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SIXTH ASSESSMENT REPORT (AR6) PRODUCTS

Information document

(Submitted by the Acting Secretary of the IPCC)

INFORMATION DOCUMENT FOR THE 43RD SESSION OF THE IPCC

(Prepared by the Co-Chairs of Working Groups I, II and III)

Overview

1. This document is the response to the request made of the WG Co-Chairs at the IPCC Bureau 51. The document: a) assesses options for the enhanced treatment of regional perspectives in AR6; and b) given the scientific merit of each individual Special Report proposal presented in plenary document IPCC-XLII/INF.13, co-chairs set up a roadmap for covering the associated topics where most appropriate in the various products of the AR6 (Table 1).
2. This document first confirms the Working Group Co-Chairs' support for: a) the Bureau's recommendation to accept the invitation by UNFCCC to provide a Special Report on impacts and emission pathways associated with global warming of 1.5 °C; and b) the Bureau's assessment of various clusters of proposals for Special Reports. Second, it sets out the Working Group Co-Chairs' assessment of options for the treatment of regional issues in AR6, as this is related to several Special Report proposals. Third, it sets out a roadmap for taking forward Special Report proposal themes by alternative means in the AR6 cycle.

Co-Chair recommendations on Special Reports

3. The Working Group Co-Chairs confirm their support for the Bureau's recommendation to accept the invitation by UNFCCC to provide a Special Report on impacts and emission pathways associated with global warming of 1.5 °C above pre-industrial levels. Accepting this proposal could, depending on the scoping of the report, cover elements of the other cluster F proposals (see 4.).
4. The Working Group Co-Chairs note that particular support was expressed at IPCC Bureau 51 for four clusters of proposals for Special Reports identified in Documents BUR-LI/INF.6 and BUR-LI/INF.8. These clusters are: Cluster A - LAND USE: land use, land degradation, food security and agriculture; Cluster B - OCEANS: ocean and cryosphere; Cluster F - EMISSION PATHWAYS including various aspects of climate stabilization; and Cluster I - CITIES. Cluster F includes the UNFCCC invitation for a 1.5°C Special Report. The views of the Working Group Co-Chairs coincide with those expressed by the Bureau as a whole.
5. The draft work schedule (IPCC-XLIII/Doc. 9 on Strategic Planning and its Annex 1) of the AR6 sets the framework and scope for its products (special reports, assessment reports) according to associated author recruitment from all WGs, authors meetings, government reviews, approval sessions and the requirement to limit overlaps. The new information for future climate projection should also be considered with respect to the timeline of the WCRP Climate Model Inter-comparison Project CMIP6. It is expected that Special Reports to be approved in 2018 may mostly rely on CMIP5 projections. The AR6 WGI report will include a comparison of CMIP5 and CMIP6 projections, and an assessment of CMIP6 simulations. Any intermediate product such as a Special Report to be approved in 2019 would be produced in a transient

situation where CMIP6 simulations will be available for use but not the comprehensive model evaluation analysis that is critical to assess model skills.

6. The first Special Report could thus address the invitation by UNFCCC with the following considerations:
 - a. The timing of the first Special Report is extremely tight in order to meet the timelines associated with the UNFCCC invitation. TSU capacity across the Working Groups will be available to meet this timing.
 - b. Addressing the theme of "Impacts of global warming of 1.5°C and related emission pathways" requires the synergistic interaction of WGI, II and III issues. Integration across Working Groups and their TSUs to produce a Special Report on this theme could be a model for conceptualizing the synthesis report and possibly a regional report.

