



1.5 within AR6 package of reports

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The Structured Expert Dialogue (SED) Co-Facilitators: Zou Ji (China) and me



formed part of The 2013-2015 Review



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The Mandate

Theme 1

1/CP.18

Recalling that the first review should st rt in 2013 and be concluded in 2015, when the Conference of the Parties shall take appropriate act on based on the review,

79. *Decides* that the review should periodica assess, in accordance with the relevant principles and provisions of the Convention, the following:

(a) The adequacy of the long-term global goal in the light of the ultimate objective of the Convention;

(b) Overall progress made towards achieving the long-term global goal, including a consideration of the implementation of the commitments under the Convention;







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Nature of The 2013-2015 Review

IPCC AR5 and some other inputs

What we know

The UNFCCC calls on national governments to promote and cooperate in research and systematic observation of the global climate system – a key prerequisite for advancing scientific knowledge on climate change.

Observe surface temperature

The world is warming

Global average temperature has been

increasing since 1870 by 0.85°C.

+0.6°C

o°C

.06°C

Driver of changes



CO₂ remains the main driver Natural and human-caused substances and processes that alter the Earth's energy budget are drivers of climate change.

Understand changes



Human influence is clear It is clear that human influence has been the dominant cause of the observed warming since the mid-20th century.

Future changes



The heat is on! Global average temperature change by the end of the 21st century is likely to rise 1.5°C above pre-industrial levels.









The Structured Expert Dialogue (SED)

 Fact-finding, face-to-face exchanges of views between Parties and experts



Fourth meeting of the Structured Expert Dialogue (SED) discussing IPCC SYR AR5 during COP20, Lima, Peru, 2nd Dec. 2014

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 3 years up to COP21: 4 meetings, 5 locations, 34.5 hours, 11 days, 60 presentations, 73 experts, many delegates plus observers, 5 notes, 4 reviewed summary reports plus a final summary with 10 messages with 10 headlines





Outcome e.g. SED Final report* including technical summary

- 1. A long-term global goal defined by a temperature limit serves its purpose well
- 2. Imperatives of achieving the long-term global goal are explicitly articulated and at our disposal, and demonstrate the cumulative nature of the challenge and the need to act soon and decisively
- 3. Assessing the adequacy of the long-term global goal implies risk assessments and value judgments not only at the global level, but also at the regional and local levels
- 4. Climate change impacts are hitting home
- 5. The 2 °C limit should be seen as a defence line
- 6. Limiting global warming to below 2 °C is still feasible and will bring about many co-benefits, but poses substantial technological, economic and institutional challenges
- 7. We know how to measure progress on mitigation but challenges still exist in measuring progress on adaptation
- 8. The world is not on track to achieve the long-term global goal, but successful mitigation policies are known and must be scaled up urgently
- 9. We learned from various processes, in particular those under the Convention, about efforts to scale up provision of finance, technology and capacity-building for climate action
- 10.While science on the 1.5 °C warming limit is less robust, efforts should be made to push the defence line as low as possible

* FCCC/SB/2015/INF.1 available at http://unfccc.int/6911.php?priref=600008454



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1/CP.21

21. *Invites* the Intergovernmental Panel on Climate Change to provide a special report in 2018 on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways;

17. *Notes with concern* that the estimated aggregate greenhouse gas emission levels in 2025 and 2030 resulting from the intended nationally determined contributions do not fall within least-cost 2 °C scenarios but rather lead to a projected level of 55 gigatonnes in 2030, and *also notes* that much greater emission reduction efforts will be required than those associated with the intended nationally determined contributions in order to hold the increase in the global average temperature to below 2 °C above pre-industrial levels by reducing emissions to 40 gigatonnes or to 1.5 °C above pre-industrial levels by reducing to a level to be identified in the special report referred to in paragraph 21 below;







United Nations Framework Convention on Climate Change

1/CP.21

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Summary!

