Section 1*	*Section 2*	*Section 3*	*Section 4*	*Total*
Certainty					
Virtually certain (99%–100%)	1	4	0	0	**5**
Very likely (90%–100%)	7	5	0	0	**12**
Likely (66%–100%)	11	12	10	3	**36**
About as likely as not (33%–66%)	0	0	2	1	**3**
Unlikely (0%–33%)	0	1	0	0	**1**
Confidence					
High confidence	16	14	22	15	**67**
Medium confidence	7	15	1	6	**29**
Low confidence	2	1	0	1	**4**
Evidence					
Robust evidence	0	1	2	3	**6**
Medium evidence	0	1	2	12	**15**
Limited evidence	0	2	0	1	**3**
Agreement					
High agreement	0	3	4	10	**17**
Medium agreement	0	1	0	5	**6**
Low agreement	0	0	0	1	**1**
Total	**44**	**60**	**43**	**58**	**205**

In line with the rhetorical style of multilateral diplomacy, a plurality and balance of perspectives were crucial to gaining acceptance by all governments. The SPM thus aimed to include the messages that delegations wanted to "take home" to support their domestic and international agendas. Mountainous countries demanded references to mountains and glaciers, and small island states stressed their vulnerability to sea level rise and extreme events. Some developed countries sought to draw attention to emerging concerns (e.g., ocean acidification was a hot topic in AR5) and to provide responses to climate skeptics (e.g., taking on their claim of an apparent slowing in the rise of global temperatures). Many developing countries insisted on emphasizing adaptation, equity, and development (e.g., by jointly referring to mitigation, adaptation, and sustainable development) and on avoiding constraints to national sovereignty (e.g., "transformation" was replaced by "pathway" in the title of section 3). Oil countries sought to divert attention from carbon dioxide (to the broader concept of GHGs) and to highlight the adverse side effects of mitigation. The SPM was to respond to governments' priorities so that all "sides could get something out of it" (excerpt from observation 2014). This was particularly true of AR5, which was expected to inform the negotiations of the Paris Agreement. The SYR was to send the message that "as a collective, we can do something and change things."[3] As stated by Pachauri (2014a) at COP20, "on the basis of the SYR we know that . . . we have the means to limit climate change and build a more prosperous, sustainable future."

The practices of intergovernmental expert consensus considerably shape the way climate change is framed in the SPM. As with many scientific/diplomatic documents, the SPMs contribute to decontextualizing and depoliticizing global problems. Such a framing is valued by many authors and delegates and is in line with the IPCC mandate to provide information that is policy neutral and never policy prescriptive—although it is criticized by many scholars (Hulme 2010; Lidskog and Sundqvist 2015). At the end of the approval session, the SPM has many features of what Perrot (2002, 53, my translation) calls "langue de coton"—a language that "has an answer to everything because it says almost nothing. Or too much, which is the same thing." The SPM scarcely mentions the socioeconomic causes of climate change, focusing instead on its consequences. It only briefly alludes to "fossil fuel combustion and industrial processes" driven by "economic and population growth" (IPCC 2014, 5). Such a framing is consonant with the requirement for the SPM to be "balanced" and not single out any specific country (or group of countries), scenario, sector, or policy option. The SPM thus contributes to constructing climate change as "a problem for society as opposed to a problem of society" (Ford et al. 2016, 351).

The SPM also makes ample use of caveats and vague terms on which all parties can agree (e.g., opportunities and challenges, co-benefits and costs). This is particularly the case for WG III statements, which some IPCC participants compared to "bland truisms saying nothing" (IPCC 2016, 9) or "pabulum" (Victor 2015, 28). Ambiguity is also introduced by lengthy enumerations to support an inclusive presentation of an issue:

[3] Interview with an IPCC/UNFCCC delegate, February 4, 2016.

