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FUTURE WORK OF THE IPCC

Compilation of submissions by Authors, Contributing Authors and Review Editors in response to the Questionnaire on the Future Work of the IPCC of 23 May 2014; Executive Heads of International and other Organizations in response to the questionnaire of 26 May 2014; and TSUs and Secretariat in response to the questionnaire of 4 June 2014

(Submitted by the Secretariat in support of the process of the Task Group on the Future Work of the IPCC)

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WMO UNEP

FUTURE WORK OF THE IPCC

A. AUTHORS, CONTRIBUTING AUTHORS AND REVIEW EDITORS COMMENTS

NAME: **Essam Hassan Mohamed AHMED**
Involvement in IPCC: **AR5**
Function: (CLA / LA / CA / RE) **LA**
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) **AR5 WG3**
Previous reports (please indicate):
Other (e.g. workshop participant): **Scoping Meeting of the AR5, July 2009, Venice, Italy.**
IPCC Scoping Meeting, August 2010, Liege, Belgium.
IPCC Expert Meeting on Geo-engineering, June 2011, Lima, Peru.

A. What should be the future products of the IPCC?

- Regarding to my check for the previous IPCC assessment reports, and my personal experience during preparation AR5, I guess time difference between ARs should be decreased, also produce summary reports spot on the LDCs enclosed recommendations and advices to decision maker could be more valuable.
- In terms of Special Report, IPCC is supposed to deep analyses and evaluation to regional and hot issues in its future assessment.
- Better to prepare Methodology Reports MR on National GHG inventories. For Guidelines, I guess IPCC should avoid the time for using it, as we couldn't use Guidelines 2006 before 2015; same situation for guidelines 2017 which couldn't be used before 2023.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

- In the process of author nomination and selection, it is better to increase number of authors from developing countries, and its be good to arrange a workshop training for the selective authors before starting the AR process to ensure that authors understand the task and standardized the assessment process steps, that could lead to enhance their capacity and able them to play a full role in the report preparation.
- Good to give a chance to experts to nominate themselves individually outside the Governments to spread the experts number to more qualified authors, governments especially in developing countries tend to nominate the official experts, more than that are working in NGOs and private sector.
- For IPCC workgroups co-chair and other posts, I guess, IPCC should looking for another process for nomination and selection for its posts avoiding nomination via the Governments, taking in account that, IPCC is inter-governmental entity, so giving the nomination authorization to the governments was shifted IPCC away of its goal as a free panel.
- I guess only four authors meetings during the assessment report preparation are not enough, it could be better to increase with two extra meetings, one before issuing the zero draft report, other after issuing the 1st draft report to get more time for discussion.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

- To enhance capacity building in developing countries, IPCC could enhance the dissemination scientific papers using a good network of national scientists, researchers and academies.
- Good to increase and develop webinars as useful tools to be disseminated in developing countries.
- Enhance transparency and information validity; organize workshops for this issue to exchange experience between developed and developing countries, and also to enhance their capacity.
- More financial support is needed for young researcher and others from developing countries, scholarship programs need to increase.

D. Other matters

- Need to enhance the communication between authors, continuous attention and adaptation to needs, barriers, and challenges.
- Most people are looking for information and updated knowledge via the internet websites, so publishing for more reports and papers should be extended without any restrictions.
- As the UNFCCC negotiation is a political process via National delegates, as IPCC is non-governmental entity with no official say in the negotiation process, I guess IPCC could attend and follow the official meetings as international and neutral scientific advisor to support and give a hand to delegates who need IPCC advices. This point could support the IPCC role and also enhance the cooperation between IPCC and national negotiators.
- IPCC could contact other climate change entities, on the international, regional and local levels to support and help the IPCC authors to be invited by these entities to participate and share for the whole scientific meetings to enhance their capacity and be updated with the new knowledge on the climate change impacts.

NAME: Julian Allwood
Involvement in IPCC: AR5 WG3
Function: (CLA / LA / CA / RE) : LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): AR5
Previous reports (please indicate): none
Other (e.g. workshop participant): none

A. What should be the future products of the IPCC?

There is clear value in WGs 1 and 2 – which are primarily based around scientific evidence. I have considerable reserve about WG3 in which I was involved: The IPCC frequently refers to itself as a panel of scientists – but WG3 is primarily a panel of economists, with many others involved too, but the ethos and logic of the report is dominated by economists. This is fundamentally different to science: economists are very short of empirical evidence, they tend to be very careless about stating their assumptions and therefore often over-state the confidence they have in their analysis, their subject is primarily qualitative not quantitative, and the scale of change being considered to mitigate emissions is so far different from today's practice that in reality, we have few if any frameworks to consider the economic basis of a change at that scale. A particular manifestation of that in WG3 this time was that the scenario chapter, dominated by economists, used models that were designed for assessing investment decisions in electricity supply, so asked each sector chapter to provide a list of options in the format "what investment is required, how many tons of CO2 will be saved." This makes good sense for looking at supply side investments, but makes no sense when considering demand reduction. As a result, the report strongly emphasizes supply side technologies which are in effect currently research projects (in particular CCS {0.005% of anthropogenic emissions are currently captured and stored} and carbon negative technologies {in effect none are currently in use}) and gives very little prominence to demand reduction options which could be implemented today (keeping buildings in use for twice as long before replacement, halving the weight of cars for example).

So – I think WG1 and WG2 have a clear and very important role, although I think they should have employed a science communication writer to create a much clearer public facing summary. I have worked in this area for 10 years and find even the summary for policy makers to be very difficult to understand – it should be easy to get some professional help to clarify things.

However, I think WG3 needs a serious re-think – to make clear that it is not and cannot be, a panel of scientists. Therefore WG3 is and always will be speculative, and both the range of options considered and the assessment of the implementation challenge could be discussed and reported in a much broader, more balanced and less opinionated way.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

An oddity of my experience of WG3 – I was in the industry chapter – is that the key people I think of as the world experts in this area applied to take part, but were turned down – and instead, most of the people in the chapter team had little or no experience of industry or mitigating industrial emissions. This is a fundamental challenge of such a UN body – and presumably has been much discussed – but I fear that there is a danger that the result is therefore partially to gather together a community of willing amateur volunteers, rather than the professionals who most understand the area. I do not know how we can balance the team better without creating a bias towards the countries more likely to have better informed academics, or how to ensure that the best people take part when it is a very demanding but voluntary activity.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

I felt that this had already been achieved very well.

D. Other matters

I found the attitude of the IPCC towards flying to be utterly baffling. Apart from attending IPCC meetings, and a couple of other prior commitments, I have tried now to stop flying for anything related to work – because I cannot reconcile it with what we are working on. Yet the IPCC met in countries that maximized the need to fly, and the secretariat apparently fly business or even first class. This seems to me to send a fundamental message to the world that the IPCC does not believe that climate change is a serious issue. The IPCC should be an absolutely assertive pioneering champion of intelligent remote working – for example CISCO's telepresence system is a fantastic way to work together at a distance – and if the IPCC really needs to meet in person, the location should be chosen to minimise total travelling distance, and flights should be by economy. How else can the IPCC defend itself against the most obvious charge of self contradiction?

NAME: Ananicheva Maria
Involvement in IPCC: since start if the work of the AR5…review editor of AR5 WGII
Function: (CLA / LA / CA / RE) RE
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX), AR5, WG2
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Besides traditional products should be the Executive summary for schools, students (early stages of education)
Also it is needed the promotion of the results of IPCC thru the TV, internet, social networks

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Relatively short reports adapted for the appropriate public, films, video, multimedia, new forms including organizing exhibition about the IPCC products

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

It is more political issue – to break the boundaries and to invite representatives from developing countries to participate
It is worth to organize summer schools for education of the future IPCC workers

D. Other matters

I personally would like to participate in the future work of IPCC and ready to develop new formats of IPCC products

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NAME: Govindasamy Bala
Involvement in IPCC: Leading Author for WG1/AR5
Function: (CLA / LA / CA / RE): LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): AR5/WG1
Previous reports (please indicate): None
Other (e.g. workshop participant): Expert meeting on Geoengineering held in Lima, Peru June 2011

A. What should be the future products of the IPCC?

IPCC should continue to come out with reports on the status of climate change, impacts and mitigation. However, the reports are too big now and it is getting tougher to go through the entire report even for experts. Shorter reports on specific themes (e.g. carbon cycle, climate models and projections, sea level rise) at regular intervals would be more useful in the future.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The structure and modus operandi for the production of these new shorter reports could remain the same as now

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

One possible method to enhance the participation and contribution of developing countries could be to set a target of bringing at least 33% of members in each chapter from developing countries.

D. Other matters

To create awareness among people in countries with huge population (e.g. China and India) where climate change awareness is very important, IPCC could make efforts to hold more meeting in these countries. This could also prove to be more effective way in ensuring participation and contribution from developing counties with dense and large populations.

NAME: Jon Barnett
Involvement in IPCC: WGII AR5 LA
Function: (CLA / LA / CA / RE): LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): AR5 WGII chapter 12, Tech Summ, and SPM
Previous reports (please indicate): n/a
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

More frequent and smaller assessmnets might be good: on key topics, emerging issues, and regions. Domne through a faster assessmnet cycle, by smaller teams, and perhaps by a groups selected from a standing panel of experts.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

There is a standing panel of experts based on broad themes or topics (ecosytems, water, social vulberability, adaptation, coasts, islands, Asia) ect. The plenary identified ket topics on an annual basis. Scientists from the panel are selected and conduct the assessment – perhaps with one round of expert review and one round of government review only.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

While I see that this is politically important, I am not sure that nationality is the issue in terms of selecting scientists – in theory any author is only assessing the literature, which means competenace is more important than nationality or 'expertise' in the chosen topic. Where developing country involvement needs boosting is in the plenaries – their voices in what to assess and in the reviews of those assessmnet sra egenerally silent, and its this I think than eeds strengthening, through better funding, awarenes sraising, and perhaps some capacity building, as occurs around the UNFCCC negotiations.

D. Other matters

NAME: Hans Guenter Brauch
Involvement in IPCC:
Function: (**CA (SREX)**/ **RE (WG 2))**
Report: (**AR5**; **WG2**; and **SREX**)
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

- Assessment Reports of three working groups should be published every 5 years
- Three related Special Reports or one special report in three parts should be considered
- A first Special Reports should offer an assessment of the scientific literature on the reasons for the lack of success in realizing the goals and implementing the previous decisions adopted by member countries of the UNFCCC and of the insufficient implementation of the commitments of the Kyoto Protocol and of the difficulty of agreeing on a new legally binding treaty to succeed the Kyoto Protocol regime.
- A second Special Report should assess the scientific policy oriented literature on policy alternatives to multilateral treaty-based climate diplomacy.

- A third Special Report should address promising unilateral and multilateral pathways towards a transition to sustainable development goals addressing the need to drastically reduce GHG emissions by a progressive decarbonization of the energy, transportation, agriculture, production and housing sectors and the potential peace dividend of such a policy strategy that aims at resource efficiency and a replacement of fossil energy sources with renewables..

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

- Most governments in their reports on the future of the IPCC (IPCC-XXXIX/INF.1 (27.II.2014)) suggested that the inclusion of peer-reviewed scientific literature in languages other than English should be increased in the future. They have thus addressed a structural deficit.
- An independent assessment for all chapters of all three WGs of AR5 of the composition with regard to the country of the CLAs, Las, CAs should be undertaken by the IPCC Secretariat
- A second independent assessment should be undertaken on the percentage of the non-English language sources that have been cited in the four reports of the AR5 (WG 1, WG 2, WG 2, Synthesis Report).
- Based on these two independent assessments the question should be addressed to which extend has there been a dominance of developed countries and an overreliance on experts from native English speaking countries what may have made the inclusion of peer-reviewed scientific literature in languages other than English more difficult.
- Based on these assessments concrete policy recommendations should be made to guarantee that in the future the inclusion of peer-reviewed scientific literature in languages other than English should be increased as many governments have already suggested..

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

- The bibliometric analysis of scientific literature on global climate and environmental change research (see ISSC: Transformative Cornerstones, 2012: 11; UNESCO's World Social Science Report 2013; Annex B, pp. 583ff.) has often relied exclusively on citation indexes (e.g. the social science citation index only) that excludes literature in languages other than English. The compilation of these indexes is controlled by private companies whose decisions are beyond public and scientific accountability and control and whose selection criteria are not widely known..
- Many databases (e.g. Scopus) are developed and controlled by private companies whose decisions on the inclusion of peer-reviewed scientific literature is beyond public and scientific accountability and control.
- The IPCC has often relied on these databases and citation indexes that only included literature published in English. The reliance on data bases and citation indexes that include only peer-reviewed scientific literature in English has distorted the global peer-reviewed scientific production by excluding the non-English scientific literature. The present requirements for the citable scientific literature should be reviewed by the IPCC Council in its future guidelines on scientific literature to avoid that this bias will be replicated in the literature citable in future IPCC reports.
- The IPCC should set up an expert group or task force to analyse the constraints and impediments that have resulted in an overemphasis on literature in English, by authors from English speaking and developed countries. This IPCC expert group or task force should review the criteria of the literature to be citable in IPCC reports to offer a more representative and inclusive assessment of the peer reviewed literature in languages other than in English.
- The goal of such a more inclusive assessment of the global peer-reviewed scientific literature has direct implications on the composition of the CLAs, LAs and CAs. This would apply that in all chapters scientists are involved who are able to read and introduce peer-reviewed research that has so far systematically and structurally been excluded in databases such as Scopus or Social Science Citation Index etc. and were thus often not citable in some chapters.

- The compilers of these valuable sources should be requested to publish their own selection criteria for the inclusion of scientific literature and a discussion process should be started by the IPCC Council, e.g. with representatives of Elsevier and Thomson & Reuter whether their selection criteria for the inclusion of scientific literature could become more representative and inclusive without compromising the quality requirements.
- The suggested Working Group or Task Force on inclusive scientific literature should enter into a close dialogue with representatives of these private companies that compile these databases and citation indexes with the goal to develop more inclusive compilations of scientific literature that better documents and represents the global peer-reviewed scientific production in a more equitable way.

D. Other matters

NAME: Jorge Carrasco
Involvement in IPCC: AR4, AR5
Function: (CLA / LA / CA / RE): LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG1
Previous reports (please indicate): AR4 WG1
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

I think it should continue as it is.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The structure has proved to work fine, so to me it should be keep it.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

One way it could be to encourage regional IPCC report which can be out of phase respect to the "global IPCC" so that the finding and conclusions of the regional IPCC can be incorporated.

D. Other matters

Probably, it could be a good idea to encourage each chapter group to write an update report (like a review, state of the art paper) to a journal, so that the time separation between reports can be filled with this.

NAME: Edwin J. Castellanos
Involvement in IPCC:
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG2
Previous reports (please indicate): None
Other (e.g. workshop participant): participation in 3 workshops of the Task Force on Inventories; country delegate in 2 plenary sessions.

A. What should be the future products of the IPCC?
The assessment reports are important products, but they become too large and complex for anyone to handle and read. Shorter, more focused reports might be more useful for specific regions or sectors.

Of the large assessment reports, the SPM is the only document translated to other languages and this contributes to that document practically being the only document cited and read by the non-scientific community. But the details contained in sectorial and regional chapters are potentially more useful to specific groups of stakeholders who might never see these chapters because they are not aware of them.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

A similar structure as the existing one could be used, but the shift would be on putting more emphasis on promoting and publishing individual reports, even translating them to specific languages more appropriate to particular regions or sectors (e.g. translate the chapter on Central and South America to Spanish and publish it an promote it as a separate volume).

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Unfortunately, the IPCC seems to have been conceived as a scientific body in the lines of science done in developed countries. In spite of recent efforts to involve more scientists from developing countries, IPCC still has a long way to go. Some additional limitations are:

1. Governments in many developing countries are not interested or even aware of the IPCC. For example, the government of Guatemala has not received any communication from the IPCC for the past two years and therefore has not participated in any IPCC plenaries, but nobody on either side (government or IPCC) has noticed or cared about this.
2. Language limitations: unfortunately, many excellent scientists in developing countries have limited knowledge of English and therefore don't feel capacitated to fully participate in either a meeting or a writing process. This language limitation also works against the final reports being more widely read among stakeholders in many countries. Specific regional chapters or reports should be translated to major local languages.
3. A lot of excellent work in developing countries is not published in the regular scientific journals. Some is published in more local, non-English journals, and the majority is published as grey literature.
4. An even larger problem is encountered when trying to incorporate traditional and indigenous knowledge into the IPCC reports as this very valid and important knowledge is not even published in local outlets, but it is produced and transmitted in a completely different system as the traditional scientific sources.