• In all reports the range of scenarios needs to be enlarged at the lower end and get more attention (despite difficulties)



- A slim SR 1.5°C is preferable and structure could follow mandate
- SR 1.5°C should attempt to answer as much as possible the questions by policy makers that remained unanswered by AR5 before COP21
- Due to time constraints an optimally robust response by IPCC to the 1.5°C question will only be possible in AR6



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On a possible structure



Some ideas for a main structure of a slim 1.5 SR

- Front matter
- SPM and FAQ (SPM reflects structure of underlying report)
- Global warming of 1.5 °C above preindustrial levels including
 - description of a LTGG (Long-Term Global Goal), e.g. of global warming of 1.5 °C above preindustrial levels as defined in AR5
 - differences to scenarios used in AR5
 - Pros and cons/limitations of methodological approaches

Impacts

focusing on difference 1.5 vs. 2°C

Emissions pathways

including mitigation risks

Synthesis

focusing as much as possible on answers to the questions asked by policy makers that remained unanswered by AR5 before COP21 (as discussed e.g. in the Structured Expert Dialogue of The 2013-2015 Review)

Back matter





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On some questions awaiting answers



Questions that remained unanswered during SED

- What are the imperatives of achieving the LTGG of 1.5°C?
- Which climate change impact risks can by how much be reduced by having a LTGG of 1.5°C vs. one of 2°C?
- What are the mitigation risks that come with a LTGG of 1.5°C vs. one of 2°C?





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After IPCC, 2014. Synthesis Report, Figure SPM.10





Key result from AR5











Setting a LTGG as in Paris Agreement





^{44d70fad} Strengthening the LTGG to 1.5 °C





C emissions compatible with 2 °C LTGG?



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C emissions compatible with 1.5 °C LTGG?







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- What are the imperatives of achieving the LTGG of 1.5°C?
- By how much can climate change impact risks be reduced by having a LTGG of 1.5°C vs. one of 2°C?
- What are the mitigation risks that come with a LTGG of 1.5°C vs. one of 2°C?



After IPCC, 2014. Synthesis Report, Figure SPM.10









***Observed impacts for a global warming of +0.85 °C



^{44d70fad} Expected impacts for a LTGG of 2 °C



Expected impacts for a strengthened LTGG





(c) Control pH



(b) After bleaching

(d) Low pH

IPCC, 2014. WGII, Crosschapter box compendium



Marine ecosystems among most vulnerable





INTERGOVERNMENTAL PANEL ON CLIMATE CHARGE



Marine ecosystems among most vulnerable





^{44d70fad}Risk for terrestrial and freshwater species impacted by the rate of warming









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- Which climate change impact risks can by how much be reduced by having a LTGG of 1.5°C vs. one of 2°C?
- What are the mitigation risks that come with a LTGG of 1.5°C vs. one of 2°C?
 - How much higher are mitigation costs?
 - Impacts on sustainable development including poverty eradication
 - Technology needs, including negative emissions, and risks not to meet them
 SDGS
 - Impacts on food security, e.g. by BECCS
 - Impacts on biodiversity, e.g. by BECCS
 - Impacts on carbon cycle by more ambitious mitigation (e.g. forests)
 - Overshoot risks (temperature, atmos. GHG conc.), irreversibility





Questions that remained unanswered during SED

Provide the specific figure called for in 1/CP.21, paragraph 17

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Difference SR 1.5 vs. other SRs vs. AR6

- SR 1.5 (not a mini AR6)
 - What are most vulnerable systems?
 - Does difference between 1.5°C and 2°C matter? Can we tell?
 - 2018: Window of opportunity for policy making?
 Urgency? Benchmarks? Risk to miss it?
- Other SRs: Careful attention to low emission scenarios (with focus on given topic)
- AR6
 - Full assessment of "1.5°C world" using RCP1.9 (overlaps with SR 1.5 in intention)
 - Updates other SR findings as given by new science





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On some time constraints

Policy making needs collide with research time lines



Further Reading: Eyring et al., 2015. Geosci. Model Dev., 8(12): 10539-10583. doi: 10.5194/gmdd-8-10539-2015 O'Neill et al., 2016. Geosci. Model Dev. Discuss., 2016: 1-35 (in review). doi: 10.5194/gmd-2016-84 Eyring.et al., 2015. WCRP 280pp. (<u>http://www.wcrp-climate.org/modelling-wgcm-mip-catalogue/modelling-wgcm-cmip6-endorsed-mips</u>)





Scientific research needs to speed up

- Articles need to be submitted by October 2017
 - and authors of those articles need to inform report authors
- Articles need to be accepted by April 2018
- Change the research agenda to not be policy prescriptive!



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Thanks for your attention!



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