Regional Assessments

7. In AR5, regional assessments comprised 11 chapters in WGI and II (690 pages in total), and were accompanied by the WGI Atlas of Global and Regional Climate Projections. The Co-Chairs are particularly concerned about the need to enhance regional perspectives in AR6 in line with Plenary Decision IPCC/XLI-4 on the Future Work of the IPCC, the request, under paragraph 45 of Decision CP.21 of the COP21 Paris meeting, for Parties to strengthen regional cooperation on adaptation, and the recommendations of the IPCC Workshop on *Regional Climate Projections and their Use in Impacts and Risk Analysis Studies* ([IPCC, 2015: Workshop Report of the Intergovernmental Panel on Climate Change Workshop on Regional Climate Projections and their Use in Impacts and Risk Analysis Studies \[Stocker, T.F., D. Qin, G.-K. Plattner, and M. Tignor \(eds.\)\]. IPCC Working Group I Technical Support Unit, University of Bern, Bern, Switzerland, pp. 171](#)) held in September 2015. The increasing demand for policy-relevant regional information is also outlined in a number of Special Report proposals. Presented here is a set of options for enhancing the treatment of regional aspects including the option of producing a separate regional report using the procedural format of producing a Special Report. This is the recommended option from the Co-Chairs.
8. New research is being conducted worldwide and new results will be available in particular on regional climate projections using higher resolution global climate models as well as regional models (WGI) and regional climate impacts (WGII). A growing number of national or regional climate assessments and adaptation strategies are available for consideration in the regional chapters of AR6, and reaching far beyond the scope of what was possible in AR5.
9. The additional workload associated with the production of a fully integrated, cross-cutting regional assessment is similar to the workload of a Special Report, such as the SREX. This workload should be recognized and accounted for in order to enable a high quality product.
10. In the AR5, regional information was presented with some inconsistencies between Working Groups (e.g., in the use of attribution approaches) and discontinuities.

11. There are two options with considerations of the advantages, disadvantages and trade-offs associated of accommodating regional information:

Option 1 : no regional report, a choice between (a) and (b) and implementing (c)

- a. Locating regional chapters in one single Working Group report.
- b. Dealing with regional issues in individual Working Group reports.
- c. The provision of Regional Atlases for climate projections and impacts in the Working Group I and II reports, respectively.

Option 2:

- d. Provision of a separate Regional Report following procedures for Special Reports (see also Box 1).

In detail:

Option 1 : No regional report, a choice between (a) and (b) and implementing (c)

- a. ***Locating regional chapters in one single Working Group report.*** A model of locating the regional chapters in one Working Group report has been applied in AR5 and led to the production of a separate WGII volume with 10 chapters (Context, Africa, Europe, Asia, Australasia, North America, Central and South America, Polar Regions, Small Islands, The Ocean; 598 pp. in total). However, this approach has reached the limits of its capacity as it places all the workload on one Working Group, its authors and TSU and takes away resources in this Working Group, not available to develop other products or aspects. It thus cannot be developed further to meet the rising demand for regional coverage and visibility. This is neither considered to be viable nor scientifically justified for AR6, as it limits cross-Working Group integration, and minimizes the ability to integrate regional information from WGI and II.
- b. ***Dealing with regional issues in individual Working Group reports.*** Regional aspects could be dealt with separately in all three Working Group reports. Working Group I may encompass global to regional dimensions in observations, process studies and projections. Many examples will in fact be also regional in order to illustrate the sectoral assessment issues in Working Group II reports. While this has the advantage of distributing the additional workload evenly across Working Groups, it has the clear disadvantage of fragmenting and isolating the regional assessment input and excluding the possibility of cross-Working Group consideration of this material. This option would therefore be a step back from AR5 accomplishments.
- c. ***The provision of regional atlases for climate projections (WGI) and impacts (WGII).*** The IPCC Workshop on “*Regional Climate Projections and their Use in Impacts and Risk Analysis Studies*” developed the recommendation to produce atlases with regional information on climate (AR6 WGI Atlas of Global and Regional Climate Projections, based on CMIP6 and CORDEX) and impacts (AR6 WGII Atlas of Global and Regional Climate Impacts and Risks). These may also include adaptation and mitigation projects. A key recommendation from this workshop is that “the AR6 Atlases should be based on coordinated, multi-model initiatives for global and regional climate models and downscaling products.” This recommendation

may be considered complementary to the development of an integrative, cross-Working Group narrative in regional assessments.

Option 2: Provision of a separate Regional Report following procedures for Special Reports (see also Box 1).

- d. The timeline of IPCC AR6 cycle discussed at the 51st Session of the IPCC Bureau considers the possibility of a Regional Report (established following a Special Report procedural format) to be completed between the main Assessment Report and the Synthesis Report (SYR). This would include a regional atlas for projections and impacts. This product would delay the production of the SYR by about 3 months into 2022. The Regional Report as a stand-alone report would build on the sectoral assessments of all WGs and could develop the regional assessments into a truly integrative product across WGI, II, and, subject to scoping, elements of WGIII, to be fed into the SYR. Specific benefits associated with a Regional Report are discussed in Box 1.

