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SWP Comment

NO. 25 MAY 2023

Knowledge Politics in the Context of International Climate Negotiations

The IPCC Synthesis Report will shape COP28 and the Global Stocktake

Gerrit Hansen and Oliver Geden

With the publication of its Synthesis Report in March 2023, the Intergovernmental Panel on Climate Change (IPCC) has completed its work programme for the sixth assessment cycle. The IPCC reports, and in particular the respective Summary for Policy Makers (SPM), provide a scientific basis for negotiations under the United Nations Framework Convention on Climate Change (UNFCCC). They are a key reference in the global climate debate. The most recent Synthesis Report (SYR) is considered one of the most important sources of information for the first Global Stocktake under the Paris Agreement, which is to be concluded at the UNFCCC Conference of the Parties (COP28) in Dubai in December 2023. The knowledge politics surfacing in controversies that were visible during the report's adoption reflect the conflicting interests that will shape the upcoming round of new emission reduction and financing pledges.

The IPCC was established in 1988 by the United Nations Environment Programme and the World Meteorological Organization to examine the threats posed by climate change and to explore societal options for responding. The IPCC is both an intergovernmental body of the United Nations (UN) and an independent scientific institution. Since the publication of its First Assessment Report in 1990, it has set the international standard for accepted scientific knowledge on climate change. Its reports play a particularly important role in international climate negotiations under the UNFCCC. They provide the scientific evidence that underpins action on climate change and often gives the impetus for increased am-

bition. Each report includes an SPM that goes through a formal endorsement process, which provides an opportunity for governments to put scientific findings into a policy context and to agree on a common, science-based language that Parties can refer to in the UNFCCC process. The structure of the IPCC and the organisation of its work ensure that the reports can claim to be scientifically sound and independent as well as timely, complete and globally relevant. On the other hand, the fact that every single sentence in the SPM is debated and ultimately approved by the plenary of the member states establishes the political co-ownership that is essential for the use of its findings in multilateral and national



contexts. The IPCC authors must agree to proposals to reformulate their original draft, thereby ensuring that the SPM retains its scientific substance and integrity.

The SPM provides summaries of scientific evidence concerning status quo, trends, and possible scenarios and their underlying conditions, but not recommendations for action. IPCC reports, and the SPM in particular, are intended to be *policy-relevant, but not policy-prescriptive*. As an intergovernmental body, the IPCC is caught between academic research, which also formulates scientifically based preferences, and the climate, economic and geopolitical priorities of the member states. In the plenary sessions for the adoption of the SPM, knowledge politics clearly influence discussions over the appropriate interpretation of climate change impacts and mitigation options.

These challenges are particularly pronounced in IPCC Working Groups II (Climate Change Impacts, Adaptation and Vulnerability) and III (Mitigation of Climate Change). In contrast to Working Group I (Physical Science Basis), which reflects mostly natural science findings, these groups deal with issues that are at the heart of governance. Among other things, they evaluate the social science and economic literature on policy instruments and technologies to reduce emissions and strengthen societal resilience. They often integrate different knowledge systems and varying forms of evidence, which also increases the complexity of the scientific assessment process.

The IPCC in a post-Paris world

In 2015, the UN 2030 Agenda with its 17 Sustainable Development Goals and the Paris Agreement as an instrument of the UNFCCC were adopted as multilateral agreements with universal applicability. Based on the findings of the 2014 IPCC Fifth Assessment Report, the global community agreed to “holding the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursuing

efforts to limit it to 1.5°C. Countries also committed to increasing the ability to adapt to climate change and to align global financial flows with these goals. Since then, research on mitigating climate change and building resilience to its impacts has increasingly focused on operationalising the goals of the Paris Agreement. In doing so, scientists must deal with the constructive ambiguity of many formulations and with the tension between the largely global perspective of both the Paris Agreement and the IPCC reports, and regionally and contextually specific solutions.