D. Other matters

The representatives from different world regions in the Bureau should be more active in promoting regional meetings and associations of scientists working on climate change issues. This would result in a more decentralized and localized governance system for the IPCC.

NAME: Andy Challinor
Involvement in IPCC: LA Chapter 7 AR5

A. What should be the future products of the IPCC?

Sector-based products may well be more useful than more 'business as usual' WG1/2/3 reports. Also note the large number of info-graphic reports based on AR5. Perhaps the IPCC should have some official info-graphics, to avoid the proliferation and perhaps mutation of IPCC messages based on other sources.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Separating adaptation from mitigation is difficult for many sectors. An assessment product based on sectors would help to break down barriers across all three WGs.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

D. Other matters

NAME: Dr Donald Peter Chimanikire
Involvement in IPCC: LA
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX)
Previous reports (please indicate):Fifth Assessment (AR5)
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

In as much as possible, IPCC should be involved in first hand local research that explores the true impacts of climate change in terms of vulnerability, adaptation and mitigation in low-income developing countries and how to go about building resilience at all scales.
In Africa, there is need for Reports that reflect the correct African perspective; research which has fully examined the scope and prospects for adaptation to climate change in the context of development and poverty reduction.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

To engage seriously local research Institutions, universities and governments.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

There should be continuity in terms of retaining those with experience in IPCC work and giving them the mandate to source new qualified participants.

D. Other matters

National Newspapers should be targeted to publish IPCC Reports. And Research universities should receive IPCC reports.

NAME: Prof Roland Clift
Involvement in IPCC:
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX)
Previous reports (please indicate): N/A
Other (e.g. workshop participant): N/A

A. What should be the future products of the IPCC?

Given that the 5th Assessment Report made so little impact, I have to conclude that these major reports have outlived their value. Future products of the IPCC should therefore be targeted on specific areas in climate science, adaptation, mitigation and – perhaps most importantly - specific economic sectors and aspects of the human economy. As a specific example, chapter 10 of WG3 is AR5 was, to be blunt, weak. Its principle deficiencies result from the way the chapter is structured: because waste management

is treated as an appendage to the chapter, the possible role of product, component and material re-use and recycling is not explored, in spite of the widespread and increasing interest in what is popularly known as "the circular economy". How that obvious deficiency came about needs to be explored to inform planning of "appropriate structure and modus operandi" for the IPCC.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

A "high level" group and process are probably needed to define the topics of specific targeted reports. However, once the topics have been selected, the scope and shape of the reports should be left to people with detailed expertise in the topic, not imposed from a "high level". Thus the authors of each report should be given more autonomy than has been accorded to Chapter Authors, at least in AR5. In support of this change, the role of the reviewers and Review Editors must be reconsidered. Overstating the problem (but only slightly), what happened in AR5 was that chapter reviewers replied in the main with very specific comments on very detailed points, far too many of them along the lines of "you haven't considered my work". The prescribed role of the RE, to screen the detailed review comments, is of secondary importance compared to what should be the most important task: helping the Chapter Authors to find the best overall logic and structure for the chapter or report. The more important task went unaddressed, because the structure had been dictated at a "higher level" by a group who lack the detailed expertise to develop the best logic for the chapter. This means that the whole process for producing IPCC reports need to be rethought; producing individual reports rather than all-embracing Assessment Reports would provide an opportunity for this rethinking.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Switching from Assessment Reports to targeted reports could also be used to advantage by involving people with the appropriate expertise, rather than having to ensure involvement of people from all UN countries. Such experts can be found in some developing countries, but in general a different role may need to be found for developing countries because it is inevitable that most of the topic experts will be from the "global North". Contributing Authors from developing countries would be needed in any case to ensure that the topic reports do not overlook issues and barriers of importance in the "global South". These contributors should ideally be early-to-mid career workers, to maximise long-term development of human capital.

D. Other matters

Moving from overall Assessment Reports to targeted Topic Reports would mean that it is no longer for any individual body or institution to take on a major managerial role. In this way, involvement in the work of the IPCC could actually be broadened.

NAME: Stewart Cohen
Involvement in IPCC: 1992 - present
Function: CLA, LA, Task Group/Expert Group member, workshop participant
Report: AR5 WG2
Previous reports (please indicate): AR4 WG2; TAR WG2
Other (e.g. workshop participant):

- workshops – scientific uncertainties (2004, Maynooth Ireland), adaptation-mitigation-sustainable development (2005, La Reunion), integrated analysis of adaptation-mitigation linkages (2003, Geneva), development, equity and sustainability (2000, Havana), development and climate change in Africa (1998, Kadoma Zimbabwe)
- member, TGICA (2011-present)
- member, Expert Group on Guidelines (1992-1994)

A. What should be the future products of the IPCC?

I appreciate the value of the Working Group Assessment Reports, but the recent SREX report demonstrated the importance of a focused cross-cutting publication. I feel that future products of a similar nature to SREX could offer an important opportunity to address linkages between scientific research and decision making, particularly if these cross-cutting products would be able to assess literature directly, as SREX did, and not be confined to or focused on already published IPCC assessments.

Building on comments from the Task Group on the Future Work of the IPCC (IPCC-XXXIX/Doc.7), one possible future product could focus on assessment and evaluation of adaptation plans and actions implemented. Specific plans and actions are more likely to have been reported in government documents and grey literature, rather than peer-reviewed research literature. How did climate change research (climate science, physical and biological impacts, social and economic aspects) enable adaptation plans to be developed and actions implemented in various countries? How did adaptation actions get initiated? What is the state of monitoring of such actions? Has this taken place within ongoing sustainability planning or as stand-alone activities? How has success been measured, and are there new ideas about adaptation indicators (for different sectors or regions)? How important is scientific uncertainty as a barrier to adaptation, or are other barriers more important? Perhaps some regional workshops could be part of the process for building author teams and collecting information (see question C).

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

IPCC cross-cutting assessment products would likely need their own TSU support, rather than drawing on a Working Group TSU. As SREX overlapped with the AR5 process, it drew on the TSUs established for AR5. A separate TSU may be more appropriate so as to enable flexibility in production schedules and workloads.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Author participation is dependent on domestic consultation processes of each national government. Perhaps in advance of organizing any future IPCC products, national contacts could be consulted on the state of the research and stakeholder/practitioner communities in their respective countries, with specific reference to topical backgrounds and research/practitioner or other relevant experiences. In other words, make the author nomination process a more interactive one, in which national contacts continue to vet their respective nomination lists, but are encouraged to broaden them as much as possible, beyond familiar domestic networks. The IPCC could identify existing literature and programs in which there has been participation from various developing countries, but that the national contacts may not be aware of the individuals involved. Regional workshops in advance of calls for author nominations could be useful for encouraging greater participation (see question A).

D. Other matters

The process for approving Summaries for Policymakers (SPM) has been a challenging one. As an author, I have participated in the Plenary approval meetings for two of these (AR5, TAR), and each time, the negotiation over words and graphics proved to be very difficult, with late night marathon sessions, and moments of surprise in which unanticipated comments from delegations led to difficulties in obtaining consensus. In the AR5, this led to the removal of some graphics from SPMs (WGII and WGIII). There needs to be a way for major concerns (especially about graphics) to be communicated to the IPCC in advance of SPM plenary sessions, beyond the current process of review of SPM drafts.

NAME: Purnamita Dasgupta
Involvement in IPCC: AR 5
Function: (CLA / LA / CA / RE) CLA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG2
Previous reports (please indicate):
Other (e.g. workshop participant):
1. Socio-economic pathways, Berlin 2010; Economics, Ethics and Costing, Lima 2012
2. SED and Adaptation Committee presentations / meetings, Bonn, 2014.

A. What should be the future products of the IPCC?

- **Reports assessing progress in climate science and learnings therein at regular intervals**
- **Focused *regional level reports* on mitigation and adaptation options, strategies and responses at 5-10 year intervals**
- **Focused sectoral reports on learnings from adaptation and mitigation actions for the advancement of the global community knowledge.**

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

- **To tailor the present structure to the requirements as expressed in A above: e.g. have more regional level efforts and secretariats**
- **Place special emphasis on building participation from the developing countries through these regional and sectoral assessments**
- **More effort on advocacy and outreach of the IPCC reports including producing shorter, and simplified documents. For instance, outreach activities structured around a chapter; web based presentations (PPT or otherwise). Etc.**

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

D. Other matters

NAME: Debra J. Davidson
Involvement in IPCC: Chapter 26, TS and SPM
Function: (CLA / LA / CA / RE) : LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): AR5 WGII
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

I believe the Assessment Reports have value, but perhaps we could produce them once every 10 years rather than every 7. In the interim years shorter, issue-specific reports can be produced, particularly targeted toward informing sector-specific adaptation/mitigation efforts authored by smaller task forces, and leave some latitude for taking up emerging issues of concern.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

I think the current structure of the Working Groups is appropriate, although a greater degree of regular cross-fertilization across the groups would be beneficial, and smaller adhoc task forces can be established as needed to produce issue reports..

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

This is a challenge that really goes beyond the capacities of an international body such as the IPCC to address, and is rooted in the limited resources and expertise in many developing countries. Too many times the authors and reviewers from developing countries do not have sufficient resources to contribute in a meaningful way.
As such, I think we need to find an alternative route for meaningful participation to take place that does not assume/expect that developing country participants can be engaged in the same manner as those from developed countries. One possible effort that could be worthwhile would be to hold regional 'pre-meetings' with developing country delegates (i.e. one in Africa, one in SE Asia, one in South America…) before a new schedule of Report tasks has been outlined, to come to collective agreement on priority issues of concern that those delegates would like to see IPCC focus on, and then designate a member of the TSU to ensure that throughout the report development process we continue to pursue those priority areas diligently, and provide regular reports to those developing country delegates.

D. Other matters

1. I feel we have become so concerned about the scientific validity of our reports that, while perhaps technically accurate, our reports have very little capacity to be digested and discussed among non-scientists (including policymakers), much less motivate social responses. I would like to see the IPCC carefully reconsider its directives regarding report content and language.
2. Holding meetings in exotic and hard-to-reach places is frankly embarrassing. We could greatly reduce our carbon footprint (and costs in time and money) if we hold our sessions in central locations with major airports like London.

3. We really need to re-think how to create constructive, inclusive deliberative formats in our Plenary sessions. I have only been involved in one (in Yokohama, March 2014), but I was wholly disappointed with how antagonistic, constrained, and unconstructive it was at many points during the week. There are far better ways to engage in a meaningful, democratic dialogue!

NAME: **Angel DE LA VEGA NAVARRO**

Involvement in IPCC: Lead Author. WG III Chapter 7, Energy systems

Function: (LA)

Report: (AR5 WGIII;)

Previous reports (please indicate):

Other (e.g. workshop participant):

"*Expert Reviewer*":

. Third Assessement Report, Working Group II

. Third Assessement Report, Working Group III

. Fourth Assessment (AR4) First-Order Draft Report of Working Group III

. IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation (SRREN),

Taller de divulgación de los resultados del Grupo de Trabajo III del Grupo Intergubernamental de Expertos sobre el Cambio Climático, Instituto de Meteorología/CIEM, Habana, Cuba, 2003.

Second IPCC Expert Meeting on DES, Habana, 23-25 February 2000.

A. What should be the future products of the IPCC?

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

In all the WGIII meetings I participated (South Korea, New Zealand, Spain, and Ethiopia) I had a great experience talking with young graduate students, especially from Germany. I suppose they were part of some research centers participating in these meetings, either to perform some support activities or to benefit from the Fifth Assessment elaboration process for their own research or studies.

Those young people were very enthusiastic about their participation, not only because they could discover distant foreign countries and meet important specialists, but above all due to the inputs they received in terms of new knowledge and information.

Taking into account these experiences I suggest to create a program to convoke or call graduate students, especially from developing countries, to participate in ARs preparation meetings. Because of financial constraints such a program could not be massive, but perhaps it is possible to set a scholarship program addressed to poorer countries and to call other developing countries to support a special program, in connection with IPCC, so some young graduate people could be able to participate in its meetings.

Those young graduate students could have important experiences and discoveries and also IPCC could accumulate new resources to respond to the persistent claim for wider opportunities for the people coming from developing countries.

D. Other matters

NAME: David Easterling
Involvement in IPCC:
Function: (CLA / LA / CA / RE) Lead Author
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX), AR5 WG1, SREX
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

For the AR6, I advocate a series of special topic reports, similar to SREX but could be focused on physical basis, impacts, mitigation or some combination with an AR6 Synthesis Report in about 2019 or so.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The Working Group structure could be retained, but would be used to coordinate the special report by WG similar to SREX, which was co-coordinated by WG1 and WG2.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC.

During the report writing process bring in younger scientists from these countries to do special postdoc type authorship terms with established authors.

D. Other matters

NAME: Segen Farid Estefen
Involvement in IPCC:
Function: (CLA / LA / CA / RE): CLA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): SRREN
Previous reports (please indicate): Ocean Energy Chapter (SRREN)
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

1) Evaluation of different software for the interaction continent-atmosphere-ocean and correlation to available experimental data.
2) Based on item 1, identification of the main parameters affecting regional climate change.
3) Influence of defrost conditions in the North Pole on maritime transportation.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Special Task Group.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Practical problems related to climate change should be addressed in the future work of the IPCC. Examples:
1) Increase of the ocean level and the effect on coastal zones - identification of the regions that will be most directly affected and recommendations about remediation (engineering approach);
2) Influence on agriculture - identification of the regions and possible migration of the present activities to other regions.

D. Other matters

Suggestion: The reports should be more specific about the effect of climate change on particular economic activities and the consequent social impact on some regions. The most affected areas (2 ou 3) in each continent should be selected for the first study.

NAME: FATIH EVRENDILEK
Involvement in IPCC: RE
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) WETLAND SUPPLEMENT
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

STANDARDIZATION PROCEDURES FOR PREPARING A TIME-VARYING AND GEO-REFERENCED INVENTORY OF EMISSIONS AND SEQUESTRATION OF GREENHOUSE GASES FOR EACH OF LAND USE/COVER TYPES ON A NATIONAL SCALE

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

A GLOBALLY-AGREED CLASSIFICATION SYSTEM OF LAND USE AND COVER TYPES JUST AS USDA SOIL TAXONOMY SYSTEM SHOULD PROVIDE THE BASIS FOR SUCH AN INVENTORY. A UNIFIED QUANTIFICATION APPROACH FOR EMISSIONS AND SEQUESTRATION OF GREENHOUSE GASES SHOULD BE POSED SO AS TO COMBINE ALL THE ECOSYSTEM COMPONENTS, MANAGEMENT PRACTICES, REMOTE SENSING, GIS, AND SENSORS SUCH AS EDDY COVARIANCE. SPATIO-TEMPORAL SCALES OF RESOLUTION SHOULD BE AGREED ON FOR SUCH A NATIONAL DATABASE.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

EXPERTS FROM ALL OVER THE WORLD SHOULD BE INVITED REGARDLESS OF THEIR ORIGIN DEPENDING ON THEIR PUBLICATION QUALITY AND QUANTITY.

D. Other matters

NAME: Nick EYRE
Involvement in IPCC:
Function: LA
Report: AR5 WG3
Previous reports (please indicate): None
Other (e.g. workshop participant): None
A. What should be the future products of the IPCC?
The priority should be to provide Governments with what they want. My personal view is that this would be better achieve by more focus on more tightly defined topics (e.g. SREN) than period 'blockbusters' (e.g. AR5)
B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The modus operandi needs to continue to meet the high standards for quality and integrity set by the IPCC. I do not have a strong opinion on the structures needed to achieve this.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

No opinion, other than that participation of developing country authors is critical.

D. Other matters

NAME: Daniel Farber
Involvement in IPCC: author
Function: (CLA / LA / CA / RE) CA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG3
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

It seems to me that the IPCC reports serve three different functions. First, they function as review articles that may be useful to the research community. Second, they serve as a resource for professionals other than climate researchers – for instance, policy analysts in government or academia. Third, they directly inform actual decision makers and the public about key climate issues.

