Understanding lessons from the IPCC to inform AMR panel

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The Intergovernmental Panel on Climate Change (IPCC) has become an important model for the design of new global assessment exercises and advisory bodies. It informed the establishment of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, which has been referred to as the IPCC of biodiversity (Larigauderie and Mooney 2010). It is being looked to by researchers and treaty makers in negotiation of a new global science-policy body for chemicals, waste and pollution (Wang et al. 2021; Allan et al. 2025), and some suggest that an IPCC-like body is needed to assess the benefits and harms of digital techs (Bak-Coleman et al. 2023). Members of the antimicrobial resistance (AMR) community are also examining and aiming for the success of the IPCC in considering design options for a new mandated independent body. The aim of this report is to identify relevant lessons from the IPCC experience to inform the design of a new AMR panel. The report proceeds in two parts. In part I, it will describe the IPCC as an organisation and as an assessment practice, including the role of governments. In part II, the report identifies two key areas for learning from the IPCC experience. First, in designing a panel for uptake and action. Second, in facilitating participation by low and middle income countries (LMIC).

Key to creating a successful scientific panel to inform a national and international response is designing the organization and its assessment practice with the constituencies that hold and produce relevant knowledge, alongside those that will need to act on and implement the findings of the final knowledge product. There are two important stages in this: 1) identifying the knowledge holders and end users and involving them in the design and operationalization of the panel; 2) ensuring that the constituencies that need to uptake and act on the knowledge participate in the making of the knowledge products and are accountable to these. This accountability to the panel's knowledge products ideally needs to be built into the design of the science panel and the international mechanism for negotiating the collective response. In this report, I draw relevant lessons from the design of the IPCC's assessment practice as a method for engaging and co-producing knowledge with key stakeholders, which in the case of the IPCC, is its member governments. There are significant challenges that the IPCC has faced and gaps in national and international uptake that offer important opportunities for learning in the creation of a new body.

Documenting the role that member governments have and how this might be deepened highlights the centrality of facilitating LMIC participation to the success of any international panel. The report identifies the critical importance of listening to all member governments and/or stakeholders concerns and ensuring the framing of the organisation and its work recognises different views and understandings of the issue, as well as forms of knowledge and capacities to engage. It is also critical to ensure that government and expert participants are provided with support that enables them to build their capacity and expertise over time.

This report was informed by extensive study of the IPCC undertaken by Hannah Hughes since 2008 (Hughes 2012; 2015; 2024a). This research was built on through collaborative study of author relations in WGIII of the Fifth Assessment Report (AR5). This examined the disciplines, institutional affiliations and co-authoring relations and its effects on the distribution of authority within author teams (Corbera et al. 2016; Hughes and Paterson 2017). The Sixth Assessment Report was also studied through a collaborative project focused on the uptake of IPCC reports nationally and internationally (Bayer et al., 2024; Bayer et al. forthcoming; Hughes 2023b). This study of the IPCC has been informed by over 40 interviews (Hughes 2012; 2023a; 2024), social network analysis (Corbera et al., 2016), a survey of authors (Hughes and Paterson 2017), and observation at IPCC plenary in 2010, the approval of WGII and WGIII in the AR6 in 2022, and the technical and political phase of the first global stocktake of the Paris Agreement from 2022-2024 (COP27, SB58, COP28, COP29).

To identify relevant lessons to inform the design of a new panel for AMR, members of the IPCC research community were invited to two roundtable discussions. A roundtable discussion was also held with members of the Secretariat to identify the role of the Secretariat in national and international uptake and facilitating developing country engagement. A roundtable and interviews were held with WGII authors in the AR6, a bureau member, a former government delegate, and two TSU heads that held multiple roles in the IPCC as well as other international assessment exercises on biodiversity loss and ozone depletion.

The lesson identification and elaboration presented in this version of the report is ongoing. The report will be updated after presentation and discussion at the workshop on "Lessons Learned for Antimicrobial Resistance From Previous International Science Panels", 28-29 April in Lagos, Nigeria. The key findings will also be presented and discussed with members of the IPCC bureau in May to inform the final version of this report to be completed by May 30th 2025.

Part I: The IPCC as role-model

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 under the auspices of the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). It was originally mandated to review and make recommendations on the science of climate change, social and economic impacts and potential response strategies. This included the "identification and possible strengthening of relevant existing international legal instruments" and "elements for inclusion in a possible future international convention on climate" (UNFA res 43/53, 1988). From the outset, the IPCC was designed to provide a knowledge base that could inform the collective response to climate change. The work of assessing these dimensions of climate change was divided between three working groups, which today are as follows: Working Group I (scientific basis), Working Group II (impacts, adaptation and vulnerability) and Working Group III

(mitigation).[1] The IPCC's First Assessment Report (FAR), published in 1990, provided a common scientific understanding of climate change. This served as the basis for negotiations towards a framework convention on climate change in a newly formed International Negotiation Committee (UNGA resolution 45/212 1990).