12. Considering these arguments, Co-Chairs developed a preference for option d considering further benefits for this option as compiled in Box 1.

Box 1: Benefits of a Regional Report (following a Special Report procedural format)

- i. A Regional Report would be a major innovation for AR6. Using the Special Report procedural format of preparation would be in line with existing IPCC principles and procedures and would minimise any complications associated with the production of this new product.
- ii. By supporting the balanced formation of joint chapter teams, a cross-Working Group Regional Report would ideally meet a key recommendation from the IPCC workshop on *“Regional Climate Projections and their Use in Impacts and Risk Analysis Studies”* to prepare *“joint chapters supported by meetings of the Lead Authors of the joint chapter teams from across WGs. Examples of unifying challenges for IPCC WGs I and II include changes in the hydrological cycle and related impacts, the regional expression of sea level rise and extreme sea level events, or climate and weather extreme events.”*
- iii. The Regional Report would be a new element produced between the main AR and the SYR. The Regional Report would be scoped together with the main report (including the SYR, and the WGI-II-III contributions to AR6).
- iv. The Regional Report as a stand-alone report would build on the global to regional assessment of WGI and sectoral assessments WGII and III. This could develop the regional assessments into a truly integrative product across WGI, II and, subject to scoping, certain aspects of WG-III, to be fed into the SYR.
- v. The timing of the Regional Report would ensure consistency in the treatment of key WGI-II-III concepts that are defined and introduced in the (sectoral) WG reports (such as risk, vulnerability, adaptation, detection and attribution, extreme events etc.).
- vi. In the Regional Report scoping process, the regional resolution could be fine-tuned beyond what was achieved in AR5, in line with previous experience and available knowledge from all WGs. Gaps in knowledge could thus be clearly

identified. Such fine-tuning would not only allow the scientific basis of regional climate projections, impacts and adaptation to be addressed, but also certain aspects of regional mitigation options.

- vii. Issues specific for a region or climate zone (e.g. desertification in semi-arid climate zones) or with regional commonalities (e.g. urbanisation in coastal zones) are within the scope of several Special Report proposals (Annex B) such as those on desertification, AFOLU, mountains, cryosphere, oceans, cities, climate and extreme events, adaptation and mitigation, and these may be incorporated in the scoping of the Regional Report in an integrated cross-Working Group approach. Specific regional processes such as desertification and land degradation, or regional nexus points such as mountains, urbanized regions and high risk areas could form cross-cutting themes addressed in dedicated sections of a Regional Report, but such approach needs to be balanced with the scoping of the main assessment. Indeed, regional treatment of e.g. cities, oceans and sea level, food security need to build on the full range of climate related opportunities and challenges associated with these sectors at the global level.
- viii. A separate Regional Report (following the Special Report procedural format) would allow additional specialized regional experts to be recruited in addition to representative authors with overarching, sectoral to regional expertise, who would also be involved in the main assessments of all three WGs. The latter will ensure consistency in the use of concepts, terms and approaches across AR6 products, combined with more quantitative information as available from e.g., Shared Socio-economic Pathways.
- ix. The combined scoping of main Assessment Report, Regional Report and SYR will ensure coordinated and balanced coverage of relevant issues and minimizes duplication.
- x. The results of the Regional Report would feed into the SYR, and the Regional Report Summary for Policy Members could even form the basis of a regional section of the SYR.
- xi. Successful implementation of a Regional Report (Special Report procedural format) in AR6 could provide a role model for future cross-cutting regional assessments.

Roadmap for the Treatment in AR6 of Topics Covered by Proposals for Special Reports

13. The Co-Chairs here lay out how to consider each of the proposals for Special Reports in the framework of the AR6. Due to the above considerations on work schedule constrains, and in spite of their individual merits, many of the 31 proposals received from 27 sources cannot be covered by a dedicated Special Report, and will have to be carefully considered in the scoping of all Working Group reports.

14. Table 1 identifies how each proposal could be addressed within the AR6 reports, which may be further complemented by expert meetings or workshops. It assumes that a 1.5°C Special Report is produced but does not make any prior assumptions about the scope of that report. The Table also identifies how proposed topics might be covered in the event that a Regional Report is or is not produced.