Although I have some changes to suggest below, I believe that the IPCC reports serve the first two functions well. But I think that even the "summaries for policymakers" are probably completely opaque from the point of view of government ministers, not to mention most educated members of the public. They are filled with jargon and so heavily adorned with qualifications as to be almost unreadable. There really needs to be a translation to make them understandable. I also find that the graphics are often more comprehensible than the text. I would urge that the IPCC find some way of publishing summaries for the ordinary reader. (For instance, "medium confidence" might be replaced with something like "although the issue has not been settled, most researchers have concluded . . . . ")

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

As a scholar, I find the IPCC's work extremely helpful as a definitive survey of existing literature on many key issues. On the other hand, it may not be necessary to stage the release of massive volumes at multi-year intervals as a way of performing that function. To the extent they are not interdependent, what are now individual chapters could be done on a rolling basis. Such staging might make the process more administratively manageable and would also allow the frequency of updating to reflect the pace of important research findings.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

It is somewhat misleading these days to talk about "developing countries" as a single group. Emerging economies like China are much different from countries like Bangladesh. In terms of the emerging economies, it may well be possible to identify experts who can participate fully in the process. At the very least, it should be possible to enlist scientists from those countries as readers. What to do to get participation from the truly impoverished countries is a different and much harder question and really involves the extent to which the IPCC can contribute to capacity building in those countries.

D. Other matters

NAME: Sandro Federici
Involvement in IPCC: Author
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) TFI
Previous reports (please indicate): 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

This answer does not cover the entire panorama of products of IPCC, but only a small issue: Guidance for GHG inventories. On this regard, I do have 2 proposals, both aimed at addressing the gap in time between the publication of IPCC guidelines and their application for GHGI compilation. Indeed, between the publication of IPCC guidelines and their use may pass several years, e.g. the 2006 IPCC Guidelines will be applied for the first time for reporting in 2015 (9 years later) and will be used till 2022 (16 later). The science of GHG inventory is fast progressing, consequently although new methods and factors may become available their inclusion in the IPCC Guidelines, and therefore in the national GHG inventories, may take decades.

The suggestion here is to publish an annual (or biennial) bulletin that incorporates:

a. updated factors,
b. new methods
c. examples of good practices
d. corrigenda, if any

Updated factors are expected to be the result of the work on data compilation and data analysis made by the IPCC EFDB.

Examples of application good practices can be prepared according to difficulties experienced by countries in implementing them or where areas of further clarification are identified.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Possibly there should be a permanent editorial committee that “contract”, case-by-case, experts for areas where new methods, factors and/or examples need to be drafted. Otherwise, the current procedure of publishing IPCC Guidelines will make the process too lengthy.

Once published in such a bulletin, methods, factors and examples will be available for their incorporation, as appropriate, in the new IPCC guidelines, or in specific supplements, that will be published by IPCC and adopted by COP.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Well, the existence of a permanent think-thank as the editorial committee may be a way to secure a continuous involvement of experts from developing countries as well as the growth of their technical expertise

D. Other matters

NAME: Carlo Giupponi
Involvement in IPCC:
Function: (RE)
Report: (SREX)
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

The IPCC should try to combine periodic AR's and SR's with more prompt delivery of evidences about climatic sciences in a form that could be readable and usable by policy makers worldwide.
The AR of WGI, II and III should not be developed jointly, but at least WGI should work before and provide scientific bases for WG II and III. Otherwise, what reported in the 3 reports risks to be uncoordinated and outdated.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

They could be developed as annual state-of-the-art reports in which quality assessment criteria of the IPCC are applied and possibly developed further to adopt the most advanced techniques for open and transparent peer review.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Financial resources to support the work in DC's are needed.

D. Other matters

NAME: Christian GOLLIER
Involvement in IPCC:
Function: LA
Report: AR5 WG3
Previous reports (please indicate): AR4 WG3
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

1. Let's stop writing big reports every 6 years. This is too big, and it is not read (except for the politically correct SPM, and potentially the TS).
2. Let's replace them by a flow of thematic reports written by identified co-authors, with a peer review from the IPCC.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

1. Stop political interventions on scientific documents labelled by the IPCC.
2. Control the selection of LA/CLA/R on the basis of academic merit.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

D. Other matters

P Goswami – LA AR5 WG I, Chapter 14

A. What should be the future products of the IPCC?

- The final product should be aimed at actionable knowledge and directly address critical issues; quantifies information should be provided at user-relevant scales even if there are large uncertainties.

- The current IPCC Reports do not adequately provided a synthesized and integrated knowledge product ready for the users; more emphasis should be given to synthesizing the findings and mapping them to applicable knowledge.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

There needs to be a multi-disciplinary group for synthesis and integration; this synthesis is beyond and in addition to SPM and ES for each of the Working Group Reports. The Report from this Synthesis and Integration Group (SIG) will combine the findings and the recommendations from the three Working Groups as well as other efforts (like SREX) and will interact with relevant agencies to produce a more user-relevant product.

SIG representatives may be part of each Working Group; The full SIG group containing these representatives and other experts can then produce the synthesized and the integrated IPCC Report to complement the IPCC Working Group Reports.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

A mechanism for regional IPCC sub committees may be set up to ensure a larger involvement of scientists at regional level; the IPCC representatives from a country should be members of such sub-committees, and should represent their views in the respective Working Groups.

It needs to be recognized that while certain expertise and proven scientific achievements must be maintained for the participation in the IPCC works, and especially in assessments, certain criteria like SCI publications and citations may be relaxed for scientists from developing countries.

D. Other matters

None

NAME: Jonathan Gregory
Involvement in IPCC:
Function: LA
Report: AR5 WG1
Previous reports (please indicate): LA of WG1 AR4, CLA of WG1 TAR
Other: Workshop on sea level rise and ice sheet instabilities, June 2010

A. What should be the future products of the IPCC?

I think that special reports will continue to be useful to focus in more detail on on restricted topics, but a comprehensive assessment report for AR6, as previously, should be the next main product of the IPCC, if the governments want one. Only a comprehensive assessment can attempt to be self-consistent and identify the inconsistencies in the current state of science. I do not think that an AR addressing parts of the science by themselves in which there had been recent advances by itself, would be satisfactory, because you could not resist the questions about what the consequences of

these advances were for all the other areas, and you wouldn't be able to take into account advances in other areas if they were outside of the remit and expertise of the authors. More frequent routine updates on particular areas would have the same problem, except that I think it is worth considering, however, whether the observational basis of physical climate change could now be regarded as more routine, since in both the AR4 and AR5 it was concluded that it gives unequivocal evidence of climate change. Updates remain necessary, but should not be a controversial part of the assessment. They are an essential input to the rest of the work of WG1, but do not depend on the rest of WG1. Hence it might be possible to reduce the amount of space devoted to the observational basis in the WG1 assessment.

It would not be possible to provide comprehensive reports, or even updates to comprehensive reports, more frequently that the current approximately 7-year interval. Indeed many people would argue for a longer interval between AR5 and AR6. This is because the preparation of the reports is a tremendous workload for the LAs, increasing at every AR, and LAs would not agree to do it more often, given that participation is essentially voluntary. Paying the CLAs or LAs would not help, because it is time which is the limitation for most people, not money. Moreover paying them would be perceived by some as undermining objectiveness.

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B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The WG structure appears to work reasonably well. I do not think that regional climate change belongs in WG1, because regions are not a natural physical division. I would move the contents of WG1 AR5 chapter 14 into WG2 and chapter 12 of WG1.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

If participation by developing countries is limited by money, this is a problem that should be soluble. Lack of expertise is more difficult. It is important that lead authors should be competent in their areas, and it therefore does not make sense to appoint LAs from developing countries for the sake of balance of countries, however desirable that may be. The consequence of this is embarrassment within the chapter teams, and an increase to the workload of other LAs. It is possible that participation as nominated reviewers (a role I have proposed in D) would be more suitable.

D. Other matters

The scoping process should mandate the topics to be covered by the report and the chapters it should have, but its assignment of topics to chapters should not be definitive. It ought to be allowed for topics to be transferred between chapters, and for chapters to change their titles, during the drafting process, with the aim of achieving the clearest possible structure for the report as a whole.

I would have a smaller number of LAs per chapter, and make more use of CAs. This would be less effort overall, because it is sometimes easier for a job to be done by fewer people than for a large number to divide it up and agree on the result. I suspect smaller teams would be easier than the current system for the CLAs and the subset of LAs who in practice do most of the work. CAs do not take responsibility for the whole chapter, so they don't have to be involved in all the discussions, and that would save time and effort.

As well as LAs, I would instead have several nominated reviewers per chapter. This would be a new function. The nominated reviewers would be chosen to cover areas the CLAs particularly thought were important or in which the LAs did not have enough expertise. They would comment on the chapter, and would be given appropriate credit for doing so i.e. named on the chapter title page and publically acknowledged. Since they would have a specific role they agreed to undertake, they could be expected to produce useful comments on every version. I think that experts in a subject would find it much more satisfactory to be nominated reviewers than they do in the current RE role. I have heard

several REs express frustration that they couldn't make comments on the text because they had to be independent, even though it was their own expert subject.

The balance of nationalities and genders could be addressed in appointing the nominated reviewers, the REs and the LAs together. I think we should acknowledge more openly that it is not helpful to the process to appoint LAs who really are not competent in that role. It is a burden on the CLAs and/or other LAs who have to rewrite their text or fill their gaps, and probably an embarrassment to the people concerned. This is one way in which having more LAs is less efficient.

I would suggest a two-stage process for appointing the teams. The first stage would be to appoint the CLAs only. The CLAs' governments would be asked to agree to support 1 FTE of postdoc and/or administrative support for the chapter, like a mini-TSU for that chapter. The CLAs would then work with the TSU to draw up the lists of LAs, nominated reviewers and REs to propose in the second stage. I guess that with their awareness of their own field, and the knowledge that they would be working with this team to write the chapter, the CLAs would be helpful in assembling a group that could cover the ground properly.

It would be possible for the review process to be sabotaged by being flooded by comments from people with particular views. Fortunately this has not happened, but it would be a serious problem if LAs were expected to answer more comments than were received in the AR4 or AR5. As a safeguard it would be helpful if REs could be given the authority to decide that some comments did not need to be addressed thoroughly, like a journal editor can.

Confidential drafts being leaked brings the process into disrepute and can mislead the public because of the circulation given to preliminary versions which may be incomplete or incorrect. I see this as a problem but I do not have a solution to offer.

NAME: William J. Gutowski, Jr.
Involvement in IPCC:
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG1 (Chapter 12)
Previous reports (please indicate): CA for TAR and AR4; Reviewer of Zeroth-order draft for SREX
Other (e.g. workshop participant):
Invited participant: *CLIVAR/PAGES/IPCC Workshop: A multi-millennia perspective on drought and implications for the future*, Tucson, Arizona, 18-21 November 2003.

A. What should be the future products of the IPCC?

The IPCC needs to recognize that the main driver of climate change issues is now impacts, adaptation and mitigation. A striking feature to me of the WG I reports from the TAR, AR4 and AR5 is that the broad outlines of global climate change and their uncertainty have not changed substantially over these three reports: global warming of a few degrees; changes in precipitation and precipitation-minus-evaporation patterns such that northern high latitudes will experience increases in both, the subtropics will see decreases; increased intensity of precipitation when it occurs and more intense extreme precipitation events. These results suggest that one can plan for the future despite uncertainties that do not appear likely to shrink substantially over the next decade (based on past history).

The sequence of ARs has provided refinement and sometimes interesting new perspectives, such as AR4 WG I, Box 3.1, Fig. 1, showing the accumulation of energy in climate system and AR4 WG I Fig. SPM.10, showing the temperature change versus cumulative CO2 emissions. However the general degree of change in key impacts variables (temperature, precipitation, humidity, resolved storms) and the uncertainty has been understood for some time now.

In addition, too little of the climate change projections assessed in WG I have been useful for WG II, because there is insufficient time for the latest climate change simulation (primarily the CMIP3 and CMIP5 simulations, respectively, for the AR4 and AR5) to appear as drivers of impacts assessments that WG II can use in the same report.

In addition, there has been a disconnect between assessement of the costs of climate change, evaluated in WG II (though usually not in economic terms) and assessment of the costs of mitigation, evaluated in WG III. This undermines the cost-benefit analyses that are sorely needed for the world to make rational decisions, as much as possible, on how to respond to climate change.

Thus, we need stronger ties between what has been WG I and WG II as well as stronger ties between what has been WG II and WG III.

Future reports:
(1) The WG I report should be more limited and be a succinct, global overview of new material on climate change, observational evidence from instrumentation and paleoclimate archives. It should not be a continuation of the ongoing, substantial growth in size of WG I reports.

(2) There should be a new working group producing a report that combines continental or subcontinental information on climate change and variability from observations and models with assessments of vulnerability and impacts. The subregions should be determined by climatological "homogeneity", such as the Arctic, extratropical North America, tropical Americas, northern Europe, Mediterranean Europe/Africa, tropical Africa, subtropical Africa, etc.

(3) There should be a new working group that assesses in one document the costs of climate change impacts, adaptation and mitigation.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Disconnects between recent WG reports suggests a sequence that is more staggered than at present, with the "downsized", more compact WG I producing its document about two years before the newly combine WGI-II, which can then benefit from the analyses produced by the latest simulations that fed into WG I and that have started to appear in the literature, making them available for WGI-II assessment. Follow this about two years later with the new WG II-III report, which can then combine the assessed regional impacts with cost estimates of the impacts as well as adaptation and mitigation costs.

This staggered rotation would allow a new IPCC report to come out about every two years, keeping the issue in the public eye, as opposed to a report set emerging about every seven years.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

A key factor is making sure the IPCC reports remain timely and relevant, and do not have the character (as they are starting to develop) of continuing in large degree through bureaucratic momentum. A clear cost-benefit assessment of impacts, adaptation and mitigation could make the report especially relevant to developing countries, by giving them a firmer basis for engaging in global discussions on human-caused climate change and how to pay equitably for responses to it.

D. Other matters

None to add

NAME: Helmut Haberl
Involvement in IPCC: LA WG III, Ch11, Annex Methods & Metrics, CA SPM
Function: (CLA / LA / CA / RE) LA, CA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5, WGIII
Previous reports (please indicate): --
Other (e.g. workshop participant): reviewer for several reports, including SRREN

A. What should be the future products of the IPCC?

- **Special reports on topical issues: limited length (<500 pages), focused on progress** since previous reports
- Overview reports on all aspects of climate change, every 5-7 years, limited length (<500 pages), focused on progress since previous reports

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Given my experience with the AR5-WGIII approval plenary, I think it is essential to distinguish more explicitly between

- Products agreed between experts/scientists and governments/government representatives
- Products written by scientists, considering comments by colleagues and by governments, but under the sole responsibility of scientists

While I see the value of a government-approved summary of some 20-30 pages, I think there should also be a prominent, succinct report that does not need to go through government approval

Moreover, I think that it is necessary to protect scientists from being judged unfairly by governments, as happened e.g. in the written statement of Brazil to the WGII outcomes on bioenergy. I think it is not acceptable that governments judge the quality of the science, i.e. a red line was crossed here.

Moreover, I think that making uncertainties and differences of opinion within the scientific community more explicit in the report, where appropriate, could help to address some of the (often unfounded or at least questionable) criticisms from outside the IPCC.

C. Ways to ensure the oarticipation and contribution of developing countries in the future work of the IPCC

No good ideas, sorry.

D. Other matters

NAME: Dr. Jochen Harnisch
Involvement in IPCC:
Function: (CLA / LA / CA / RE) : CLA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): AR5 WG3
Previous reports (please indicate): TAR, AR4, SR Ozone and Climate, 2006 Inv Guidelines

A. What should be the future products of the IPCC?

My strong preference would be to move away from the big assessment processes and to produce and review “issue papers” in the format of what are now individual chapters of the assessment reports. These “issue papers” could be produced at different rates and speeds e.g. some on an annual basis with only a few months for preparation and review, some every few years or only once and with a year or two for preparation and review.

A periodic summary process could produce a technical summary and SPM based on all issue papers produced over a certain period of time e.g. 1, 2 or 3 years. The proven IPCC procedures could remain intact.

As a result the work of IPCC would become more efficient and timely and more rewarding to authors.

Potentially occasional special reports could stay as standard product. However, their scope should be kept more limited.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

No fundamental changes needed. The TSU would be more focused on quality assurance of the products and on transparently running the underlying processes of selection of topic s and authors.

The selection and commissioning process for "issue papers" should become leaner and less political. Maybe there could be an annual ranking of issues by voting.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Currently there seems to be a problem of mismatch between needed qualifications and authors selected. Frequently experts are selected who are not real experts in the field in question. This makes it difficult for them to add value to the process. More flexibility should be exercised in selecting authors with less constraints. In my view one should ideally start with two CLAs who then propose and select their team of authors based on merit and according to a simple set of criteria and quota. The TSU could check compliance with these criterial and quota.