The IPCC has produced six rounds of assessment reports on a 5-8 year cycle, and a seventh assessment cycle is now underway. The remit of the three WGs has remained relatively constant over the past 35 years, although after the first assessment report, the formulation of policy response options was transferred to a newly established International Negotiating Committee (INC), the outcome of which was the formation of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. With the formation of the INC, the IPCC's role became to provide the necessary scientific and technical advice required for the negotiating process (UNGA res 45/212 1990), a task and relationship that we will return to below.

As well as the large comprehensive assessments of climate change, which are updated every 5-7 years, the IPCC also undertakes special reports on request by member governments or invitation of the UNFCCC, and methodology reports to guide national reporting of greenhouse gas emissions. The key findings of IPCC reports are presented in Summary for Policymakers (SPM), which aim to present the key messages of the report in a much shorter document for policy uptake and wider communication and dissemination.

The structure of the IPCC

The IPCC is an intergovernmental body, with 195 member governments. Member governments constitute the "panel", which is the main governing body of the IPCC and decision-making by governments takes place in twice yearly plenary meetings (see figure 1). Member governments are categorised in the panel as developed countries (Annex 1), developing countries (Annex 2) and economies in transition (Annex 3) (IPCC 2015). Member governments participate in the panel as national delegates and have distinct roles in the production of IPCC reports, which starts with the decision to produce a report, electing a bureau to lead the assessment, nominating authors, approving report outlines, submitting review comments and approving the reports key findings in the SPM. This line-by-line approval process has garnered increased interest over recent years as government's negotiation of the document has resulted in re-wording and removal of sections, and subsequent accounts of this political manoeuvring have been published in the media. Each member government has a designated national focal point, which serves as the intermediary between the IPCC and the national government and relevant expert communities.

[1] In 1999 a Task Force on National Greenhouse Gas Inventories (TFI) was also established to provide methodological guidelines and scientific and technical advice to governments for producing national greenhouse gas inventories. More information about the TFI is available here: https://www.ipcc-nggip.iges.or.jp/faq/faq.html

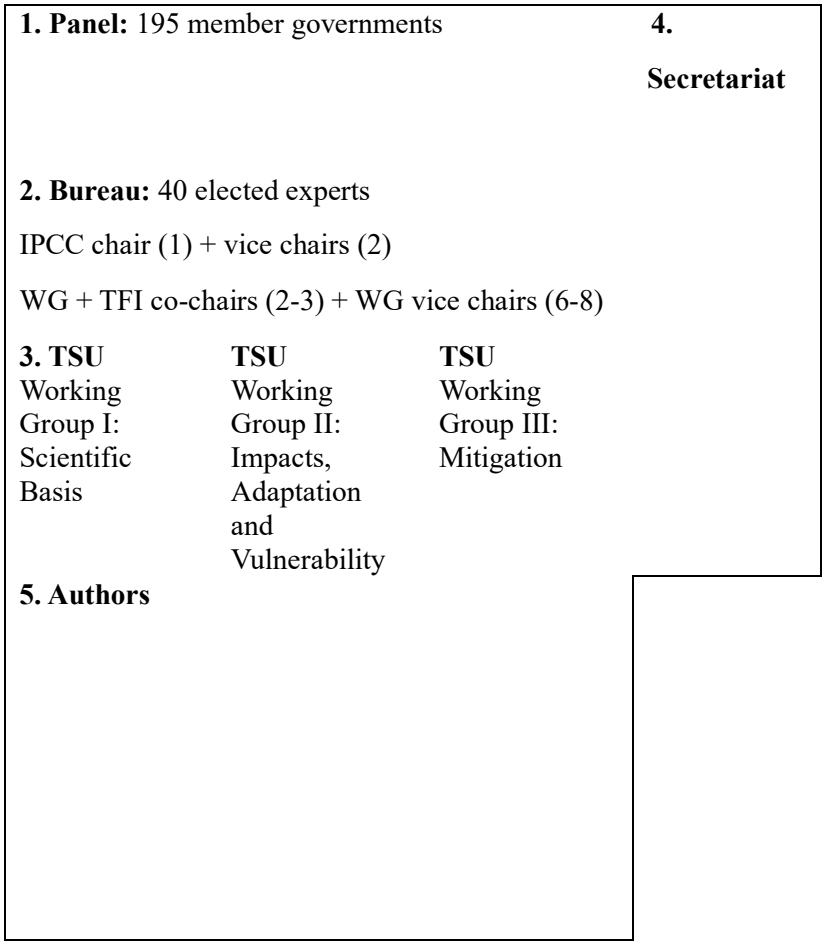

Figure 1. The IPCC represented as five distinct units: 1) secretariat; 2) panel; 3) bureau; 4) Technical Support Units (TSUs); 5) authors. Units 1-4 come together for the IPCC plenary and have access, share information with each other. Figure adapted from Hughes 2024a.