Table 1: Roadmap for taking forward special report proposal themes by alternative means in the AR6 cycle

The following acronyms are used: WG(main assessment by individual WGs); RR (Regional Report); 1.5°C (Special Report on impacts and emission pathways associated with global warming of 1.5 °C). Any scoping of AR6 products would need to be checked against this table for coverage of proposed themes.

		Potentially within scope (if no Regional Report) of				Potentially within scope of a Regional Report
		1.5°C	WG-I	WG-II	WG-III	
Cluster A: LAND USE						
1	Climate Change and Desertification;	✓	✓	✓		✓
6	Special Report on Climate Change, Food and Agriculture;	✓	✓	✓	✓	✓
10	Special Report on Desertification with Regional Aspects;	✓	✓	✓		✓
17b	Food security and climate change;	✓	✓	✓	✓	✓
18b	Special report on AFOLU;	✓	✓	✓	✓	✓
21	Climate Change and Land Degradation	✓		✓	✓	✓
27	Climate Change and Mountains		✓	✓		✓
Cluster B: OCEAN AND CRYOSPHERE						
2	Impact of Climate Change on the Cryosphere;	✓	✓	✓		✓
4	Climate Change and Ocean;	✓	✓	✓		✓
7	Japan's view on potential themes for Special Reports;	✓	✓	✓		✓
8	Ocean and Climate Change;	✓	✓	✓		✓
12	Special Report on Antarctic/Southern Ocean Region; Oceans and Climate Change;	✓	✓	✓		✓
14	Special Report on the Evidences, Impacts and Adaptation to the Climate Change of the Oceans	✓	✓	✓		✓
16	Global and Regional Consequences	✓	✓	✓		✓

	of Changes to the Frozen World;					
17c	Sea level rise and glacial melting	✓	✓	✓		✓
Cluster F: EMISSION PATHWAYS						
17a	Decarbonisation and low carbon development	✓	✓		✓	
23	Mitigation, climate stabilization scenarios and sustainability	✓	✓		✓	
24a	Special Report on Scenarios	✓	✓		✓	✓
26	Impacts of global warming of 1.5°C and related emission pathways	✓	✓	✓	✓	
Cluster I: CITIES						
25	Special Report on Cities and Climate change (SRCC)	✓	✓	✓	✓	✓
Cluster C						
3	Climate Change and Human Health;	✓		✓		✓
19	The Impact of Climate Change on National, Regional and International Security	✓		✓		✓
Cluster D						
5	Integrating adaptation and mitigation in comprehensive near term solutions to climate change;	✓		✓	✓	✓
11	Special Report on Adaptation Costs in Developing Countries;	✓		✓		✓
18a	Special Report on Aviation and Maritime;	✓		✓	✓	
22	Global Adaptation Outlook	✓		✓		✓
24b	Special Report on the Interaction between Adaptation, Mitigation and Sustainable Development	✓		✓	✓	✓
Cluster E						
9	Carbon pricing				✓	
Cluster G						
13	Special Report on Managing the Diversity and Contradictions of Climate Change Data and Information		✓			✓
Cluster H						
15	Update of key policy-relevant messages in AR5 in support of review and assessment procedures in new UNFCCC agreement;	✓	✓	✓	✓	✓
20	Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation – Update	✓	✓	✓		✓

Annex A

Summary of Methodology

Working Group Co-Chairs were invited at the 50th Session of the IPCC Bureau to draft a commentary without prioritization on the proposals for Special Reports.

After reception of all 31 individual SR proposals, the Co-Chairs of the three Working Groups investigated potential synergies and overlap amongst individual Special Report proposals and identified 9 clusters of potentially inter-related SR proposals.

The Co-Chairs then considered the proposals using the *IPCC Decision Framework for Special Reports, Methodology Reports and Technical Papers* and focused on the science-related guidelines, formulating 5 criteria against which each individual Special Report proposal was considered:

- *Special Reports must be relevant for at least 2 working groups*
- *Special Reports should complement the AR6, and be scientifically focused,*
- *Special Reports should cover timely topics not recently adequately covered by earlier special reports`*
- *Special Reports which would strongly depend on new climate simulations from CMIP6 can only be implemented late in the cycle*
- *Special Reports may integrate different individual proposals in a coherent framework.*

The Co-Chairs included the Vice-Chairs of each Working Group in the analysis of each Special Report proposal. They also consulted with members of the research community of each Working Group and considered the feedback received from the consultation with relevant international bodies that was organized by the IPCC Secretariat.