NAME: Christoph HEINZE
Involvement in IPCC: LA AR4 WG1 ch. 7, RE AR5 WG1 ch. 6
Function: (CLA / LA / CA / RE) RE
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG1
Previous reports (please indicate): LA AR4 WG1 ch. 7
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?
The most important function of IPCC has been to create a worldwide awareness about the human-induced climate change and an agreement that policy action is necessary. This awareness and this agreement have to be kept alive through future reports/activities by IPCC.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The reports are very long and yet not detailed enough to do all aspects justice. Also the expertise of the scientists involved does not cover all aspects similarly well. On the other hand, the already long reports are difficult to read (as a tell-tale sign errors are sometimes detected only after a long time).
I see two possibilities:
1. An even more comprehensive report in 4-6 years from now with shorter time interval between cut-off date for inclusion of most recent results and a summary for policy makers. This may practically not feasible unless a dedicated agency is established for this.
2. Shorter updates of the previous IPCC reports every 2-3 years highlighting new developments and persisting key issues and in ca. 10 years a complete new detailed report.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC
Commitments of richer countries for capacity building in developing countries together with funds for networking for participants from developing countries (travel, conference attendance). Use e-technology for virtual conferences involving partners from developing countries. Explore ways for virtual conferences also for low band-width internet connections (if technically feasible at all).

D. Other matters
I wish that IPCC continues. Self-criticism should be enhanced somewhat. The review process should be adjusted to the procedures of scientific open access journals. Editors (or groups of editors) should have the final decision on the release of the reports and should be independent of the authors. Editors should call dedicated reviewers who have the best suited expertise. The time interval between cut-off dates for inclusion of new findings and the release of the report should be shortened considerably.

NAME: Bruce Hewitson
Involvement in IPCC: Author, Atlas advisory board, and co-chair TGICA
Function: (CLA / LA / CA / RE) CLA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG2 & 1
Previous reports (please indicate): TAR, AR4
Other (e.g. workshop participant): workshop participant, TGICA

A. What should be the future products of the IPCC?

The future products should be relevant. By that I mean that in TAR the relevance was largely about narrowing the uncertainty around the question of the human contribution to climate change, and the related consequences and options. The AR4 mostly put the final seal on that question, and opened up new discussions on the adaptation and mitigation issues. In both cases this was relevant to what decision makers were facing, and showed an appropriate shift in the center of gravity of the discussion toward the adaptation issues. It would have been natural to expect this shift to continue, and in particularly that this shift would move even further into the realm of regional foci. Instead, and for reasons I still do not fully understand, the AR5 WG1 walked back from regional foci and ended up mostly reinforcing AR4's big-picture messages, which placed constraints on the WG2 and WG3 regional treatment!

The need is now even more pressing for substantive treatment of regions; already other initiatives are stepping into the vacuum to address this (especially through the climate services paradigm), but often without the rigor that IPCC could bring to the subject.

Thus I argue that future IPCC products should put regions front and center; not in a sequential way where WG1 is meant to inform WG2 and WG3, but that there is a systematic co-exploration where the physical science of regional responses are evaluated through the lens of WG2/3 concerns.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

At a minimum there seems to be a pressing need to break the barriers between WG1 and WG2, and the sequential mindset that WG1 necessarily must independently precede WG2 … the traditional independent development may once have been appropriate for past needs, but where society's concerns currently stand, this division seems inappropriate.

There are a number of possible structural approaches to this challenge, but whatever is chosen there should be a convergence of action between the working groups, especially WG1 and WG2. One radical way could be to combine WG1,2,3 efforts within separate continental assessments.

Alternatively, and this would be most attractive to my current thinking, merge relevant elements of WG1 and WG2 in a new activity. One could do this by first greatly reducing the scale of WG1's purview to focus only on the emerging new understanding of the big global issues. Then place more investment on addressing the physical science of regions through the eyes of impacts, adaptation and policy issues. For example, GCMs, RCMs, Statistical downscaling, and observations all have internal contradictions that remain unexplained and are often conflated into the catch-all term of uncertainty. This does little to inform the regional response which would greatly benefit from a systematic assessment that is undertaken jointly by WG1 & WG2 scientists working together within one activity, and where communication between participants and across disciplinary perspectives is transparent and immediate. SREX serves as an interesting prototype for this.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

First, by adopting a regional focus one would inherently foster the engagement of regional scientists and hence necessarily the developing nation scientist. However, as has been seen in past reports, merely being on an author team does not necessarily lead to solid engagement. This is a classic capacity problem when one mixes capacity of the inexperienced with the internationally recognized experts; some developing nation scientists are world class intellectual leaders (although perhaps not always well recognized due to their limited opportunity for visibility), while others are awaiting only the opportunity to be mentored into the assessment/interpretive big-picture way of thinking. Moving from the project mode description of scientific results into a mode of IPCC assessment and critical evaluation across the range of literature, needs confidence, and that comes with experience of engagement in the contestation of ideas … an attribute that is not easily gained in the small communities of developing nations. A possible approach within the adoption of a regional focus paradigm is to partner scientists within author teams, mixing across disciplines and experience to comprehensively address the regional multi-disciplinary issues.

Secondly, the inclusion of developing nation scientists through a process of national nominations is fundamentally flawed. The national focal point's awareness of relevant scientists is often limited, and politics not uncommonly plays a role. A proactive search by the IPCC, based on identified track record and potential, would substantially enhance the development of, and contribution from, developing nation scientists.

Third, the nature of developing nation scientific environments is that the scientists in a small community necessarily deal with a high degree of multitasking on unrelated activities. Thus, if one could ring-fence some of their time to appropriately be engaged, along with relevant institutional support through the home institutions, would enable the developing nation scientist to dedicate appropriate effort and focus with commensurate personal growth.

There are numerous other structural options, but time prohibits going into them here … suffice to say the principles and objectives need to be cogently articulated first, and the appropriate structures would then naturally follow.

D. Other matters

It would be interesting to give the development of an assessment the flexibility to evolve the scope and structure of a report during the process. It seems to be often the case that part way through the writing process there is a logical pathway to follow which diverges from the government approved outline. An ability to revise and reframe could lead to a much improved outcome.

NAME: Gerardo Hiriart L
Involvement in IPCC:
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX)
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Considering the usefulness and relevance of special reports produced by the IPCC, I strongly believe that they must continue, but I would like to propose a current issue that can be used as a main topic of next reports. This theme refers to the advantages and benefits, as well as implications and impacts on the environment of innovative technologies, such as the extraction of Methane Hydrates, Shale Gas and Shale Oil.

Aware of their potential to supply worldwide energy demand, their economic influence in other sectors, its scientific and technological development and the possible displacement of renewable energy as consequence of its implementation (even if there is a degree of complexity to implement them), I suggest the IPCC assess their socio-economic effects, impacts on the environment and their association with the government, academia and industry to take advantage of the benefits of these sources with social responsibility and sustainable commitment.

I also recommend including friendlier products, designed to capture the attention of more people around the world. The change of society's behavior is one of the main tools to combat climate change and it can only be reach if there is more information within regular people. I suggest the development of new information products oriented to society, and focused on simple facts and actions.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

I would like to refer to my previous answer and underline the need of friendlier instruments; in this sense, I suggest that some of IPCC products are produced as short documentary films designed to transmit a concrete message to society. Furthermore, they should be available on the website, subtitled in all UN languages and disseminated in other media. The visual advantage of these new products will allow the work of the IPCC is best known and more accessible.

Regarding the modus operandi for the IPCC products I urge the authorities to improve distribution mechanisms in all countries to guarantee the adequate dissemination of the information. I have notice that some ministries and even governments, academia and industry of participant countries do not have knowledge of the importance of these reports and have not benefit from this work.

I suggest having an open selection process of the participant experts, so all countries can be involved, allowing any specialist to demonstrate its interest and participate with its particular ideas and knowledge. This will contribute to reinforce the equality, freedom and inclusiveness criteria that the United Nations professes and will promote the IPCC work is best known in the world, because it will be necessary to give more publicity to the calls in order to attract the largest number of interested specialists.

In addition to the previous, I suggest the involvement of youth in the work of the IPCC through a special open competition targeted especially for them, distributed at universities and companies in all member countries of the UN and recruited using incentives that could contribute to the specific development of the country they come from.
The participation of young people will allow the products in which they participated be necessarily disseminated in universities and companies where the call was made making these be well known and used as a reference.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC.

Referring to the previous two answers, I think the best way to increase the participation of developing countries in future IPCC products is increasing awareness of the work of it and the reports it produces. It is necessary to involve the government, academia and industry in these countries through visits, forums, presentations and conferences in which they could be aware of the IPCC work and receive formal invitation to participate in its products.

Investing and planning for distributing the IPCC assessments in universities and companies interested in each of the member countries, should become one of the most important activities of the latter. It is of great importance to ensure that all products are known, consulted and taken as a reference, because the content is complete, official, reliable and useful to discuss the specific topics covered. And so far, little is known of these, at least in Mexico.
All reports, methodological guides and technical documents should be present in the libraries of all universities and spread across all companies whose activities and interests are lined up with the issues that these products present.

Therefore, new products such as documentary films and interviews would facilitate outreach in developing countries, due to the accessible nature of this kind of products when providing visual information. Also, the call for convening experts and young people through open competitions will offer an excellent way to increase such participation.

D. Other matters.

Finally, I would like to mention that it is essential that social issues generated from the impacts of climate change are largely addressed in the IPCC products. The considerations and recommendations that the IPCC could issue for these topics are fundamental to influence decision makers to create, modify or delete current policies.

It is extremely important not to forget that the welfare and longevity of the society is the reason why the current environmental conditions are studied, future conditions are predicted and the path of sustainability is built.

Therefore, the society's adaptation and resilience to the phenomenon of climate change should become the main objective of each product in order to benefit those who live in the most vulnerable conditions.

NAME: Kaija Hakala
Involvement in IPCC: AR5 WG2 Chapter 7 (Food production systems and food security)
Function: RE
Report: (AR5 WG2)
Previous reports (please indicate): commentator in many reports, but not official status
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Special reports, website with on-time information. No more huge AR:s

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Collection of the best scientists on every issue (according to publication history), then working as a group, not necessarily in meetings, but the same way as scientific articles are written, can

be exclusively by Emails and cloud services. The problem is how to reach the best scientists from Chinese-Spanish-Russian-German speaking countries that don't publish in English. There should be an action group for every large language area that chooses the best people from these areas to be members in the writing group. However, everyone who is a member has to understand and speak also English so that others can understand.

Web site could be taken care of by part time employers, not top scientists, but people who can get and understand information from the top scientists and from publications. These web site groups should have as members people from Chinese-Spanish-Russian-German speaking areas. They should understand and speak English to be able to communicate with each other. These people could share information with the Special report people, and they could be partly the same people.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Secretary-type groups of people that can speak both Chinese-Spanish-Russian-German and English and who can scout through the Chinese-Spanish-Russian-German speaking literature and contact specialists from these areas or just read and report the papers.

D. Other matters

Equality as seen by now is no equality, if the Chinese-Spanish-Russian-German people cannot communicate in the group and don't participate fully. I think that the best forces have to be involved, but position in IPCC writing group shouldn't be just a mark in your CV, but an active task. Maybe use of smaller working groups for more focused Special reports and updating a website, would remove the rigid status of the work as a member in a group, and help return the IPCC work to the science itself.

In the compilation of the suggestions for IPCC future in your website there are many very good suggestions, such as: co-operation with UN bodies, showing gaps in knowledge, and that the reports would be finalized with professional large audience writers. Also it would be helpful if the references could be linked to the text for quick and easy checking of facts.

NAME: Peter Irvine
Involvement in IPCC: contributing author and reviewer
Function: (CA / RE)
Report: (AR5 WG1; WG3)
Previous reports (please indicate): no
Other (e.g. workshop participant): no

A. What should be the future products of the IPCC?

Relatively frequent special reports indicating major changes in understanding or developing a theme (e.g. SREX), and occasional executive and technical summaries of the state of the science.

Perhaps a shift to "chapter-wise" reports to report on changes in understanding rather than the major reports would be helpful. I.e. when a major improvement in understanding is made in, for example aerosol-cloud interactions, a special report could be made.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Don't know

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Unsure but connections seem closest for mitigation and adaptation, where regional contextualization would be valuable.

D. Other matters

NAME:	David de Jager d.dejager@ecofys.com
Involvement in IPCC:	Staff Member TSU WGIII: Scoping AR4 and Editor/CLA SROC Review editor SRREN Contributing Author AR5 WGIII
Function:	editor / CLA / CA / RE
Report:	AR5 WG3; SRREN, SROC
Previous reports:	See above
Other:	Several workshops since the 1990s

A. What should be the future products of the IPCC?

Focus on WGIII reports

- Topical reports, answering concrete policy relevant questions, in a relatively fast process.
- Help making available data for the research community (e.g. open access to background data used for the reports)

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Focus on WGIII reports

- The key strength of the IPCC process is and should be the review process. However, the current process is not fully supporting this, for various reasons:
    - The selection of authors – and the considerations applied in the selection process – frequently doesn't result in the best team of authors. Some authors have a perfect CV, but have no time and/or eagerness to work on the drafts. Some authors are 'recycled' because of their past contributions and commitment, but are added to chapters that don't match their expertise. It should be much easier to dismiss non-contributing authors and underperforming CLAs. There is no 'punishment' for non-involvement.
    - The first order drafts, and unfortunately also the second order drafts, too often lack the quality for a good review process. The differences between final draft and second order draft are too big in my opinion.
    - For the SROC IPCC WGI and III worked together with the TEAP of the Montreal Protocol. The TEAP can deliver short reports within say 6 months, prepared by experts in their network, and allowing to quickly address topical issues. TEAP can do this, because the topic is clearly defined and focused, and as it does not have a review process. The first is a key asset, the latter is a weakness as the reports may be biased. By combining the focused approach of TEAP, and the strength of the IPCC review process, IPCC can add more value to its efforts.
- The process can be improved by the following measures:
    - Focus on smaller topics (like now addressed in special reports, but maybe even more focused). Aim for 100 page reports (excluding any annexes).
    - Establish a core writing team of highly dedicated authors (with significant time/budget available), supported by senior staff from the TSU and a project steering group (PSG) of renowned experts/scientists.

- Distribute a FOD which sets out the structure and logic of the report, and which presents the literature that will be assessed (as far as the core team is concerned). (20 pages, plus a structured literature list). Reviewers can propose additional (e.g. regional) literature, and can offer to contribute to the process (e.g. by assessing/translating regional literature). Their potential involvement will be decided upon by the TSU / co-chairs / PSG (safeguarding an unbiased representation of facts in the report).
- Distribute a SOD, which should be close to the final draft report. The SOD will be reviewed in order to ensure that the academic/policy community is allowed to point at any biases in the assessment.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Focus on WGIII reports

- Access to literature and data is a key challenge for some developing countries. So open access to this is of crucial importance.
- Attention to any language issues is of equal importance. Consider translating the FOD in French, Spanish etc.
- I've seen too many examples of developing country experts not being able to deliver as expected. Sometimes because they were assigned to the 'wrong' chapter because the chapter just 'needed' a non-OECD author, often due to language issues, and sometimes due to lack of motivation.

D. Other matters

NAME: Blanca JIMENEZ CISNEROS
Involvement in IPCC:
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX)
Previous reports (please indicate): AR4
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Policy briefings and information with practical information

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

A different one to the one used, in order to involve use communicators and practitioners to produced and some scientists to overview the quality of the information contained

.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Including in a proper proportion experts coming from the developing world in the three groups mentioned above. Also geographical and gender balance should be considered

D. Other matters

I think IPCC has been a very successful adventure for raising the profile of climate change concers. It also has shown that the mobilization of transdisiciplinary science to address global challenges is possible.

NAME: Simon Josey
Involvement in IPCC: LA for Observations : Ocean chapter in WGI AR5 report
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG1
Previous reports (please indicate): None
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?
Comprehensive assessment reports at intervals of approximately 6-7 years as carried out to date. Additional shorter term, brief update reports on key issues (e.g. global surface warming hiatus) at the mid-point between large reports**.**

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?
The same structure and modus operandi as was employed for AR5.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Encourage more strongly scientists from these countries to apply as LAs etc for the various WG reports and appoint to chapters as appropriate if they are sufficiently experienced / qualified.