The IPCC has a small secretariat with 15 members of staff in the WMO headquarters in Geneva (IPCC n.d.). This small size reflects the fact that the secretariat does not have a direct role in the production of the assessment reports, which is provided by individual WG technical support units, introduced below. The main responsibilities of the secretariat include the organisation of IPCC meetings and document support and reporting for these. The secretariat also manages the Trust Fund and all other funds, contributions and related accounting. The Trust Fund supports the travel of eligible member government delegates and experts from developing countries and economies in transition (EIT), and the secretariat organises relevant travel arrangements. Outside of the organisation, the secretariat promotes

the IPCC's work to relevant UN bodies and seeks regular input from these and other stakeholders to ensure the continued relevance of assessment products. It also has a critical role in the communication and dissemination of IPCC products.

Each WG assessment report is led by two co-chairs, from a developed and developing county, supported by a regionally representative bureaux of 6-8 members (see figure 1). All bureau members are elected by the panel at the start of an assessment cycle. The IPCC bureau provides the scientific leadership and governance of the assessment and is made up of experts that usually have a combination of scientific accomplishment, previous IPCC experience, and experience navigating the science-policy interface nationally and internationally. In addition, geographical representation and gender balance, are important considerations in the composition of the bureau, and important lessons can be drawn from the IPCC experiences in these areas. As well as overseeing the assessment, the bureau meets before plenary, informs member government decision-making at plenary, and chairs the approval of IPCC products. Bureau members are also active at UNFCCC events representing the IPCC and the latest science relevant to the WG. This includes meeting with subsidiary body chairs and presenting at relevant workshops and side events. Research has identified bureau members as science-diplomats and mediators between the science and politics of climate change in these multiple roles (de Pryck and Gaveau 2024).

The co-chairs of the assessment are supported in leading the assessment by technical support units (TSUs) that are set up at the start of an assessment cycle. These are small units, although they have grown over time, of 5-10 staff that provide the technical and administrative support required to produce the large assessment report, technical report and SPM, along with any special reports within an assessment cycle. This includes coordinating the hundreds of authors through four lead author meetings, providing input and guidance notes to inform authorship, and upholding tight deadlines during the multicycle review and updating process of the production schedule. Taking a closer look at the TSUs begins to reveal some of the resource and knowledge asymmetries that will also likely shape the AMR issue area (Hughes 2024a; 2024b). The TSUs are funded by the host government of the developed country co-chair. Historically nearly all technical and administrative support has resided within the institution of the developed country co-chair, which has resulted in their scientific visions, expertise and research networks dominating the assessment report. However, as the importance of technical and administrative support has become recognised, there has been more concerted effort to ensure this is also provided to the developing country co-chair, through their own national government support and/or ensuring the TSU is also responsive to their needs.

In 2011, an Executive Committee (ExCom) was added to the governing structure of the IPCC. ExCom is composed of the IPCC chair, two vice chairs and the WG co-chairs and is supported by five advisory members, including the IPCC secretary and heads of the four TSUs (IPCC n.d.). ExCom was created to enable the IPCC to address issues arising and take decisions between panel sessions.

Other stakeholders participate in the IPCC as observer organisations, classified as intergovermnental organisations (IGOs), non-governmental organisations (NGOs), observer entities and UN bodies and organisations. Observer status is subject to acceptance by the panel, and an organisation must demonstrate its non-profit status and expertise in matters covered by the IPCC. In this capacity, stakeholders can nominate authors and submit expert review comments during the drafting cycle. Yamineva (2017) highlights, however, that NGO participation in the IPCC is shallow and in part, shaped by fears of the influence of climate scepticism. In the first two assessment cycles, NGOs with environmental agendas and those representing business and industry were able to intervene during the line-by-line approval of IPCC documents. However, this form of participation was curtailed during the approval of Working Group I's SPM for the Second Assessment Report in 1995. During this meeting interactions between the Global Climate Coalition (a US-based industry group) and the Saudi Arabian and Kuwaiti delegations were observed that appeared to be delaying the progress of the session (Houghton 2008; Leggett 1999; Lunde 1991).

The Scientific Assessment

The WG reports are prepared by chapter teams led by two appointed Convening Lead Authors (CLAs) (one from a developed and one from a developing country), lead authors, and review editors. The chapter authors are nominated by governments, observer organisations and the IPCC bureau. In most cases, authors self-identify through their national focal point and member governments then either undertake their own internal selection or submit all nominations received. Author selection is conducted by the IPCC WG bureaux based on submitted CVs with support by the TSUs to identify the necessary expertise to fulfil that required for the government approved outline. The final author lists are also subject to plenary approval to ensure that overall WG authorship accounts for the range of "scientific, technical and socio-economic views and backgrounds, we well as geographical and gender balance" (IPCC n.d.). As well as appointed authors, the chapter team may identify contributing authors for specific sections or figures that are required within the chapter.