> Common constraints on implementation arise from the following: limited financial and human resources; limited integration or coordination of governance; uncertainties about projected impacts; different perceptions of risks; competing values; absence of key adaptation leaders and advocates; and limited tools to monitor adaptation effectiveness. (IPCC 2014, 19)

Finally, the SPM is characterized by the issues that are *not* mentioned. Through its language of abstraction, references to global indexes and scenarios are privileged over more context-specific and regionally relevant information (Livingston et al. 2018). While such abstract language is a common feature of science, it also avoids distributing responsibilities to specific groups of actors. As noted by Victor (2015, 161), "abstract, global numbers from stylized, replicable models get approved because they do not implicate any country or action." The document also seldom mentions the underlying causes (e.g., fossil fuel subsidies and trade) that hamper the implementation of climate policies (Rankovic et al. 2016). Through the lengthy discussion of "common enabling conditions," the report presents the environmental transition as easily attainable and frames politics as a solution rather than as a constraint in the fight against climate change.

Conclusions

In this article, I have extended the study of intergovernmental assessment bodies from a focus on specific figures or concepts to the investigation of the process of agreeing on scientific/diplomatic documents *as a whole*. I have proposed a way to study the making of intergovernmental expert consensus by looking at the various procedural, visual, and rhetorical practices employed to agree on policy-relevant scientific conclusions. Using the case of the SPM of the IPCC AR5 Synthesis Report, I have shown that the SPM may be viewed not only as a document through which concepts and figures are given political significance but also as an attempt to develop a collective position between hundreds of experts and diplomats from various scientific and political cultures. In this context, consensus building is the artful result of a complex layering of compromises, which are reached at various stages and contingent on the issues at stake and the strategies of actors. Through negotiating arrangements (such as the scoping and review processes or the role of contact groups) and rhetorical practices (such as the use of both objectifying and ambiguous language), the SPM approval session produces a hybrid document that responds to multiple scientific and diplomatic sensibilities. Such craft is crucial to creating the position of the IPCC as a collective group and the shared foundations on which collective action in the UNFCCC is supposed to rest.

I have also differentiated between two views of consensus that coexist in intergovernmental assessment bodies. On one hand is a view "in the singular," which reduces the diversity of perspectives by converging on the most robust and unanimous conclusions. This type of consensus is illustrated in the SPM, for instance, by the infrequent use of qualifiers indicating major uncertainty and the focus on statements with high probability, confidence, evidence, and agreement. On the other hand, consensus is also

viewed "in the plural" as the juxtaposition of different perspectives in order to accommodate the demands of all actors. Accommodating the interests of more than a hundred delegations, however, is not easy, especially given the short length of the SPMs and the fact that the IPCC is supposed to weave these national agendas into a fabric of international cooperation. In this context, consensus is not reached by bringing all governments to support each and every statement. Instead, governmental consensus is fostered by the SPM *as a whole*. This may explain why the SBSTA finds it difficult to extract statements from the SPMs for consideration by the COP: because the SPM is an overall compromise, single conclusions cannot be extracted from it without jeopardizing the balance of the document.

Finally, I have discussed how consensus-making practices in the IPCC influence how climate change is presented in the SPM. Finding a consensus that satisfies all sides while sticking to the scientific literature is a difficult exercise that may tone down the messages of the SPMs. Intergovernmental expert consensus familiarizes governments with the science of climate change and creates an agreed understanding of its consequences and solutions. At the same time, however, it also contributes to the depoliticization of the problem and falls short of bringing reflexivity to the climate regime.

Kari De Pryck *holds a postdoctoral fellowship of the Swiss National Science Foundation. She is a visiting scholar at the Department of Geography at the University of Cambridge and a research associate at the Center for International Studies at Sciences Po Paris. She is interested in the production of expert knowledge in intergovernmental assessment bodies. Her current project focuses on the work of the IPCC Working Group III, as part of an international team of social scientists using ethnographic methods to study assessment practices. She published, with Krystel Wanneau, "(Anti)-boundary Work in Global Environmental Change Research and Assessment" (*Environmental Science and Policy *77 [2017]: 203–210).*

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