D. Other matters
None

NAME: **Haroon Kheshgi (ExxonMobil Research and Engineering Company)**

Involvement in IPCC: **LA, CA, RE, reviewer, observer (IPIECA), expert meeting participant**

Function: **expert and observer**

Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX)
- **AR5 WG2 Ch 10 RE**
- **AR5 WG3 Ch 10 LA**

Previous reports (please indicate):
- **AR4 WG3 Ch 5 RE**
- **TAR WG1 Ch 3 LA**
- **TAR WG1 Ch 12 CA**
- **TAR WG1 TS CA**
- **TAR WG3 Ch 4 CA**
- **SAR WG1 Ch 8 CA**
- **SR CCS Ch 6 LA**
- **SR LULUCF Ch 1 LA**

Other (e.g. workshop participant):
- **Organizer of IPCC expert meetings with business experts (AR4, SRREN, and AR5).**
- **Participant in numerous other expert meetings and workshops.**

Thank you for this opportunity to provide my perspective on the future of the IPCC.

Comments below address each of your four questions.

The assessment process was the primary focus of the comments that I had submitted on behalf of IPIECA on the future of the IPCC prior to the AR5 – which are attached in Appendix 1 – and remain relevant to the future work of the IPCC. In response to the question on *Other Matters*, perspective is provided on areas where the assessment process in practice has improved, and areas for further improvement.

A. What should be the future products of the IPCC?

The current set of product types – Assessment Reports (AR), Special Reports (SR), Technical Papers (TP), Workshops, Expert Meetings, and informal reports – provide a significant range of products to meet assessment needs.

Given the importance of *Maintaining the IPCC's Strengths* (see Appendix 1), care should be taken in altering product types and their procedures. However, given the increasing size of each AR, an evolution towards assessments that focus more on what has changed in our understanding – updates rather than complete rewrites of entire assessments – could have advantages (and might take advantage of features available for electronic documents). Any change in product types and their procedures will require careful consideration and take time and could be considered in scoping and potentially in parallel with the AR6 or beyond.

As part of a societal risk management approach to climate change, metrics are important in measuring risks and progress in managing them. As ARs have matured, there has naturally been and evolution towards clearly-defined quantitative metrics (e.g. temperature, radiative forcing, GWPs, GHG concentrations, agricultural yield, economic impacts, emissions, mitigation cost and investment, …) and estimates of their uncertainty in each of the Working Group Reports. A clearer understanding the portfolio of metrics used in IPCC assessments and their role in informing risk management could help focus the next assessment and serve as measures of changes in our understanding. This could be the topic of an expert meeting and/or a TP.

There has been surprisingly little recent discussion and input on IPCC SRs, TPs and other products. It is important to gather input broadly on assessment needs, and gathering this input should be incorporated into IPCC plans on outreach (including a way to gather and retain this input that will not be lost as Bureau members and staff change between ARs). Outreach and input should be sought from potential users that are generally remote from the IPCC process (e.g. the private sector).

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The current divisions between the three Working Groups continue to serve well, and are associated with different science communities. It is important to maintain the current scope of WG I; a challenge for WG I will be to have greater focus on those aspects of climate more closely associated with climate risks where confidence in past and future trends may be lower. This might receive more careful attention in future assessment. This would be in addition to the repeated assessment of, for example, global temperature which has seen incremental change in understanding but remains an important metric.

The two-step process of the IPCC (see Appendix 1) -- where the IPCC defines the scope and structure of the Report, and chosen authors are responsible for the contexts of the chapter – continues to be successful. The selection of a diverse set of authors is critical in this process.

As can be seen by surveying the authors chosen for the SRREN and AR5 (see Appendix 2), there are extremely few authors who are not from government institutions or from institutions funded by governments (e.g. academic R&D). This is in contrast with the large fraction of R&D carried out by the private sector – about 2/3 of R&D is in the private sector according to OECD R&D statistics – and an even greater fraction of technology deployment carried out by the private (vs public) sector. Inclusion of experts from the business community could add perspective on practicality and context with other priorities, particularly related to adaptation and mitigation.

Given the lack of authors from the private sector, expert and outreach meetings with experts from business have provided important contributions to the AR4, AR5, and SRREN. There remains further need to strengthen participation from the private sector.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

The work of the IPCC should be informed by a broader set of interactions with developing countries. Outreach to those in developing countries on completion of the AR5 is one opportunity.

As the IPCC moves forward it will become increasingly important that the authors draw not only from the climate-change-specialist research community, but also from those with a broader perspective on assessment information needs in the context of decision making which would balance adaptation and mitigation in the context of other social priorities. Experts from developing countries – from both businesses and the public sector – could provide important contributions to the work of the IPCC along these lines.

D. Other matters

The AR5 saw an improvement in clarity and transparency of its assessment, and of the assessment of confidence and uncertainty of its conclusions. There was a significant improvement in the WG II report, and in its coordination with information from the WG I report. There were, however, areas for further improvement:

- There were significant changes to the chapters and SPMs of all working groups from draft-to-draft which, in the end, meant that expert reviewers did not have the opportunity to review text close to the final product. While I understand the desire to have the most up-to-date report, this should not result in inadequate review.
    - Because of the heavy reliance (and perhaps over-involvement of assessment authors) on model intercomparison research, which was not complete until late in the drafting process, results in drafts were sometimes missing or marked preliminary.
    - For example, in WG III, key Table SPM.2 was not reviewed by experts nor did it appear in the final draft of the SPM.

- While the clear publication deadline for papers to be included in the IPCC added, perhaps, transparency, it seems to have been misused. Large numbers of papers were issued at the time of the deadline, some in special journal issues timed to meet the deadline outside of the non-special-issue journal editorial process. The late availability of literature also compromises the IPCC review process.

- The IPCC has become more insular in its review process for final draft SPMs. In the AR4 and before, the IPCC allowed for review comments from organizations as well as from governments. This provided additional expert review and perspective on the draft SPMs. However, in the SRREN and AR5 the IPCC only allowed comments from governments narrowing the information that governments had available in negotiating text of the SPMs. It is not constructive to limit availability of information available to the IPCC.

_____Appendix 1: Comments on the Future of the IPCC Prior to the AR5: _____
_____Available at: http://www.ipcc.ch/meetings/session28/inf1.pdf _____

Dear Chairman Pachauri:

Future of the IPCC: Comments from IPIECA (author: Haroon Kheshgi, Chair of the IPIECA Climate Change Working Group, ExxonMobil Research & Engineering Company, Review Editor, AR4 WG III Chapter 5)

Thank you for the opportunity to comment on your paper on "Future of the IPCC." Comments are provided on the following topics:

1. *Maintaining IPCC's strengths*
2. *Defining the contents of assessment reports*
3. *Economics*
4. *Special Reports and the Assessment Period*

***Maintaining IPCC's strengths**: The IPCC assessments have provided important contributions to the science of climate change that underpin society's response. The success of IPCC assessments, considered in sections 1 and 2 of your letter, have been enabled by several critical characteristics of the IPCC process: 1) policy relevant and not policy prescriptive, 2) assessment of available literature and not research or research guidance, 3) assessment given in underlying chapters the product of researchers and analysts in contact with the broad range knowledge throughout the world, and 4) government engagement on defining assessment scope and selecting most relevant information from underlying reports for summaries with the underlying report being the responsibility of its authors. It is important in future activity of the IPCC to maintain these key characteristics.*

A strength of the IPCC has been the inclusion of authors from a broad geographical range and a broad understanding of the knowledge base which has created products with strong credibility. It is important to continue to broaden IPCC's author base as it extends to new topics to assess, including both geographical distribution and those from business and industry that have a working knowledge of many of the topics that the IPCC assesses. This could be further strengthened by using the full range of author roles (e.g. increasing the use of contributing authors in WG 2 and 3; WG1 has historically made extensive use of contributing authors), and other input mechanisms like the IPCC-industry workshops held to gather input to the WG3 AR4 report.

The demand for information and the effectiveness of outreach continues to increase. In meeting this demand it is important to maintain credibility in its outreach by sticking to the strength of the IPCC products and their conclusions.

It is important that the IPCC assessments not present a conflict of interest for those doing the assessments and, therefore, for the IPCC assessment process not to get involved in research planning. As is noted in your letter in section 3.2, the IPCC could serve as a facilitator for regional research, but it is suggested that such an activity be kept separate from the assessment process.

***Defining the contents of assessment reports**: A two step process to define the output of the assessments is suggested in your letter in section 4.1.1. The IPCC process has been very successful in having the Panel define assessment scope and select the most relevant information from the underlying reports for report summaries, with the underlying report basically determined by the report authors. Such an approach leaves to the authors the responsibility of bringing to the IPCC assessment the relevant findings of the research and analysis community, even if the answer is that there is not sufficient literature to carry out an assessment of a topic of interest or justify expected conclusions. Such an approach does not pre-define the content of the assessment, but makes use of the experts engaged as authors to gather content from the literature.*

For the authors to carry out their job effectively is aided by a well designed assessment structure. Greater consideration of future report structure might be useful in addressing weaknesses of previous reports. An example was the expanded structure on observed climate change in the AR4 WG1 report compared to the previous assessment.

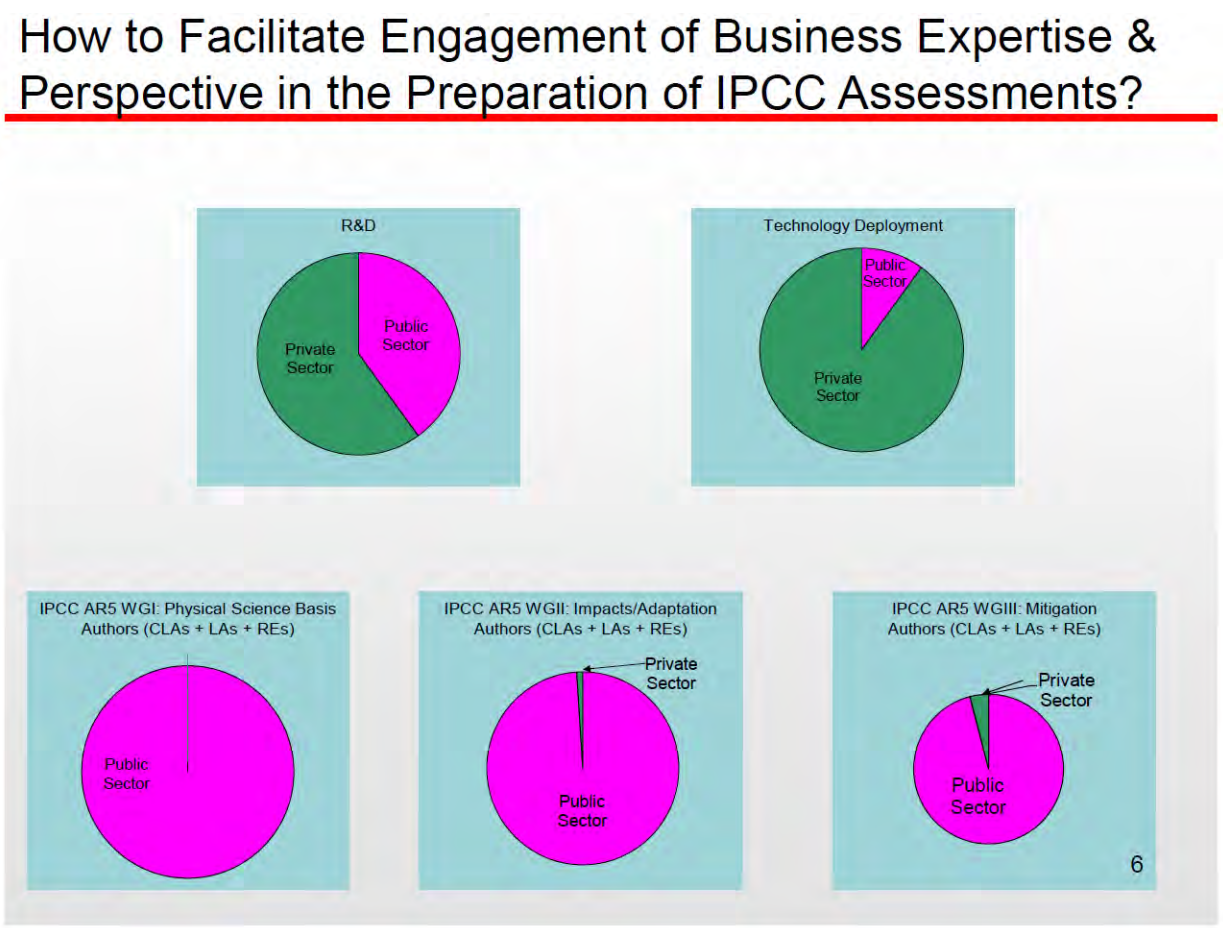
***Economics**: Research on the economics of climate change is a rapidly growing and evolving field of study that applies to the topics of both WG II and III, including the economics of options and policies for both mitigation and adaptation. In considering future special reports and assessments, the IPCC might plan to allow for a broader assessment of economics that allows*

for the range of results emerging from economics and integrated assessment research. In scoping future assessments, this would mean structuring reports so that authors have greater flexibility in assessing economics literature on options and policies. This might allow, for example, assessment of the economics of mitigation to extend far beyond the past assessment's focus on mitigation potential and cost to assess the economics of mitigation within markets and with pre-existing and additional policies. A task for the group introduced in your letter section 3.1.3 could be to consider how assessment structure might enable such an assessment of the economics of climate change.

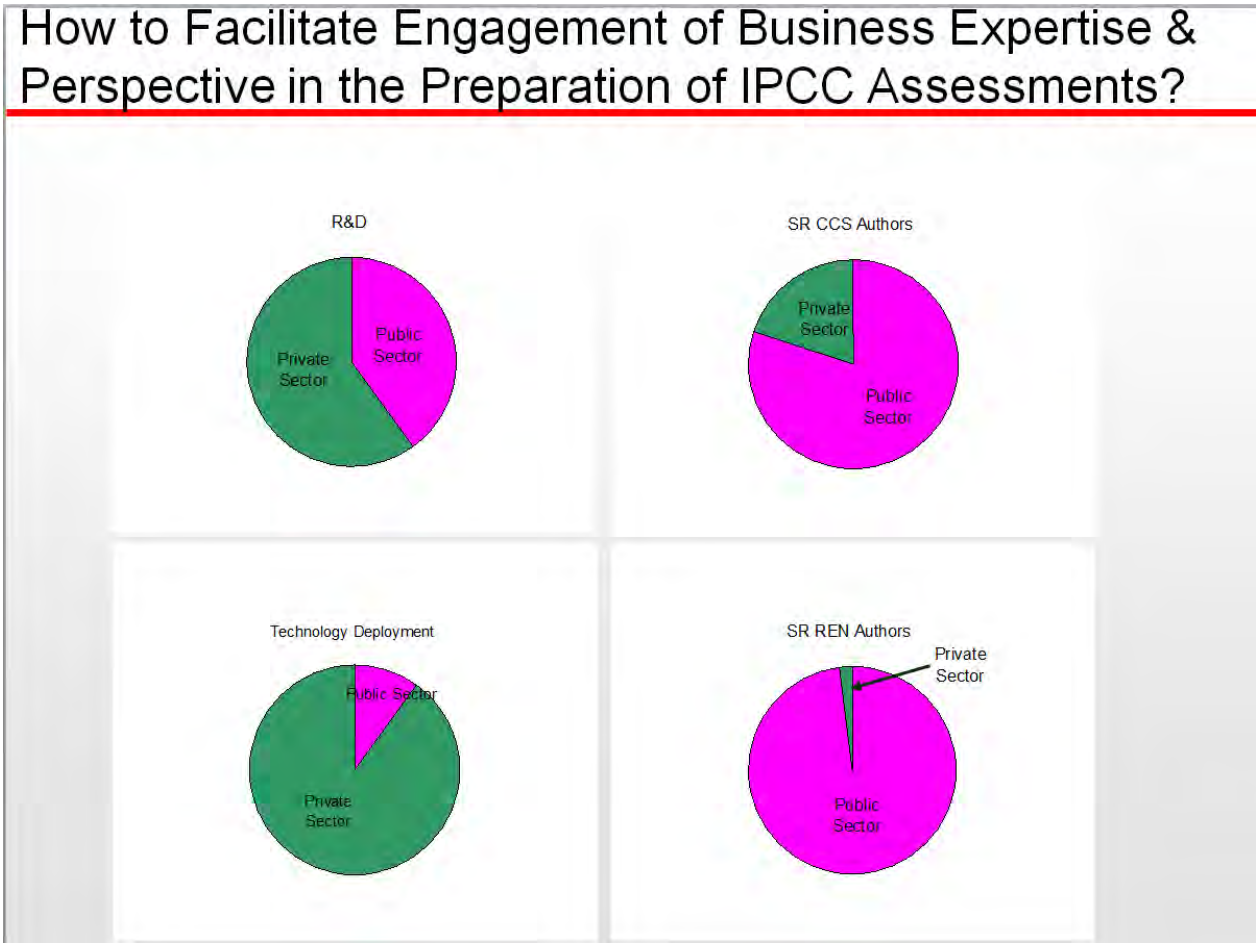
***Special Reports and the Assessment Period**: Recent special reports have proven to be very useful and timely products. Special reports with greater focus allow a deeper level of expertise to be engaged in the preparation of IPCC products. Special reports associated with mitigation technologies (e.g. the SRCCS), enabled engagement of experts from business and industry with working knowledge of technology development and implementation to make significant contributions to the assessment. Expert communities remain, such as those with working knowledge of adaptation, might also be engaged in a focused special report.*

While full assessments have proven to be of great value, adding special reports and either extending the period between assessments (AR5 in 2015?), or having an overall assessment of only WG1 every cycle (with WG 2-3 every other cycle) may have merit and warrant further consideration.