The majority of authors are drawn from government agencies and/or laboratories and academic institutions with a smaller percentage of expertise drawn from international organisations, non-government organisations and the private sector (see Bhandari 2020). Participating as an author is a substantial time commitment, particularly for CLAs. Authors are not paid for their time, although some CLAs may receive research support to facilitate their investment in the role. It is in authorship and assessment of the available literature that the extent of global knowledge asymmetries become most evident. The barriers to full participation in the assessment operate at multiple levels. It takes time to invest and acquire the skills required to contribute to the process, a resource that may not be available to those outside of academic institutions. These material barriers extend to access to international journals to identify and conduct a review and reliable internet connection for downloading content and virtual meetings with chapter team members. However, barriers also operate at the level of perceived scientific authority, as measured by institutional affiliation and

publication record, which structures the space in which authors are recognised and valued as expert members within chapter teams (Hughes 2024a; 2024b).

The global distribution of climate knowledge and authority is mirrored in the literature and source material to review and assess in producing assessments. There remains a lack of data on some of the most climate vulnerable regions of the world. Furthermore, developing country knowledge, perspectives and concerns on issues with profound national and international policy implications is less adequately considered, analysed and substantiated in internationally published scientific literature.

Part II: lessons from the IPCC for the AMR panel

1. Designing a panel for uptake and action

Key to creating a successful scientific panel to inform a national and international response is designing the organization and its assessment practice with the constituencies that hold and produce relevant knowledge *and* those that will need to act on and implement the findings of the end product. There are two important stages in this: 1) identifying the knowledge holders and end users and involving them in the design and operationalization of the panel; 2) ensuring that the constituencies that need to uptake and act are participants in the knowledge products and are accountable to these. This accountability to the knowledge ideally needs to be built into the design of the science panel and the international mechanism for negotiating the collective response.

There are important lessons that can be drawn from the design of the IPCC's assessment practice that offer an example of how governments and other stakeholders participate in the production of a shared knowledge base for collective action. There are also significant challenges that the IPCC has faced and gaps in national and international uptake that offer important opportunities for learning in the creation of a new body.

The purpose of the IPCC and its assessment reports

The IPCC was established with a clear mandate – to review and make recommendations on the science of climate change, social and economic impacts and potential response strategies. The purpose of the IPCC as such, was to provide a shared knowledge base to governments for collective decision-making. There was adjustment to this mandate with the formation of the International Negotiating Committee (1990), which separated the IPCC's role as provider of up-to-date assessments from the negotiation and formulation of policy response options in the negotiating body. This focused the IPCC's task as provider of the approved knowledge base for collective negotiation and decision-making on climate change. The managers of the IPCC, in particular the bureau and Secretariat, have created roles for themselves in demarcating and upholding a boundary between the IPCC as knowledge provider and the negotiated response (UNFCCC). This makes clear that the central users of IPCC products are

governments and the organisations that support collective decision-making between governments on climate change, most importantly the UNFCCC. The design of the IPCC's assessment practice and dissemination of the reports reflects this.

Member governments to the IPCC are co-producers of IPCC products. Assessment reports, special reports and other IPCC products begin with a decision by member governments. Member governments participate in the scoping of the report, approve the report outline, undertake a government review of the draft, and approve line-by-line the report's key findings. These tasks themselves serve as a form of knowledge dissemination and climate position formation depending on a government's level of investment and the extent to which these tasks are coordinated across relevant departments. Engaging with and providing comments on the most up to date science on a given topic helps develop competence within government and already serves to create "ownership" over the result (Hermansen roundtable 3/04/2025). Government review is also an important form of preparation for intergovernmental approval of the report's key findings in the SPM. The review process can facilitate the formation of a shared position on the document, enabling informed decision-taking and participation at the session by government delegates. However, as government interest and investment in the IPCC has increased, so has the politics surrounding all aspects of the IPCC's work.

As indicated in the principles governing IPCC work, decisions in the IPCC process both at the panel and WG level are reached by consensus, and where this is not possible, differing views are explained and "upon request, recorded" (IPCC 1991, 8). The need for consensus in decision-making ensures that all strongly held and spoken objections must be accommodated, with implications for the IPCC as an organisation, the conduct of the assessment and the key findings of a report (de Pryck 2021; 2022). The final products produce scientific objects that are taken up and become part of the negotiation (Hughes and Vadrot 2018; Hughes and Vadrot 2022; Hughes 2024), the clearest examples are carbon dioxide and methane that have been identified through IPCC assessment reports as greenhouse gases requiring of collective target-making. However, this is not a one-way process, the negotiations also produce objects that need to be assessed, evaluated and are ultimately legitimated through IPCC assessment reports (Fogel 2005; Lahn and Sundqvist 2017; Beek et al. 2022). The most well-known of these is the 1.5 temperature goal (Tschakert 2015; Livingston and Rummukainen 2020; Cointe and guillemot 2023). This makes the IPCC assessment process a key site in collective decision-making on climate change, which in turn, brings the politics of climate negotiations into all aspects of the IPCC's work. Those leading, managing and administering the organization and its assessments are subject to these intense pressures and have to respond and adapt to maintain and uphold the integrity and authority of the IPCC (Hughes 2015; 2025).