The IPCC is an independent institution, but it does not have a mandate to define climate policy goals or objectives. On the other hand, it is expected to provide knowledge in a form that is relevant to governments and the UN climate process, for example by assessing the likelihood of different mitigation pathways to hold global warming below a certain level, and outlining the differential risks associated with such choices. Due to the uncertainties inherent in both the climate system and socio-economic developments, such an assessment can only be provided in the form of ranges, which offer scope for interpretation and hence invite interventions motivated by knowledge politics. In addition, highlighting specific pathways and their characteristics in the SPM (e.g. a timetable for the global phase-out of unabated coal-fired power generation) inevitably has a political dimension. The fact that the IPCC’s published estimates of possible future pathways are often interpreted as guidance in the context of the Paris climate goals places a special responsibility on scientists and poses an additional challenge for the adoption of the SPM in plenary.

Controversy tends to focus on the exact wording of politically sensitive findings. For example, spelling out the main drivers of climate change explicitly, or the assessment of the role of fossil energy sources and specific greenhouse gases such as CO₂ or methane, is often contested, since they imply responsibility of specific sectors or countries. The regional manifestations of

the consequences of climate change and the costs for mitigation and restructuring the global economy are equally sensitive issues. The differentiation between groups of countries based on socio-economic criteria and along the categories of developing and developed countries — a dichotomy still dominant in the UNFCCC — is also controversial, especially in the context of equity and historical responsibility.

In the sixth assessment cycle (2015–2023), the intricate question of how to operationalise the principles of fairness and equity has gained further prominence, for example with regard to sharing in the dwindling carbon budget or assisting poorer countries or those particularly affected by the consequences of climate change. Taking the national contexts and differences between countries and regions into consideration — particularly in terms of financial capacity, the applicability of technological approaches and the design of effective policy instruments — is especially of importance for the large emerging economies. The universal validity of socio-economic assumptions in scenarios or the applicability of global model results in national and regional contexts have also been subject to debate in the IPCC for several years. Global modelling studies are increasingly being used as roadmaps for the implementation of policy goals and the development of benchmarks such as “net zero emissions by 2050”. Hence the extent to which the consideration of historical responsibility and distributive justice — or a lack thereof — in these studies’ assumptions and outcomes result in effectively setting inequitable norms has become a point of contention between some governments and the scientific community.

The IPCC Sixth Assessment Report

Each SYR concludes a multi-year assessment cycle, integrating the findings of the Special Reports and the Working Groups’ main Assessment Reports produced during that cycle for policymakers and the public. The SYRs do not contain new scientific

findings and do not reflect the most recent data due to the process. Still, they are the IPCC’s most widely distributed and politically influential products. Historically, SYRs have also influenced key concepts, narratives and thresholds in the policy arena. For example, the SYR of the third assessment cycle was crucial for the establishment of the so-called burning embers, an iconic graphic showing five aggregated risks along a temperature gradient, which has since then visualised how the climate risk assessments have tightened from report to report. In the fifth assessment cycle, the AR5 SYR contributed to the popularisation of the concept of a limited carbon budget, and thus to the realisation that CO₂ emissions must be reduced to net zero globally. In addition, due to requests especially from small island states threatened by sea-level rise, the AR5 SYR included an additional category for mitigation pathways that limit global warming to 1.5°C by 2100 — an important basis for the subsequent formulation of the long-term temperature goal in the Paris Agreement.

The Sixth IPCC Synthesis Report (AR6 SYR) is one of the key sources of information for the first Global Stocktake — due to be completed at COP28 in Dubai in December — in the context of the Paris Agreement. The Global Stocktake is a two-year process to assess collective progress towards the long-term goals of the Paris Agreement, in particular the level of ambition of the combined Nationally Determined Contributions (NDCs) and their implementation. In addition to status and trends in greenhouse gas sources and sinks, adaptation and financial flows, it also considers *Loss and Damage*, special challenges for developing countries, issues of international cooperation, and equity and fairness, among other things.

In addition, the AR6 SYR will also be a key reference point in the negotiations on the Global Goal on Adaptation, on a *New Collective Quantified Goal on Climate Finance* and on the new financing mechanism for *Loss and Damage* agreed at COP27. It is therefore particularly important for the governments involved that the scientific findings high-

lighted and language used in the SYR, and its SPM in particular, reflect their national priorities and negotiating positions in the international climate process to the extent possible.