_____ Appendix 2: Author and Review Editors: _____
_____ Relative fraction from Public and Private Sectors_____



Source: Welcome address for the IPCC AR5-WG3 Expert Review Meeting: see http://fscarbonmanagement.org/content/ipcc-working-group-iii-contribution-5th-assessment-report-expert-review-meeting



Source: Welcome address for the IPCC SRREN Expert Review Meeting: see http://fscarbonmanagement.org/content/ipcc-expert-meetings

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NAME: Randy Kolka
Involvement in IPCC: Chapter 5: Inland Wetland and Mineral Soils (2013 Wetlands Supplement)
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) TFI
Previous reports (please indicate): None
Other (e.g. workshop participant): None

A. What should be the future products of the IPCC?

The IPCC appears to have a very functional system in place to continue to evaluate the status and economies of our planet in light of climate change. It is imperative that the IPCC continue the Assessment Reports from the three working groups. The AR reports have been at the forefront of science and policy regarding global climate change. In addition, future products might take into consideration other changes more directly like land use change (which is considered in countries carbon accounting), and changes in atmospheric deposition. I don't necessarily think it is IPCC's responsibility but developing countries need more guidance to capture their carbon footprint. Perhaps IPCC could come up some specific guidance for those countries to be able to go from Tier 1 guidance to Tiers 2 or 3 including suggested approaches and potential sources and costs of acquiring the

necessary data and synthesis. Also, we need to continue to update the National Greenhouse Gas Inventories with new scientific information. Continued special issues that can advance our accounting, again, especially in developing countries, should be pursued (e.g. the 2013 Wetlands Supplement and the 2013 KP Supplement).

I see that there are videos of the working group chapters from the AR5 chapters. I think using multi-media like videos, blogs, and social media like Facebook and Twitter to get the IPCC products to the world is important.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

For future AR and supplementary reports it appears to me that the appropriate structure is in place to deliver these critical global assessments. For the supplementary report to help developing countries in the carbon accounting, a combination of accounting experts from both developing and developed countries would make sense with the help of TFI coordinating the effort. Perhaps new folks might be needed to initiate and manage other multi-media efforts. For other future supplements where new literature supports the development of new accounting guidelines, meetings/workshops that identify the important gaps should continue to be used. It was an expert meeting held in Geneva in 2010 that led to the production of the Wetlands Supplement. Continuing to have these expert meetings in all sectors will be critical to improving the AR reports and the accounting guidelines.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Continue to offer travel funding to those scientists and policy makers from developing countries. Need to demonstrate how participation in the IPCC will enhance their country's ability to account for carbon and meet their greenhouse gas goals. Continue to recruit developing country's best and brightest scientists. If quality scientists are not present or available to participate in IPCC activities, I would not select lesser candidates. I think there should be good country representation but not force it to the extent where the science could be compromised.

D. Other matters

From my one experience working on the Wetlands Supplement, I would suggest some sort of post evaluation system of the authors and reviewers that were selected. Perhaps this occurs and I don't realize it. Include high producing contributors in future IPCC efforts and drop those that are not.

NAME: Elmar Kriegler
Involvement in IPCC:
Function: LA
Report: AR5 WG3
Previous reports (please indicate): -
Other (e.g. workshop participant): AR5 WG3 Scoping Meeting (Venice, 2009), Expert meetings on uncertainty (Stanford, June 2010) and scenarios (Berlin, Nov 2010; The Hague, May 2012), IPCC AR5 WG3 Approval Plenary (Berlin, April 2014)

A. What should be the future products of the IPCC?

There is value in producing periodic updates of the state of knowledge across the three working groups as currently performed in the main assessments. It is unclear how otherwise an integrated picture across all dimensions of climate change could be provided.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

More mechanisms should be developed and more time spent on integration between the Working Groups during the writing process. E.g. the synthesis report could be re-structured into a report on topics cutting across working groups, which would be developed in parallel with the Working Group reports (with authors of dual membership in a Working Group chapter and a X-cutting chapter).
The separation of the working groups into (1) physics of climate change, (2) impacts, adaptation and vulnerability, and (3) mitigation is no longer useful to assess the research, since more and more studies will integrate impacts, adaptation and mitigation in the future. Working groups 2 and 3 should cover all of these aspects simultaneously. The two working groups may rather be separated along other criteria, e.g. geographical scale with a focus on global and macro-regional scales in one Working group, and on a smaller regional to national scale in the other Working group

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

The primary way is strengthening and building independent scientific institutions with an open scientific culture in developing countries around the world. Such institutions would nurture world class researchers from which the IPCC could draw. Selection procedures should value scientific expertise highest (in developing and developed countries). During a transition phase of establishing internationally competitive scientific institutions, native researchers working abroad should be eligible to represent their countries on author teams. The joint lead of chapters by developed and developing country researchers is a good institution, but will only be effective in enhancing the representation of developing country perspectives in the reports, if internationally recognized developing country researchers are selected. Developing country researchers, and CLAs in particular, could benefit significantly from support for their scientific infrastructure.

D. Other matters

The review process should be revised to allow for more targeted and professional reviews. Review editors should be employed half-time to organize targeted chapter reviews and to pre-filter comments from the open review process for author teams.

The IPCC needs to commit to the eligibility of assessing regional policies and emissions in the reports. Climate change and climate policies cannot be sensibly assessed without regional specificity. If such regional specificity fell victim to the IPCC approval process, the value of IPCC assessments would be substantially reduced, and it may become increasingly difficult to draw on the world's leading experts for the assessment reports. Procedures should be developed that safeguard the presentation of regional information in the Assessment reports.

NAME: **RODEL D. LASCO**
Involvement in IPCC: LA AR5 WG2
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX)
Previous reports (please indicate): AR4, LULUCF Special Report, GHG Good Practice Guidance
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

- Synthesis reports like the AR reports
- Shorter reports on select topics as demanded by policy makers eg LULUCF

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

- For assessment reports, as currently done
- For shorter reports, the current system works as well. However, NGOs should be allowed to nominate authors.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

- Allow NGOs and academic institutions to nominate authors directly

D. Other matters

NAME: Neil Leary
Involvement in IPCC:
Function: (CLA / LA / CA / RE) RE, LA, TSU Head
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG2
Previous reports (please indicate): TAR, AR4, AR5
Other (e.g. workshop participant): Multiple workshops

A. What should be the future products of the IPCC?

A hiatus from the comprehensive reports should be taken for a number of years. The focus for a few years should be placed on a small number of special reports that are carefully targeted to address specific, salient questions that are of high scientific, policy and social importance. These should emerge from and build upon workshops that bring experts from diverse and relevant fields together to share, explore and debate the topic(s). This should precede and inform the drafting and approval of a report outline.

Topics/questions that cross over between working groups are likely to be of particular importance in coming years.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

A program or programs similar to Assessments of Impacts and Adaptation to Climate Change (AIACC) are needed. Following the TAR, IPCC authors developed a proposal for the AIACC project, which was funded by the GEF and implemented by START in partnership with TWAS. The project built capacity in the science communities of a number of developing countries for engagement in policy relevant science assessment for evaluation of climate change vulnerabilities and adaptation. This was done by supporting over 300 scientists from 50+ developing countries, many of them early career scientists, in designing and executing 24 multi-country, multi-institutional, multi-year studies. The support was provided in the form of grant funding, technical guidance, workshops, trainings, networking, a working paper series and participation in synthesis of project findings. Over 100 publications, many of them peer-reviewed, resulted. Many of the published results were cited in AR4. Many of the participating developing country scientists were authors for AR4 and AR5. See http://start.org/programs/aiacc.

D. Other matters

NAME: OSWALDO LUCON
Involvement in IPCC: Author
Function: (CLA / LA / CA / RE) CLA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG3 Ch9; SRREN Ch9
Previous reports (please indicate): 2006GLs
Other (e.g. workshop participant): 1996GLs

A. What should be the future products of the IPCC?

Assessment Report and Special Reports, where Governments define topics.
(In my opinion, carbon budgets and other types of emission allocations could be better assessed.)

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

More simple reports; robustness does not mean data overload. Too much emphasis on Integrated Assessment Models may cause credibility problems, as do too much self-referencing and the production of last-minute papers for the IPCC report. Emphasis only on peer-reviewed literature caused unbalances with developing countries, notably where non English speakers publish less.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Empowering contributors, respecting their views. Avoid overprotecting a handful of OECD-based authors - in particular some nominated by their peers. Author names in the title do not mean authorship necessarily - there should be improved mechanisms to avoid overburdening some and allowing for others´ idleness.

D. Other matters

AR5 was much too time consuming and bureaucratic, especially for unpaid authors. Zotero-ing references and other procedures were as a nightmare to authors; the support of CSAs was decisive. The WGIII TSU was very professional but prone to *de facto* dominance of one of the co-Chairs, with controversially biased views in topics sensitive to non-Annex I countries. Despite warnings, problems witnessed during the AR5 WG3 and SRREN processes naturally surfaced at the final plenaries. Past frictions can bring about important lessons for the future.

NAME: Richard Klein
Involvement in IPCC: 1994-2014
Function: (CLA / LA / CA / RE) CLA and LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) CLA AR5 WG2
Previous reports (please indicate): LA SREX, CLA AR4 WG2, LA TAR WG2, CLA SRTT, LA SAR WG2
Other (e.g. workshop participant): Co-organiser IPCC workshop on Adaptation (Costa Rica, 1998), participant in various other IPCC workshops, expert meetings and scoping meetings

A. What should be the future products of the IPCC?

IPCC Sixth Assessment Report in 2021, preceded by one or two Special Reports

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The current structure and process can be retained, with the exception of moving the assessment and attribution of observed and projected impacts in natural systems from WG2 to WG1.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Invite richer developing countries to contribute to the IPCC Trust Fund, and to cover the costs of lead authors from these countries themselves.

In selecting authors, focus on academic merit and English language skills rather than geographical balance.

D. Other matters

None.

NAME: Prof Andrey Kostianoy (P.P. Shirshov Institute of Oceanology, Moscow, Russia)
Involvement in IPCC: Yes
Function: (CLA / LA / CA / RE) - LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) – WG1 AR5, Chapter 3 Observation Oceans
Previous reports (please indicate): no
Other (e.g. workshop participant): no

A. What should be the future products of the IPCC?

1) To include much more information on regional climate change in addition to global change.
2) To include in Chapter 3 Observation Oceans a sub-chapter Coastal and Inland seas or to add it as a separate chapter (better). Regional seas react differently, even if located in proximity of each other (I am CLA on all Russian coastal and inland seas in Roshydromet AR2 for Russian Federation (2014)).
3) To avoid intersections (for example, sea level change in several chapters) to minimize future intercorrections..
4) In each Chapter to add a subchapter (Conclusions) describing what was correct/wrong in the results, conclusions and forecasts of the previous ARs.
5) To organize an Inter-Committee on Figures in order to improve the quality and clarity for non-specialists.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

There is a good idea to have WG1 – WG2 – WG3 logical nexus in the reports. What is missing - a real sequence in actions. WG2 has to work basing on the WG1 results and to do not repeat them. WG3 has to work basing on the WG2 results. This may prolong AR production, but it may be accelerated at the final stages to minimize the time gap between production of the reports of WG1, WG2 and WG3. Also, it can be helpful if CLAs of WG1 attend meetings (during a couple of days) of WG2 and vice versa. The same for WG2 and WG3. In this way people from WG1 will understand better what WG2 is required, and vice-versa.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Yes, participation of developing countries is required. In some of them a level of climate science is low to participate in the WG1, but they can contribute more in WG2 and WG3 (as experts or consultants) having local specific experience.

D. Other matters

NAME: Snorre Kverndokk
Involvement in IPCC: RE
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) WG3
Previous reports (please indicate): AR3 LA, AR4 CA
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

I think we may have reached a stage where the main conclusions from old assessment reports are mainly the same, and the new conclusions are more refinements, changes in details etc. This does not mean that new conclusions are not important, such as for instance some breakthrough technology that reduces costs of mitigation, climate change is slower/faster than we expected etc. So maybe the focus should be more on special reports where one can focus on important new insight instead of having these large assessment reports.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

One disadvantage of not having assessment reports is that these attract quite a lot of media interest. Thus, this may have a value in itself in reminding people and politicians about climate change, even if the main message has not changed much. I guess special reports would not attract such interest. But is it a way that larger special reports can be produced and press conferences are organized following the same template as press conferences for AR's today?

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Maybe people from developing countries working at well-known universities abroad can represent their home countries?

D. Other matters

I was not present at the SPM process in Berlin (WG3), but all reports show that the SPM has been more subject to politics than before. Would there be some ways to avoid this so not every sentence has to be approved by all?

NAME: Natalie Mahowald
Involvement in IPCC: LA, WG1
Function: (CLA / LA / CA / RE) LA, CLA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5, WG1
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Smaller reports, such as the SREX, seem much more helpful to the wider community, as well as integrative across traditional working groups, without the huge infrastructure of the full WG structure. They can also more easily address emerging issues than the cumbersome WG structure. For example, extreme events are now exploding with work, and thus perhaps a second SREX would be appropriate in a few years. Another example is sea level rise. Or food security. Of course all these issues are linked and coordination is required.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The overall IPCC governance would decide which topics to pursue for smaller, cross-cutting assessments, that could be offset in time from each other, and yet interact.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Representation of developing countries in IPCC assessment process is very important, and should continue to be encouraged. With time, this will strengthen the interactions between developing and developed countries.

D. Other matters

NAME: Axel Michaelowa
Involvement in IPCC: Author
Function: LA and CA
Report: AR5 WG3
Previous reports (please indicate): AR4 WG3

A. What should be the future products of the IPCC?

Full assessment reports with a publication frequency at the start of each decade (2020, 2030, …)

Special reports focusing on emerging topics once every 2-3 years

- Call for proposal of topics to entire IPCC structure (authors of preceding AR)

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The current structure of multiple round of reviews has been robust and should be retained

It should be ensured that the TSU does not influence the content of the report

The TSU should provide resources for an overall screening of literature leading to an as complete list as possible of all literature relevant for the respective chapter prior to the start of the chapter work. This literature list should serve as the starting point of the chapter. This would weaken bias towards certain literature due to the specializations of the chapter authors. Alternatively, the REs would start work earlier than the rest of the chapter team and get resources to undertake such a generic literature screening which they bring in the first authors' meeting.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Self-nomination of developing country authors without need to go through government focal points.

Support of developing country authors to cover costs related to IPCC work, e.g. journal access, and hiring of assistants.

D. Other matters

Given the hugely political negotiation leading to the summary for policymakers that increasingly distorts communication about the reports, it should be envisaged whether a scientific summary by the CLAs could replace the SPM.

The locations of author meetings should be less remote than in the past to reduce travel costs and related emissions.