One significant pressure for the IPCC is uneven participation, as will be detailed in the next section. It is important to identify it here because of its impact on fulfilling the mandate and overall purpose of the organization in realizing a shared knowledge base. Although the IPCC has 195 member governments and roughly 120 attend plenary session, research has consistently identified that around 40 members are actively involved in plenary decision-

making and the approval of IPCC documents (Hughes 2022; 2024; Bayer et al. 2022; Bayer et al., forthcoming). This is significant because, while many developed countries conduct national assessments of climate change, many developing countries rely on IPCC assessments to inform national policy priorities and international position-taking. Ensuring these countries build national expertise and evaluate the emerging knowledge through their own national context – the needs it generates and the barriers to implementation that exist – is absolutely critical to successful uptake and ultimately the national and international response.

National Uptake

As the government review of IPCC documents indicate, there are important lessons to be learned from the IPCC experience about when and how uptake of IPCC products happens. Government participation in IPCC decision-making and assessment activities (approving the outline, reviewing, approving the SPM) is a critical dimension of national uptake and dissemination. One of the lessons that can be identified in the uneven participation of developing countries, beyond the resources required, is it matters who within government participates in IPCC meetings and is responsible for overseeing the national coordination of the required task. The majority of IPCC focal points reside within environment departments, designated climate change departments or the meteorological office. The location of the relevant department and the designated focal point and their capacity and authority to lead and coordinate the work required at a national level needs to be a critical consideration in the choice of parent body and organizational design.

The launching and dissemination of IPCC products is frequently dependent on national investment in the body, including the time available to individual focal points and those that support their work (if they have anyone to support their work). This is again marked along developed and developing country lines. Some focal points organise government-wide seminars to identity the latest findings and there may be parliamentary-level discussions initiated by different national actors (Gaveau 2024). The IPCC facilitates this process of national dissemination by highlighting the most important messages from the approved SPM in the form of headline statements. These headline statements are easily reported to ministers and can be taken up in all forms of media reporting. Bureau members have an important role in disseminating new reports, and this is particularly important in developing countries and regions (Ramón Pichs-Madruga, 17/04/2025). Authors and other stakeholders, such as NGOs, also disseminate the latest report findings. The IPCC's media and communication strategy continues to evolve with the needs of the collective response to climate change. With the sixth and seventh assessment cycles awareness has grown that the IPCC's target audience is broader publics (Secretariat, 16/04/2025). Civil society organisations and different sectors of society from Indigenous Peoples, youth, to workers are required to apply pressure on governments to increase collective ambition and to adapt to the changing social and economic conditions that the political response to climate change, and climate change itself, create.

International Uptake

The success of the IPCC can be measured by the establishment of the UNFCCC in 1992. Its first report provided the shared knowledge base for this objective. With this success came a central place as knowledge provider in climate politics, and alongside this came increasing interest in the organization and the pressures this has created. While the IPCC's purpose has remained constant, the requirements and demands of fulfilling this task have evolved with and in response to collective decisions reached within the UNFCCC to respond and address climate change, most significantly the negotiation of the Kyoto Protocol in 2007 and the Paris Agreement in 2015. Ensuring UNFCCC decisions and outcomes are accountable to the approved knowledge base has also required developing mechanisms to disseminate the latest reports so that they may serve to inform, underpin and ultimately to align action with the urgency required by the assessment findings. Until the Paris Agreement, IPCC reports did not formally serve this function. However, with the creation of the global stocktake, the IPCC assessment reports became formally recognized as input as 'the best available science' to assess collective implementation. The outcome of this five-yearly stocktaking process, the first of which was concluded in 2024, is to inform parties 'in updating and enhancing' nationally determined contributions and collective efforts (Paris Agreement 2015, Art 14). In this role, the latest science serves both as a measure of implementation and critically as a lever to greater collective ambition. It can also serve to ensure that the international community is responsive to unexpected changes and advances in climatic change.

It must be stressed again that these roles as knowledge provider, benchmark in implementation and lever to greater ambition create significant pressure and forces on the IPCC and its assessment process, and insulating from these requires constant and careful manoeuvring. The mechanisms the IPCC has developed for this include maintaining a clear demarcation between science and politics, upholding neutrality and developing a conflict of interest policy for bureau members and authors. The secretariat and the bureau and the practices and processes that they establish, such as those for addressing conflicts of interest or errors identified in reports, are absolutely crucial (Secretariat 16/04/2025; Ramón Pichs-Madruga 17/04-2025). However, it is the government delegates that approve the SPM and negotiate in the UNFCCC that bring the politics into all aspects of the organisation and its assessment practice.