Increasing risks and decreasing adaptive capacity

The IPCC has once more tightened its assessment of the risks of climate change compared to the Fifth Assessment Report. Severe impacts are expected even at lower levels of warming than before. And the SYR confirms the finding of the Special Report on Global Warming of 1.5°C, published in 2018, that an average temperature increase of this magnitude represents a significant risk threshold for particularly vulnerable ecosystems, regions and societies. A more detailed analysis of long-term sea-level rise and the likelihood of reaching tipping points has also contributed to this understanding, building on findings presented in the 2019 IPCC Special Report on the Ocean and the Cryosphere. The observation that the impacts of climate change and losses and damages from extreme weather events are already increasing also supports this assessment. This is in addition to the finding that the effectiveness of many adaptation options declines with increasing warming, and that hard limits to adaptation have already been reached or will be reached for certain regions and ecosystems between 1.5°C and 2°C of global warming.

These AR6 findings have helped shift the focus of political and public discourse from limiting warming to well below 2°C to 1.5°C. Many governments, and the Glasgow (COP26) and Sharm-el-Sheik (COP27) declarations, now refer to 1.5°C as the collective level of ambition (see SWP Comments 2/2022 and 10/2023).

Transition in this decade

At least since its Special Report on Global Warming of 1.5°C, the IPCC has been sending the message that every bit of warming, every year and every decision counts.

Achieving the long-term temperature goal of the Paris Agreement will require massive, rapid and sustained reductions in greenhouse gas emissions across all sectors.

Current NDCs are woefully inadequate, and the SYR SPM (hereafter SYR) attests to a major ambition and implementation gap. In order to limit warming to 1.5°C by 2100 with only “limited overshoot” (i.e. temporarily exceeding by a maximum of 0.1°C), global greenhouse gas emission reductions must amount to 43 per cent in the period 2019–2030 and 60 per cent by 2035. In particular, the reduction level for 2035, which is explicitly mentioned for the first time in the SYR, is likely to be an important benchmark for the review of global ambition in the context of the Global Stocktake and the subsequent reformulation of the NDCs with a time horizon of 2035.

Such quantitative estimates of mitigation levels, timelines and potentials are crucial inputs for the political process, and hence often controversial, especially for individual sectors, technologies and energy sources. The SYR contains no specific information on phase-out years or reduction targets for coal, oil and gas, nor on halting deforestation or the required expansion rates for renewable energies. The increasing cost efficiency of wind and solar energy and their high potential contribution to “Paris-compatible” emission reductions by 2030 can be gleaned from a visual, but it is not included in the text. In contrast, there was consensus on the important role of methane mitigation measures, indicating this may become a priority issue for COP28.

The future of fossil fuels

It is widely accepted in scientific, civil society and national policy debates in industrialised countries that a comprehensive phase-out of coal, oil and gas is required for effective climate action. In a multilateral setting, however, it has proven extremely difficult to reach consensus on text related to curtailing fossil fuel use, production and finance, including subsidies. Indeed, the Glasgow Climate Pact, adopted at COP26,

was the first UNFCCC decision document to include an explicit reference to fossil fuels. The last-minute forced change of the wording from “phase out” to “phase down” for coal-fired power generation almost caused the Glasgow negotiations to collapse.

The SPM of the Working Group III (2022) report broke new ground here, and some of those statements are reflected in the SYR. Both documents show that global financial flows for fossil fuel infrastructure and subsidies exceed those for mitigation and adaptation. They also highlight that future emissions from the continued use of existing fossil energy facilities alone already exceed the remaining 1.5°C CO₂ budget. The SYR also points out that without additional abatement measures such as carbon capture and storage (CCS), emissions from currently existing and planned facilities would exhaust even the carbon budget for 2°C.

Statements about the need to reduce the use of fossil fuels regularly include the qualifier “without CCS”. Fossil fuel use with CCS is listed as an essential technology in the SYR, despite its high cost, a limited range of deployment options and low short-term abatement potential. The limitations of the CCS process are explained in a footnote. This prominent placement is supported by the fact that CCS plays an important role in many of the WG III emission reduction scenarios, especially for coal-fired power generation, which is politically relevant for heavily coal-dependent countries. However, the emphasis on the potential of CCS for fossil fuels in general could also be read to imply their future viability, which is important for many oil- and gas-producing countries that are counting on CCS pathways or *carbon capture and utilisation* (CCU).