NAME: Ulf Molau
Involvement in IPCC:
Function: LA
Report: AR5 WG2
Previous reports (please indicate): IPCC TAR (CA), IPCC AR4 (Expert reviewer)
Other (e.g. workshop participant): Swedish delegation to the AR4 Synthesis Report (Valencia 2007)

A. What should be the future products of the IPCC?

It is becoming increasingly difficult to produce all-inclusive IPCC assessments like the AR5, mainly because of the exponential accession of new publications and data sets. Nevertheless, the broad IPCC assessments is what the end users need; an open-ended series of special reports can never replace that, not entirely at least. The AR5 was a great step ahead in comparison with the AR4 for several reasons, i.e., a much better cover of socio-economic aspects and a thorough approach with regard to attribution and confounders. The inclusiveness of an IPCC AR6 will however depend on the developments within the IPBES, in order to avoid overlaps with IPCC WG2. To conclude, general assessments like the AR5 are essential for IPCC in the future as well, to maintain the high profile of IPCC, and this is also what is expected from us by end users, e.g., the UNFCCC.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

At present it works fine, but a formal and close liaison with IPBES is required for the operation of IPCC WG2.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

This is very much a matter of capacity building in the developing countries.

D. Other matters

William Moomaw – CLA SRREN WG 3

A. What should be the future products of the IPCC?

The ever-expanding major reports are becoming less timely and more cumbersome. While there is new knowledge contained in each succeeding Assessment Report, it is difficult to pick out the significant new information. Also, the ARs are increasingly difficult for anyone but specialists to read. Even with the Technical Summary and the SPM, Much of the Assessment report never sees the light of day. By way of contrast, the US produced National Climate Assessment that was released in 2014 is a model of clear communication. The IPCC spends too much time discussing model projections of the future and insufficient time documenting current observed trends or in examining the paleo-record to gain insights into our current and potential future climate. While models are important tools, they are subject to misunderstanding, and are often criticized as being fiction by critics. In many ways, the economic analysis of AR5 was perhaps the most important new information that was provided.

In many ways the Special Reports contain some of the most interesting information. As a CLA of the SRREN, I felt constrained in being able to convey the rapid growth of renewables because of the long lead-time between the closure date for citing articles and the time of publication. It is interesting that the recent publication of REN 21 is able to have a report each year within six months of the end of the year that is covered. The SRREN was two to three years out of date by the time it was published.

The very useful Synthesis report comes out so late that it goes unnoticed.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Perhaps a series of annual reports published on the web would permit a current assessment of new information in a more digestible format that would be up to date. For example the news of the Antarctic glaciers may be the most stunning finding of the past six years, but it was published too late to be part of AR5. This will be old news in 2020 with AR6. A more current web based report could also have bulletins of recent findings.

Timely progress reports on specific aspects of climate science, economics and policy might be more useful.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

To ensure the participation of scientists from developing countries it is essential that there is a concerted effort to search them out. In the SRREN, we found a fabulous African environmental economist halfway through the writing process. I have been co-CLA with very fine scientists form both Latin America and Africa. It is essential to use developing country networks to avoid having the process dominated by developed countries. This is a particular problem in the economic analysis.

D. Other matters

IPCC needs to remain the authoritative voice on climate related issues. This monumental assessment institution is a remarkable invention, but it must not become a dinosaur. It cannot be allowed to become to large and unwieldy. In the early days there were short, insightful technical reports that filled a gap. The organization needs to become more agile and be able to respond to criticism and correct any errors or unclear statements rapidly.

NAME: Akinori Mori
Involvement in IPCC: 2013 KP supplement
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) TFI
Previous reports (please indicate): N/A
Other (e.g. workshop participant): N/A

A. What should be the future products of the IPCC?

1) Ranking for cost effectiveness of mitigation options in each sector.

2) Summary for country specific values of GHG inventory in each sector.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

1) Cooperation of economist and data compilers.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

1) Study meetings for constructing GHG inventories in an appropriate manner.

2) Constructing methods to participate in CDM programs easily on a personal basis.

D. Other matters
N/A

Richard B. Norgaard <norgaard@berkeley.edu> Wed, May 28, 2014 at 5:07 PM
To: ipccfuture@wmo.int

Dear Members of the Task Force:

May I humbly suggest that we abandon the slow and total assessment approach and switch to a combination of assessments of key special topic areas, such as has been done with renewable energy, geotechnical solutions (though also on key scientific questions) and a much more rapid process of overall updates of the whole global situation with a smaller team.

The reasoning is fairly simple. The present approach: 1) is so long and supposedly encompassing that the assessment is out of date by the time it comes out, 2) the volumes, though offset so that the subsequent volumes can take advantage of the work in the prior volumes is not really working anyway, 3) the process is inclusive of many nations' scientists, but not that much has come of massive inclusiveness, so a smaller total number of participants, while still being inclusive, is justified in order to put financial resources into a more sped up process ...

I would also reconfigure the role of policymakers and politicians in the future. The positions of different nations have not moved much. Leave the assessment to the scientists and let the FCCC process deal with the political "rewriting"'interpretation.

In short, I favor a more agile, adaptive process to keep up with the rapidly changing situation and knowledge base.

Best wishes in this effort,

Dick

Richard B. Norgaard
Professor Emeritus of Energy and Resources
University of California, Berkeley

New Book
Dryzek, John, Richard Norgaard, David Schlosberg. 2013 Climate-Challenged Society. Oxford University Press
http://global.oup.com/academic/product/climate-challenged-society-9780199660117?cc=us&lang=en&

NAME: JEAN PIERRE OMETTO
Involvement in IPCC: 1st contribution to IPCC in both WG2 and TFI
Function: (CLA / LA / CA / RE): RE / LA
RE WG2 Ch 27 and,
LA TFI 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): AR5 WG2; TFI
Previous reports (please indicate): None
Other (e.g. workshop participant): TFI workshops and consultation

A. What should be the future products of the IPCC?

Reports focused on Adaptation and Mitigation should receive stronger focus. Consider the 2020 climate change agreement for planning the report publication.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

A longer lag between the publication of the basis of climate change and the other reports would contribute to more effective responses to the outcomes from the Adaptation and Mitigation reports. The structure of three working groups could be revisit under this proposal of spreading in time the publication of the Reports.
In my view, the current structure of the Working groups is efficient. A suggestion would be to recompense financially the Coordinators Lead Authors.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Balance as much as possible the distribution of LAs and CLAs from different regions through all the chapters. It would also be desirable to have developing countries personnel contributing with the TSU activities.

D. Other matters

Promote engagement activities in developing countries towards higher contributions from these regions/countries to the IPCC process.

NAME: **Michael Oppenheimer**
Involvement in IPCC: **Author**
Function: **CLA**
Report: **AR5 WG2**; **SREX**
Previous reports (please indicate): **AR1, AR2, AR3, AR4 as CA, LA**
Other (e.g. workshop participant): **various expert and scoping meetings**

A. What should be the future products of the IPCC?

- **More frequent but briefer reports.** As effective and credible as IPCC assessments have been as a reflection of expert consensus, they consume much too much time of too many scientists who otherwise could be spending their time on research. While early IPCC reports were crucial for establishing what was known about climate change, the gains in terms of new insights from full assessments have not been great enough recently to justify this diversion of experts. Instead, IPCC should focus on producing a larger number of briefer, more focused reports on questions of immediate interest to policy makers. SREX provides

an example of such a report but the process could be slimmed down further and be completed more quickly. Potential topics could include an updated look at sea level rise with a special attention to the role of ice sheets; a close examination of the potential for a large release of methane from warming marine sediments; geoengineering as an abatement strategy; the effect of climate change on food security; and the potential role of shale gas in carbon mitigation with a view toward evaluating the leakage issue. These could be completed in one year each, including one or more formal review cycles.

Governments should ask for comprehensive assessments on a variable timetable as needed. I imagine that normally, full assessments should be initiated no more often that every ten years. Short reports could occur much more frequently, perhaps one or two per year.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

- **Consolidate the Working Groups.** The current Working Group structure is effective for dealing with some issues but not others. As the focus turns away from major assessments, as recommended above, and more toward brief, targeted reports, the role of the Working Groups should become secondary to that of more fluid and variable interdisciplinary structures tailored to the specific questions at hand. The current Working Groups may provide a convenient bureaucratic vehicle for establishing and monitoring these structures but they would take a secondary role in the actual management of such reports.

- **Increase process transparency.** As far as IPCC has come by posting review comments and drafts, the process of author deliberation and judgment remains shrouded. IPCC should be concerned with spelling out the full range of author and community views, not just the consensus. IPCC has made significant progress by moving toward a fully probabilistic, risk-based approach to assessment. I strongly urge that IPCC take two additional steps to make its basis for judging key questions less obscure: Along with its consensus findings, publish a record of significant divergences of viewpoints among authors, if any, and identify those holding each view. While I do not believe that such differences are common, when they do occur and indirectly become public, they can undermine IPCC's credibility in a broader community. A direct approach is called for. Secondly, allow researchers to study IPCC thoroughly, including how decisions are reached by author/experts, in order to better understand how the process works and how it may be improved (This issue was taken up at Batumi and an expert meeting to evaluate the potential for such studies is under development).

- **Make the intergovernmental part of the process more accessible.** Plenaries, meaning author-government sessions where SPM wording is ironed out, are restricted to IPCC officials, authors, government representatives, and nongovernmental observer organizations. Opening the process to accredited media would strengthen understanding and acceptance of IPCC with the broader public. The process of these meetings is not understood even by most lead authors, especially not those who have never attended one. Enhanced transparency might have reduced the odds of episodes such as that which occurred at the recent WGIII plenary, where governments were viewed by many in the public as distorting scientific

findings. In any case, transparency would reduce misunderstanding of exactly what transpired.

- **Experiment with diverse approaches to assessment, including formal ones.** Many interesting approaches to assessing the literature, including formalized expert elicitation, are available which could complement IPCC's current approach. Large scale expert assessment is a recent phenomenon. We need to be scientific about finding the best approaches to assessment because the problems are complex, the risks are high, and the effects of evidence-based decisions to act (or not act) are sometimes irreversible. IPCC itself provides a unique opportunity to experiment with the best ways for experts to assess complex information. One model is to use the elicitation methods already deeply explored by Granger Morgan and coworkers. Another would be to assign two teams of experts to independently assess identical questions (obviously for a limited number of issues in any one report). There are probably multiple approaches which could be used in conjunction with the existing, informal deliberative approach which would improve the range of outcomes considered and increase our confidence in the ultimate findings of any IPCC report.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

- **Circumvent language difficulties to enhance participation.** LAs from developing countries are often hindered from effective participation by their reluctance, due in some cases to limited English skill, to engage in rapid, detailed verbal exchanges. But assignments requiring less facility with English but of equal depth and concentration can effectively draw on their other skills and expertise. These could include asking CLAs to seek opportunities like developing key figures and tables where developing country LAs could take charge. This LA could then become the natural leader of discussions around these particular components, and contribute successfully to the part of the assessment which draws on these elements.

D. Other matters

- **Improve the COI disclosure process.** IPCC recently instituted a sensible Conflict of Interest disclosure processes. Now this reporting should become transparent by making the completed forms available to the public.

- **Institute an ongoing process of continual review.** IPCC, like any institutions, needs fresh input from outside sources to assure that it does not become ingrown and irrelevant. Having the nearly unique mission of assessing a singularly complex issue repeatedly, IPCC cannot afford to become stale in its approaches. The appointment of a rotating group of outside advisors who evaluate the assessment process and make recommendations for improvements on a regular basis would provide an invaluable context for the Chair, Bureau, and full Panel to make continual adjustments.

NAME: Anthony PATT
Involvement in IPCC: Scientist
Function: LA, RE
Report: WG2, WG3
Previous reports (please indicate): CA for AR4 WG2
Other (e.g. workshop participant): Workshop participant for AR4 on uncertainty

A. What should be the future products of the IPCC?

I started the AR5 process convinced that there was little need for additional reports, and finished my work with AR5 process having changed my mind, convinced that there is a need. The big assessment reports are necessary, and play an important role in identifying where the scientific evidence is suggesting something new, where it is not suggesting something new, and where major uncertainties lie. I see the special reports of the last cycle (SREX and SRREN) as valuable resources, but potentially more valuable for the scientific community than for the policy community. I could imagine the IPCC preparing special reports focusing on particular regions, and in particular developing country regions, where national capacity to prepare their own reports may be lacking. This would be an opportunity to bring together scientists defined by the geographical regions on which their work concentrates, rather than their citizenship or home affiliation. The recent Arctic assessment is an example of this.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Overall I was impressed during AR5 with the structure and modus operandi, especially in the case of WG3, where I was more active, and would consider these to be appropriate also in the future. As a member of the SPM writing team for WG3, I participated in the plenary approval meeting in Berlin, and actually viewed that as improving the quality of the SPM: its existence forced the authors to present a balanced set of findings that was cognizant of the role that these findings would play in political processes, and where the findings were not supported by empirical results, or presented an interpretation of those results that was imbalanced, they were often removed. In WG2 I had some difficulty with my chapter (I was RE), because I felt that the TSU did not play a strong enough role to coordinate material across chapters, and to enforce discipline on authors to stick with their page limitations or their agreed content. This left open the possibility of free riding. It is important to have a strong and well-managed TSU. It may also be desirable to strengthen the role of REs in the process, perhaps by involving them earlier, or by giving the practical authority to reject authors' written material, in time for that material to be rewritten and resubmitted; in the current system, rejection by the RE is not a practical option.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

My experience in both WG2 and WG3 was that many participants from developing countries had a difficult time contributing as extensively to the report as those from wealthier countries. It is unfortunate but true that many of the developing country participants have less experience working in a fast-paced egalitarian English-language environment at the leading edge of science, and without that experience, often lack the confidence to make themselves heard and to contribute. Many who do have this experience are overcommitted, and lack the time to fully engage in research and writing between meetings. I have three ideas to improve this: (1) holding one or more workshops for developing country authors, prior to the LAM1, in which they practice working in the style of the IPCC; (2) holding dedicated writing meetings in between the LAMs, during which time the developing country authors can be away from their home commitments, freeing them up to devote more time to chapter research and text drafting; and (3) paying even closer attention to the selection of authors from developing countries to ensure that only those who have the skills and time to meaningfully contribute to the process are involved.

D. Other matters

Parts of both WG2 and WG3 present their own special challenges, because they draw off of social scientific literatures that are often quite different in character from the natural science literature than the natural science literature. I thought that AR5 handled these challenges well, but they could be handled even better in the future. For both adaptation and mitigation, there is a large amount of peer-reviewed literature that develops and applies conceptual models to decision- and policy-making problems, and yet is not clearly supported by empirical findings. Reporting on these ideas is important, and yet it is also clear to distinguish them from the findings that rest more clearly on data. In the case of WG3, there are many interesting findings that can be gleaned from a comparison of scenarios generated by energy system models, and yet these models are very different in character from the climate and earth systems models relied upon in WG1 and WG2, being impossible to validate, and making strong (arguably even counterfactual) assumptions about societal goals and the means of achieving them. It would be worth considering in greater details how to convey these methodological differences in the underlying research. Perhaps, for the former difference (between data driven and concept driven science), it would be worth adopting a set of uniform practices to differentiate them, similar in manner to the uncertainty communication practices. In the case of energy system scenarios, it would be worth holding one or meetings bringing together members of this modeling community and those outside of it (other social and natural scientists, stakeholders) to carefully consider the objectives to be achieved through the communication of such model results.

NAME: Jim Penman
Involvement in IPCC: TFI Bureau member
Function: (CLA / LA / CA / RE) LA, TFI Bureau Member, Steering Committee member for methodology reports
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) TFI reports
Previous reports (please indicate): 2006 GHG Guidelines, 2003 and 2000 Good Practice Guidance, 1996 and 1995 GHG Guidelines
Other (e.g. workshop participant): Consideration of WGIII reports and 2000 Special Report on LULUCF; many workshops associated with inventory guidance

A. What should be the future products of the IPCC?

1) The essential functions of IPCC are to produce assessments of the science of climate change so that governments have:

a) an agreed common reference for decision making across the areas covered by the Working Groups (WGs)
b) agreed methodologies for making greenhouse gas inventory estimates for reporting to the international community.

2) Hitherto periodic set-piece Assessment Reports (ARs) and GHG Inventory Guidelines have successfully delivered these functions, and any alternative future model also needs to do so, or IPCC will lose its purpose. The present model could continue, but if it is felt to be becoming unwieldy, peer reviewed rolling updates would be possible alternative. There could then be a summary assessment (something like the present synthesis reports), based on the rolling updates and produced with about the same periodicity as present ARs. Such a synthesis assessment would have a policy-makers' summary that could be agreed in the same way as policy-makers' summaries are presently agreed. If necessary, in this model there could still be set-piece ARs, but with lower frequency that at present.