1. Facilitating participation by Low and Middle Income Countries (LMIC)

Two elements are key to this: 1) listening to all member governments and/or stakeholders concerns and ensuring the framing of the organisation and its work recognises differing understandings of the issue, forms of knowledge and capacities to engage; 2) ensuring participants are provided with support that enables them to build their capacity and expertise over time.

Government participation

In the early stages of the IPCC's formation, developing countries raised concerns with the technical and scientific framing of climate change. They called for the issue to be recognized as a developmental issue and for it to be assessed in the context of sustainable development (see Zimbabwe speech to first session in IPCC 1988 annex 3, 11; Borione and Ripert 1994: 81). Developing country delegates also identified gaps in national data and scientific capacity (IPCC 1991) and felt a 'sense of frustration' in the process because of the human resources required to participate (in speech by Mostafa Tolba, IPCC 1991: 5). The IPCC recognised the importance of developing country participation as reflected in an oft-cited sentence of the first IPCC chairman when faced with disagreement from developing countries over the acceptance of the first report, 'right now, many countries, especially developing countries, simply do not trust assessments in which their scientists and policymakers have not participated. Don't you think global credibility demands global representation?' (Schneider 1991).

Trust Fund

To address these issues the IPCC created a Trust Fund. The IPCC Trust Fund is maintained by voluntary contributions from member governments as well as contributions from WMO, UNEP and the UNFCCC. It covers IPCC activities, including funding the travel for participation of developing country participants at panel and bureau sessions, lead author meetings and other expert meetings. The fund also covers the cost of publication and translation of IPCC reports into all UN languages. While the Trust Fund is essential to enable geographical representation of delegates and authors in IPCC activities it does not equate with equal participation. As highlighted in one IPCC scholar roundtables, "one important conclusion from my work is that inclusive access arrangements do not necessarily and automatically lead to inclusive participation" (Yulia Yamineva 30/03/2025, see Yamineva 2017). Another interview participant pointed to the overrunning of meetings, which is particularly common during the approval of documents (Pauline Midgley, 07/04/2025). The effect of which is that Trust Fund recipients have had to leave before the meeting is concluded.

Task force on developing country participation

Without a capacity building function and dedicated resources the IPCC has had to be thoughtful in its approach to addressing this issue. Its task force on developing country participation regularly conducts survey and information gathering, including from the IPCC research community, to understand the issue and identify avenues to facilitate participation. This information and reflection has led to some of the following organizational innovations.

Bureau membership

Ensuring a geographically representative bureau and increasing the size of the bureau over time to facilitate regional representation is one critical avenue. Bureau members play an important role in identifying regional expertise at key stages in the assessment process, most notably in the scoping and author nomination stages, including where there are gaps in final author lists, and during the expert review of the draft reports. The bureau also plays a critical role in building government participation in the panel. Bureau members meet before plenary

meetings and can be accompanied by the national delegate. This is particularly relevant to developing countries because it can facilitate increased government participation in IPCC activities. Through attending bureau meetings, government members gain more in depth knowledge of the assessment in progression, which makes for more informed participation during plenary meetings and at key decision points in the process (Hughes 2022; 2023).

Meeting location
The location of meetings can be used to engage national governments and expert communities in the process, offering the opportunity for additional outreach and speaker events alongside (Pauline Midgley, 07/04/2025). Expert meetings and workshops can be particularly useful in identifying and building regional expertise for a specific topic in the assessment.

Skill building for plenary
More recently, the secretariat has provided information sessions for delegates before plenary, either holding an additional session before the opening of the meeting or virtual capacity building sessions. These range from identifying key items on the agenda to providing guidance and mentorship on engaging in plenary discussions and activities. Some developed country governments have also organized and hosted their own capacity building sessions.

Expert participation

Expert participation in IPCC authorship reflects the global economy of knowledge, which itself is a reflection of the global distribution of resources. The IPCC does not produce research, its authors assess the available literature on climate change. Knowledge production, particularly specialized forms of data collection and analysis – as required in modelling the global atmospheric circulation or contributing to integrated assessment modelling – requires extensive national research infrastructure and sustained investment of resources to produce and maintain these. The existence of the IPCC has served to significantly increase investment in climate change research. One of the key purposes of assessments is to identify gaps in knowledge, which can effectively serve to channel research investment in these areas and provides a ready-made platform for the research outputs. As the IPCC assessment process has matured, authorship has created a site where gaps in knowledge are identified and publications are produced in time for the final report through collaboration between authors (Corbera et al. 2015; Hughes and Paterson 2017). In this respect, the IPCC itself both sits within and can serve to facilitate and challenge the reproduction of scientific dominance in global assessments of climate change. As research has increasingly revealed and problematized the multi-dimensions of this issue and its impact on how climate change is known as a collective problem, the IPCC has identified avenues to strengthen developing country participation in the authorship.