Overshooting 1.5°C and carbon dioxide removal as the new normal

The SYR spells out an uncomfortable truth with unusual clarity: The 1.5°C global warming threshold will probably be exceeded, at least temporarily, even with immediate and stringent mitigation action, and quite possibly as soon as the early 2030s.

This highlights one of the key contradictions in climate policy: The political commitment to 1.5°C is inconsistent with the continued rise of emissions since Paris.

According to the SYR, the remaining carbon budget for 1.5°C would be exhausted by the end of this decade if emissions remain at current levels. A drastic reduction in global CO₂ emissions of 48 per cent by 2030 compared to 2019 levels and achieving net zero CO₂ emissions by the early 2050s would make it possible to still limit the temperature increase to 1.6°C. Only if carbon dioxide removal (CDR) was to significantly exceed remaining CO₂ emissions over the course of the second half of the century could the global temperature rise be lowered back to 1.5°C.

The SYR clearly states that large-scale CO₂ removal from the atmosphere is a prerequisite to bring warming back to 1.5°C. The report also addresses the associated risks, both in terms of the potential consequences of global temperature being above 1.5°C for several decades, and in terms of the technical feasibility, costs, and potential environmental and social impacts of such large-scale CO₂ removal, which would need to be undertaken in addition to the already significant CDR volumes required to compensate for residual emissions that are difficult to avoid (e.g. from agriculture).

This step towards normalising a necessary political debate is also based on the scientific progress since AR5. Examples include the systematic examination of the environmental, social and cost dimensions of different CDR approaches; the consideration of potential competition for land and other sustainability criteria in modelling ecosystem-based CDR methods such as bioenergy with CCS (BECCS) or afforestation to avoid trade-offs; and the resulting increase in knowledge about the sustainable potential of CDR. Practical implementation is also highly dynamic: from pilot plants for BECCS and direct air carbon capture and storage (DACCS), to extensive public innovation programmes — for example in the United States and the United Kingdom — to policy frameworks at the European Union

(EU) level, where the Council of the EU and the European Parliament are currently negotiating a Regulation on the certification of CDR methods (see SWP Comment 40/2022).

These developments clearly show that mainstreaming CDR will be part of the new normal in climate change mitigation. However, CDR will have to be pursued in addition to, not instead of, ambitious emission reductions to achieve the temperature goal of the Paris Agreement: Deep and rapid cuts in global greenhouse gas emissions are key to limiting both residual emissions and the overshoot to feasible levels.

It remains to be seen what impact the prospect of exceeding 1.5°C will have on the UNFCCC negotiations. It could strengthen the case for a shift in focus towards the “well below 2°C” mark. It is also conceivable that 1.5°C will become even more important as a “survival limit”, especially for small island states. In this case, the focus may shift towards minimising the magnitude and duration of the overshoot, and how to politically organise and finance the necessary use of CDR without jeopardising sustainable development goals.

Climate finance, losses and damages

Climate-related investment would need to be scaled up significantly in the near future in order to meet the goals of the Paris Agreement. Financial flows are currently more than insufficient, and the gap is even more profound for adaptation than for mitigation. For the first time, the SYR makes explicit reference to the economic impacts of climate change further increasing financial constraints for adaptation, particularly for developing and least developed countries.

The amount of finance required for mitigation and adaptation can be estimated by researchers. Similarly, scientific evidence can be provided about potentially effective instruments and mechanisms to improve access to finance. However, the question of where the funds should come from and what support the (historical) major emitters should provide cannot be answered by the

IPCC. Even a graphical presentation of data that may indicate responsibility or liability, such as country-specific emissions, has proven very difficult in the context of an IPCC SPM. The controversies that have arisen over draft language and visuals in this respect should also be seen in the context of the forthcoming negotiations on a *New Collective Quantified Goal on Climate Finance* under the Paris Agreement and on the financial mechanism for *Loss and Damage*. The list of potential donors has already expanded beyond the traditional industrialised countries, but tangible commitments have yet to be negotiated.

The SYR refers in many places — and with substantial emphasis — to climate-related losses and damages that have already occurred or are unavoidable in the future, especially if the 1.5°C threshold is exceeded. The IPCC consistently uses the term “losses and damages” to clearly distinguish between scientific findings and the political concept of *Loss and Damage* within the UNFCCC. The SYR avoids regional differentiation beyond a generic list that includes all developing regions. It thus reflects the political consensus at COP27 that the most vulnerable and poor countries need support to cope with increasing *Loss and Damage*, but it gives little indication as to which countries and regions these are.