Author selection criteria
The IPCC's rules and procedures identify criteria to guide author selection by the WG bureaus. The final WG author lists are subject to government approval in plenary and must

reflect a range of views, geographical representation, experts with and without previous IPCC experience and gender balance (IPCC 2013). These institutional measures alongside ensuring that there is at least one lead author 'and normally two or more from developing countries' on each chapter (IPCC 2013, 5) and funding travel costs (IPCC 1992, 152) have contributed to an increase in the geographical representation of IPCC authors over time (see Tandon 2023). Bureau members play a critical role in this process, including through raising regional awareness of the call for authors, identifying regional experts to fill gaps in government nominations, and ensuring measures of expertise such as publication record fit the regional context (Standring and Lidskog 2021). However, this stage in the assessment process highlights the impact of uneven member government involved in the IPCC.

The focal point is regarded as the link between the government and the national scientific community, and as such it is responsible for orchestrating the national process for identifying experts and submitting a government-approved list of author nominations. How this list is compiled depends on the national context (IPCC 2010). The IPCC encourages focal points to keep data bases of past authors and reviewers to contact, and many developed country focal points have support staff and well-established mechanisms for sending out the call to government agencies and academic networks. This may extend to workshops to raise awareness of IPCC authorship and a set of institutionalised procedures, such as government and community consultations or expert committees, which are convened to assist in the selection process (IPCC 2010).

Scientists from developing countries have raised concerns over the responsiveness of their focal point and the appropriateness of the expertise nominated 'either because they do not know who those scientists are or because political considerations are given more weight than scientific qualifications' (IAC 2010, 18). An early study of government participation by the IPCC revealed a lack of coordinated effort for author nomination and selection in developing countries. The study indicated that only half of developing country focal points submitted nominations for the AR4, compared to over ninety percent of developed countries (IPCC 2009). The first report by the special committee on developing country participation, published in 1992, indicates that the degree of coordination between various departments and ministries of governments and the 'manpower' [sic] 'to receive, communicate and disseminate information' was often not sufficient within developing countries (IPCC 1992: 157). This meant that from the outset there was difficulty establishing the processes to fulfil these requests and tasks. As a result, developing country authors have sought alternative avenues, either through nomination by an international organisation or through a developed country focal point (Tandon 2023).

Role of the co-chairs and TSU

The WG co-chairs and TSUs have an important role to play in upholding the scientific authority of IPCC assessment reports and challenging the reproduction of scientific dominance. This is observable during author selection, where TSU members supplement author nominations and facilitate bureau selection by checking the scientific expertise of nominations using common measures of scientific authority, such as institutional affiliation

and publication record. The TSU have played an important role in the standardization of the assessment over time, contributing to the writing and establishment of criteria for the treatment of literature and measures of scientific authority, and ensuring these are adhered to in the checking and editing of submitted drafts.
Uneven access to literature has been a persistent issue for developing country authors in the assessment. Although tasked with reviewing and assessing available literature in a designated topic area for the report, limited access to international journals and slow, intermittent and costly internet access have been identified as barriers (Yamineva 2017, 28). Schipper et al. (2021, 853) note, for example, that '… only a few African university libraries have reliable internet connectivity, with South African universities being among the most equipped in the continent'. For the first time in the AR4 the WGI TSU reached an agreement with several publishing houses to provide authors with free access to international journals. It was intended that this would be extended to all WGs for the AR5. However, WGIII was only able to offer a database and encourage sharing between authors. This meant that in the 2014 assessment of climate mitigation some developing country authors relied upon the support of other chapter team members to share materials for their review. While this was meant to be resolved by a UNEP supported IPCC library facility for the AR6 (IPCC 2016), issues with ease of access remained.

The infrastructure that supports and enables appointed authors in their national context to fulfil their task is a critical issue that it easily overlooked at international meeting sites. However, when the IPCC process moved online as a result of COVID-19, the asymmetries in infrastructure were observable in online meetings and became even more marked. When the AR6 author meetings moved online, poor internet infrastructure meant that some developing country authors were 'cut off from the process altogether' (Julia Steinberger quoted in Ketcham 2022). Further confounding this infrastructure divide is the fact that while the convening lead authors from developed country authors frequently receive government or institutional support, which may include a research assistant for compiling lists of relevant literature and producing endnote databases, these funds are frequently not available for their developing country counterparts. The effect of this has been that while WGs have attracted developing country authors at the start of the process, authors have dropped out due to the time commitment as the assessment progresses. Whether an author is able to and or chooses to fully invest in the process has significant implications for the division of the labour. The fact that all appointed author names remain on the chapter regardless was raised by participants in the roundtable discussions.

Without a designated capacity building function and resources, WG co-chairs and TSUs have attempted to provide practical support to address the issues identified. As well as ensuring access to literature, TSUs have taken a role in relevant skill development, including training in conducting comprehensive review, use of certainty guidance and media training (interview 21/03/2025). In the AR5, WGII and WGIII introduced chapter scientists to chapter teams to serve the dual function of providing assistance to the authors and, through the process, learning assessment skills and gaining access to international scientific networks (Schulte-Uebbing et al. 2015).

It is not only in upholding procedures that the co-chairs and TSU are important for; it is also in establishing the culture of work at author meetings and between author teams (author roundtable 3/04/2025). This culture can serve to reproduce a social scientific order or identify the importance of valuing the diverse forms of expertise that each author brings into chapter team discussions and assessments of knowledge. The criteria for selecting authors, the standardisation of the assessment practice and, more recently, diversity training disrupt dependence on scientific conventions for identifying and distinguishing climate expertise in the ordering of relations in the conduct of authorship (Hughes 2024). Although measures of scientific excellence remain pervasive, the AR6 was the most diverse assessment cycle in terms of gender and developing country participation. However, this remains a persistent issue as AR6 authors identified during roundtable discussions, where professional expertise, training and support is required to navigate relations between "so many people, from so many parts of the world, with so many expectations and biases" (author roundtable 3/04/2025).

IPCC Scholarship Programme

In 2007, the IPCC was jointly awarded the Nobel Peace Prize for its contribution to efforts "to build up and disseminate greater knowledge about man-made climate change, , and to lay the foundations for the measures that are needed to counteract such change" (Nobel Prize 2007, press release). They used this money to establish a scholarship programme to support developing country scientists in their postdoctoral study of climate change and in doing so, contribute to the long-term endeavor of countering the global knowledge economy.

Conclusion

This brief report highlights two important areas for learning from the IPCC in designing a new independent panel for AMR. The first important area for drawing lessons from the IPCC experience is in designing a panel for uptake and action on the panel's knowledge products. Achieving this requires designing the organization and its assessment practice with the constituencies that hold and produce relevant knowledge *and* those that will need to act on and implement the findings of the end product. The report identifies two stages to this. The first, is identifying the knowledge holders and end users and involving them in the design and operationalization of the panel. The second is ensuring that the constituencies that need to uptake and act are participants in co-producing the knowledge products and are accountable to these. This is critically important in deciding on whether it is governments that are the main stakeholders and end users of AMR knowledge products and therefore, the decision of whether an intergovernmental panel is required.

The second important area for drawing lessons is in facilitating participation by LMIC. To achieve this will require listening carefully to stakeholders from LMIC, including governments, experts and other relevant knowledge holders. The subsequent framing of the organization and its work must recognize the different understandings of the issue, forms of

knowledge and capacities to engage. It must also develop a long-term place of how it will ensure participants are provided with support that enables them to build their expertise and capacity over time to engage actively, meaningfully and impactfully in the panel and its products.

Drawing these lessons from the IPCC experience, and from some of those most experienced in the IPCC process, it is clear that the organization has undertaken its own information gathering, listened to its many critics and carefully attempted to respond and address the issues that are most central to fulfilling its organizational mandate. However, it is also the case that the lessons, learning and organizational practices highlighted here are not the only relevant experiences that can be identified and learned in creating an independent panel for AMR. The IPCC has gained valuable experience and lessons related to the importance of facilitating and enabling a multidisciplinary perspective, English language dominance in the scientific literature and conduct of the assessment, guidance on non-peer reviewed literature and how to include Indigenous and local knowledge. The IPCC is still learning in many of these areas and itself looks to other bodies that were frequently mentioned in interviews and roundtable discussions, most notably the Intergovernmental Science-Policy Platform on Biodiversity and Economic Services (IPBES). What is clear, is that a new body for AMR has rich experience and open and willing examples to learn and engage alongside.

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Appendix 1: List of roundtables and interviews with names identified where informed consent allowed

IPCC researcher roundtable (30/03/2025)
Shinichiro Asayama
Patrick Bayer
Yulia Yamineva
IPCC researcher roundtable (3/04/2025)
Erlend Hermansen
Kari de Pryck
IPCC AR6 WGII author roundtable (3/04/2025)
IPCC Secretariat roundtable (16/04/2025)

Interviews with multiple role holders in IPCC and other science processes
IPCC vice chair, WGIII co-chairAR6 (17/04/2025): Ramón Pichs-Madruga
IPCC TSU AR5, author AR6 (22/03/2025)
IPCC TSU AR5, delegate, author (7/04/2025): Pauline Midgley
Former UK delegate (24/03/2025): David Warrilow