An additional difficulty in dealing with these issues arises from the lack of a universally accepted definition of the term “developing countries” and its strong politicisation in the UN context, including through different rights and obligations. Related sensitivities also preclude the categorisation of countries at different levels of development using indices that are common in the scientific community (e.g. based on gross national income or the UN Human Development Index).

The 1992 UNFCCC dichotomy between developed and developing countries no longer adequately reflects individual countries’ economic strength, their current and historical emissions, and the capacity to support others. One of the great breakthroughs of the Paris Agreement is its uni-

versality, moving beyond this dichotomy while still adhering to the guiding principle of “common but differentiated responsibilities and respective capabilities”. Since Paris, the interpretation of these differentiated responsibilities has been hotly contested, especially between traditional industrialised countries and large emerging economies such as China, India, Brazil and Saudi Arabia (see SWP Comment 9/2019). This tension translates into challenges regarding the wording in the relevant passages of the SYR, which serves as input to the UNFCCC process.

Equity

Questions of justice are ubiquitous when dealing with climate change: within and between generations and societies, between polluters and those affected, and between poorer and richer countries, especially in the context of the right to economic development and industrialisation. In this context, AR6, like AR5, emphasises the potential synergies between ambitious mitigation, adaptation and other sustainable development goals. The SYR also underlines the importance of the equitable and inclusive design and implementation of climate change policies for their effectiveness and acceptability, and of considering context-specific vulnerability factors, especially for poor and marginalised groups.

A section devoted to equity and inclusion highlights the importance of equity as a central concept in the context of the UN climate regime, while acknowledging that there may be “shifts in differentiation between states” and that “assessing fair shares” is a difficulty. The SYR points out that ambitious climate change policies can potentially trigger “disruptive changes in existing economic structures”, with significant distributional consequences within and between countries. These include shifts in income and employment, particularly in regions that are economically heavily dependent on fossil fuels. In this context,

which is also topical for the EU and Germany, the SYR points to the important role of *just transitions*.

Looking ahead

The IPCC’s meeting in Interlaken, Switzerland, was the first in-person plenary to adopt a report since 2018/19. That it was successful is a remarkable achievement, given the fallout from Russia’s war on Ukraine and the Covid-19 crisis.

The two-day extension of the consultations required for this — with long negotiating days and night sessions — highlights one of the major challenges of the multilateral climate process: Poorer countries with small delegations can hardly participate on an equal footing under such conditions. In the end, important voices from some of the countries most affected by climate change are missing, because their delegates’ travel costs are covered by the UN only for the officially scheduled duration of the meetings, and they return home as planned.

The IPCC is facing major institutional challenges. With its current *modus operandi*, it can hardly cope with the growing volume of research and rapid technological and political developments. Justified calls for greater diversity within the author teams are difficult to implement in a system based on scientists volunteering considerable amounts of their time within a research landscape that remains dominated by industrialised countries. The global scope of the assessments also limits the usefulness of results at the national level. At the same time, rising emphasis on political perspectives, as witnessed during the SYR approval process, challenges the feasibility of the IPCC model moving forward. As the focus shifts further away from the natural sciences and more towards the implementation of mitigation, adaptation and finance, national sensitivities will inevitably come to the fore.

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In July 2023, the new IPCC leadership will be elected in Nairobi – a new Chair, three Vice-Chairs, the Co-Chairs of the three Working Groups and the IPCC Task Force for National Greenhouse Gas Inventories (TFI), along with the Working Group and TFI Vice-Chairs that together form the regionally balanced IPCC Bureau. The work programme for the subsequent seventh assessment cycle is expected to be decided by the plenary later in 2023, informed by lessons learnt during AR6 and input from governments on, for example, the topics and timing of Special Reports. Recent discussions on aligning the IPCC's assessment cycles with the five-year cycle of the Global Stocktake or on the composition and election of the next IPCC Bureau have been controversial and yielded no substantive innovations. The far-reaching reforms that could maintain the political relevance of the IPCC's work and increase the inclusiveness of its processes may well be countered by the institutional path dependencies that often prevail in UN organisations.

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