3) Special reports could still be produced in the rolling update model, although in some cases the choice of area to cover in a rolling update could reflect an area of emergent special interest, so the number of special reports needed might fall.

4) The rolling update model fits less well in the case of methodological guidance on national greenhouse gas inventories produced by the inventory task force (TFI). This is because a summary assessment is not a suitable vehicle to convey information that can be rather detailed technically. This suggests that greenhouse gas inventory guidelines should continue to be updated in the same way as has been done so far. This includes the possibility of supplementary reports and guidance that can be used in conjunction with full updates, as has already been the case with the two sets on Good Practice Guidance (used in conjunction with the 1996 Guidelines) and the Wetlands and KP Supplements (used in conjunction with the 2006 Guidelines). This reduces the frequency with which it is necessary to produce full updates.

5) The methodological work on national greenhouse gas inventories could extend to areas of greenhouse gas inventory estimation that interact with national estimates, for example life-cycle analysis, consumption-based emissions estimates, entity-level estimation, project-based estimates, projections and the relationship with atmospheric observations. Initial exploratory work has been done by the TFI in some of these areas and other agencies are already active in some of them. The most effective interaction is likely to be to produce one-off technical reports that explain the relationship between national greenhouse gas inventories and the area in question. These reports would eventually need updating, and this could be decided on a case-by-case basis.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

6) Future structure and modus operandi should be based on the WGs and the TFI. If a rolling update model were adopted, the WGs would be responsible for the rolling update in their respective areas. The periodic summary assessment would be the joint responsibility of the WGs.

7) The TFI should be a distinct entity because the nature of its products is distinct, as indicated in paragraph 4, and because countries are required to apply the guidance in full rather than take account primarily of policy makers' summaries. Paragraph 5 above suggests areas in which the TFI might extend its activities. In most cases this could be done using expertise that the TFI has used traditionally. In some cases cooperation with working groups would be useful, e.g. with WGI for the relationship between inventories and atmospheric measurements, and with WGIII for the relationship with projections.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

8) Apart from obvious considerations of support, by ensuring through national focal points that IPCC can identify relevant experts, and by science funding agencies encouraging cooperation between institutions and experts in developing and developed countries in participating in IPCC activities.

D. Other matters

None

NAME: Benjamin Preston
Involvement in IPCC: AR5 Working Group II, Chapter 16 & Synthesis Report
Function: CLA, CA, CWT member
Report: AR5
Previous reports (please indicate): None
Other (e.g. workshop participant): None

A. What should be the future products of the IPCC?
In the wake of the AR5, it seems apparent that there are diminishing returns from continuing to produce the assessment reports at their historical frequencies and levels of comprehensiveness.

Special reports on more focused topics that have immediate policy-relevance and/or or provide critical foundational knowledge for those policy-relevant issues would seem to be of greater utility for researchers, policy makers, and practitioners. The transaction costs associated with the assessment reports are extremely high, coordination within and among working groups is challenging, and the assessment reports seem to be reiterating previous findings in more exhaustive detail. As a case-in-point, the AR5 WGII report contained four chapters on the topic of adaptation, which reflects increased international interest in this topic. However, coordination among those four chapters proved challenging and thus it is unclear whether that expanded treatment of adaptation truly serves the needs of the international community with respect to policy guidance. Similarly, the coordination between WGI and WGII in the assessment report process has been historically quite limited. Little of the science within WGI is directly incorporated into WGII due to the time lags associated with publication, data dissemination, and the lack of coordination and collaboration between these research communities. Key questions within WGII regarding climate risk are difficult to address without targeted cooperation between WGI and WGII (e.g., likelihood of exceeding biophysical or socioeconomic thresholds). In contrast, the SREX report appeared to be an example of a more targeted report with productive interactions between WGI and WGII researchers. Even that effort involved significant investments of time and resources. I suppose ultimately, the question is whether the current model is sustainable. For example, I know of at least one AR5 lead author for whom the AR5 was his first involvement in the IPCC process, and he seems committed to never participating again in the future, based on his experience. If the best and brightest early career researchers are turned off by the IPCC process, that doesn't bode well for its future.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

As the dust settles from the AR5 (i.e., well past the release of the synthesis report), it seems it would useful to identify the key knowledge gaps that exist across the three working groups that are particularly relevant to the international policy context. As a case-in-point, the issue of loss and damage has emerged as a high profile and contentious policy issue. However, research on this topic of loss and damage including attribution, understanding of limits to adaptation, and the relationship between L&D and different mitigation and adaptation options is quite limited (as indicated in some sections of the AR5 WGII report). Hence, more focused assessment of this topic would seem to be relevant to the policy context rather than waiting for a potential AR6 to pick up this issue (assuming an AR6 occurs and L&D is a topic within).

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

My experience with the AR5 in this regard was rather mixed. On my own chapter, both participation and contribution from our developing country authors was quite weak. One was dropped as an author early in the process due to lack of participation and some issues associated with plagiarism of material. Another ceased all involvement after the first author meeting (although health issues appeared to be at play), and a third made quite limited contributions, but at least was engaged throughout the process. Collectively, this posed challenges to ensuring our chapter could capture the relevant literature from developing nations. I have seen some similar challenges with the Synthesis report with respect to developing nation authors deferring to or handing off to authors from developed nations in terms of work. At the same time, however, this is by no means the rule, as there are clearly a range of authors from developing nations who are quite committed and quite productive in terms of progressing the work of the IPCC. Ultimately, the question is one of how to improve the identification of authors from the developing world who are a proven track record within or independent of the IPCC. Then again, I have seen my fair share of lackluster participation by authors from developed nations who seem to view the IPCC process as a privilege rather than a responsibility.

D. Other matters

1) **Supporting resources for AR5 authors**. The various TSUs for the AR5 made a concerted effort to provide resources to chapters to support chapter production. This includes reference management software as well as different types of cloud based file storage. While this was intended to benefit the authors and that intent was appreciated, the success of these resources wasn't particularly impressive. For WGII, the reference management software that we were encouraged to use throughout the process was abandoned at the 11th hour due to bugs, leaving authors to largely manage references the old fashioned way. Cloud storage for document management was relatively straightforward, but the resources used varied from one WG to another. Hence, for those of us working on both a WG report and the synthesis report were juggling multiple resources.
2) **Technical Support Units.** Despite the comment above on resources, the TSUs really performed outstandingly in terms of managing the process and supporting the author teams.

NAME:	James Renwick
Involvement in IPCC:	Lead Author, AR5 WG1 Ch14; Ar4 WG1 Ch3
Function:	LA
Report:	AR5 WG1
Previous reports (please indicate):	AR4 WG1; Technical Paper on Water & Climate Change
Other (e.g. workshop participant):	Contributor to TAR WG1

A. What should be the future products of the IPCC?
The Assessment Reports serve a very good purpose, providing a snapshot of the science at particular time stamps. As such, I think they should be retained but perhaps produced (in full form) less frequently, say every 10 years. I suggest they be supplemented by a greater number of more timely and targeted reports, on different components of the science: atmosphere, oceans, cryosphere, sea level, and so on. Output formats could be more varied – the full reports and SPMs, but also videos, interviews, fact sheets, web pages, social media content etc. Anything to engage with the audience.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?
The present structure works well and should be retained for both the full assessments and the shorter more timely reports. More resources could go into communications support.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC
Funding. Scientists from developing countries suffer from lack of resources and opportunities. It would strengthen participation considerably if the IPCC could somehow facilitate capacity-building in important but geographically under-represented area (e.g. equatorial Africa, Pacific Island nations) through research scholarships, data rescue and infrastructure support etc.

D. Other matters
The IPCC report process is a vast and costly exercise. Many of the real costs are hidden, in terms of scientist time. We must ensure the result is relevant and useful. Significant resources should go into communications and social research to better transmit messages ad develop dialogues. Outputs could include much more use of video, short 'fact sheets' along the lines of the FAQs, etc. The full WG1 Report is a wonderful encyclopedia for my office bookshelf, but if policy analysts in government and the private sector do not read it, we have wasted our time.

NAME: Dr. Debra Roberts
Involvement in IPCC: Lead Author
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WGII
Previous reports (please indicate): None
Other (e.g. workshop participant): Expert meeting on urban areas

A. What should be the future products of the IPCC?

Focused reports on strategic and topical issues that are completed within a year (e.g. there is an urgent need for a special report on cities).

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

SREX provides a good initial model for the sort of structure that might be appropriate – but each issue addressed may require a different structure. A targeted group of participants (rather that the full group) should then be convened.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

The issues addressed in special reports should be informed by the needs of these countries - however, this is such a complex area due to capacity constraints, lack of resources and poor communication that there probably is no easy solution at this point.

D. Other matters

Although this was only my first time as an author it struck me that the current IPCC model has perhaps become unrealistic in the sense that I do not think it is possible to expect so many people to voluntarily give up so much of their time anymore without remuneration given the complexity of the report now compared to FAR. This is why I think shorter more issued focused reports may be sustainable.

NAME: Alan Robock, Rutgers University, USA, robock@envsci.rutgers.edu
Involvement in IPCC:

AR5:
- Lead Author, WG I, Chapter 8
- Contributing Author, WG I, Chapter 5
- Contributing Author, WG I, Chapter 7
- Contributing Author, WG I, Chapter 11
- Contributing Author, WG II, Chapter 19
- Reviewer, many drafts of WG I, II, and III

6 meetings:
- Synthesis Report Scoping Meeting, Liege, Belgium
- WG I LA Meeting, Kunming, China
- WG I, II, and III Geoengineering Meeting, Lima, Peru
- WG I LA Meeting, Brest, France
- WG I LA Meeting, Marrakech, Morocco
- WG I LA Meeting, Hobart, Australia

Previous reports (please indicate):

Contributing author of:

Chapter C, *Climate Change 1992, The Supplementary Report to the IPCC Scientific Assessment*
Chapter 2 of *Climate Change 2001; The Scientific Basis*
Chapter 12 of *Climate Change 2001; The Scientific Basis*

Reviewer of many chapters in different reports.

Other (e.g., workshop participant):

Attended IPCC Detection/Attribution Workshop, College Station, Texas, January 15-16, 1999
Attended IPCC Working Group I Workshop on Climate Sensitivity, Paris, France, July 26-29, 2004
Attended International Workshop on IPCC Model Analysis, Honolulu, Hawaii, March 1-4, 2005

A. What should be the future products of the IPCC?

I agree with many of the comments in IPCC-XXXIX/Doc. 7: Future work of the IPCC - Synthesis of Government submissions in response to questionnaire of 9 December 2013. I think the current products are fine, but we need to make it easier for policy-makers to use the output, including more interactive presentations. I think we also need tools that explain the exact response to different policy actions, such as different levels or types of mitigation, and different adaptation measures as a function of time. These tools need to be kept up-to-date as emissions continue and climate responds between the time of the assessment reports.

I think the consequences of action (and inaction) in response to climate change need to be made clearer. I know that IPCC is supposed to be policy-relevant, and not policy-prescriptive, but the consequences of different policies, including specific regional impacts as a function of time need to be made very clear, not just to policymakers but to the public. In democracies, government responds to the people, so IPCC has to explain the results and consequences of policy inaction very clearly to the public using state-of-the-art technology and media presentations, including movies, websites, video games, and music.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

It is important to improve the phasing and interactions between the different working groups. I agree that they should be produced one year apart so that WG II has time to process the results from WG I, particularly the climate model simulations (CMIP6 for the next report). Furthermore, there needs to be more interaction between authors of the different working groups. I attended the geoengineering workshop in Peru, but after that there was no follow up and interaction on geoengineering between the different working groups. I attended the scoping meeting for the synthesis report in Belgium, but then was not involved further in the report. Furthermore, that scoping meeting was held so far in advance of the WG reports that there was nothing to synthesize.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

This is very difficult, as we need the best scientists to write the reports and by definition, developing countries have few of them. Some were imposed on the chapters to attempt to be inclusive, but if they did not have the appropriate background they could not contribute very much.

D. Other matters
CLAs and LAs are volunteers and do not get paid. I don't think paying them will help the process. The prestige, the opportunity to interact with the best scientists from around the world, and travel to exotic locations are enough incentives.

NAME: Maisa Rojas
Involvement in IPCC: LA-Ch5, TS
Function: (CLA / LA / CA / RE) : LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): AR5 WG1
Previous reports (please indicate): no
Other (e.g. workshop participant): no

A. What should be the future products of the IPCC?

More special reports on specific topics, addressed in a multidisciplinary manner, with wide involvements of relevant actors and views (i.e., all three working groups).

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Cross-cutting (traditional) working groups, smaller numbers,face-to-facel meetings are still necessary

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

I believe it would naturally be easier to find a larger equilibrium between countries when addressing a specific topic. Quotas could be enforced.

D. Other matters

NAME: Jayant Sathaye
Involvement in IPCC: Sustainable Development and Equity Chapter 4 in AR5
Function: (CLA / LA / CA / RE): RE in AR5.
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): WG3
Previous reports (please indicate): Worked on 11 reports since 1990. Acted as Principal or Coordinating Lead Author on most of the reports and also delivered the WG3 findings at the 2001 meeting in Morocco.
Other (e.g. workshop participant): Presentations on 11 reports on several country meetings.

A. What should be the future products of the IPCC?

IPCC has been very active during each set of meetings, and it has expanded its activities over the years. The list of activities submitted by many countries is quite supportive and also providing new approaches. The number of countries though was limited to 32 compared to about 190 potential participants. Missing was India which is a large country.

The AR5 WG III has already worked on a large number of 16 activities that covered all the major items that needed to be addressed. The same products could be done again with few changes noted below.

For one of the first times, the IPCC reported significant information from agriculture and forestry which now account for 24% of total carbon emissions. Agriculture emissions though are projected to increase while forestry may go up or down. Separating the two as they were in 2007 report may be useful since the two items have very different projections and will require very different approaches to reduce the emissions.

The Sustainable Development and Equity Chapter 4 had limited coverage of agriculture and forestry and it should be more effectively included in it during the next IPCC WG3.

It would also be useful to consistently project and report on emissions not only at the country level but also at the state levels particularly in larger countries. For example, each state in India and USA has its

own approaches for controlling power sector electricity generation and end-use. These are not under the country's control, and hence the whole country may or may not be able to direct states to reduce emissions. It will thus require more information to engage the states since their emissions control also varies significantly.

The future products need to also focus more explicitly on power sector electricity generation, supply and use. AR5 WG3 Chapter 8 focused on power supply and left out the electricity use assessment options to the industry, buildings, and transport sectors. The energy use component needs more intensive work. For instance, in AR5 there was only one tiny mention of Demand Side Management (DSM) in Chap. 9 Buildings. DSM is a common item that is used broadly for reducing energy use in many countries.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The appropriate structure that could help would be to set up separate Agriculture and Forestry chapters since their future projections will be different, and the modus operandi (MO) will be equally different. US, for example, will be concerned about Agriculture and not about Forestry, and many developing countries will be focused on both, or only on Agriculture or Forestry.

Would also be good to create a separate Power Sector chapter with explicit recognition of three topics – generation, supply and use of electricity. Another way would be to separate each of the three topics. It would also be good to engage industrial staff in WG3 topics. These would provide good knowledge about their activities that affect the use of the three items.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

As noted above, developing countries would be very interested in the above topics. Both agriculture and forestry and the power sector topics are commonly of interest to developing countries and each of these areas is going to expand as populations increase in most of the countries. Most of the earlier participants in each of the chapter were relatively senior persons and many were also PhD candidates. Developing countries do not have large number of persons with such background, and seeking such persons may also cause problems. Another option would thus be to seek developing country persons that are working in markets or private companies in related topics. These may provide sufficient effective developing country experts without necessarily seeking many lecturers or professors from universities.

D. Other matters

NAME: Tormod Andre Schei, Cand. real. Zoologist, freshwater ecologist and specialist on renewable energy
Involvement in IPCC: author and expert reviewer
Function: CLA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): SRREN CLA Hydropower, AR5 WGIII expert reviewer
Previous reports (please indicate): expert reviewer AR 4
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Reports

- Main reports, like todays AR5 and Special reports, are still definitely highly relevant products

- New types of reports could be considered, for instance more thematic and (maybe) shorter, less broad - on e.g. important/key topics regarding CC itself, consequences, adaptation and mitigation (example; tipping points, permafrost melting, Greenland ice sheets , extremes, or; status, roadmaps etc on technological shifts necessary to reach the 2dt)

Workshops, seminaries etc

- arranged by the IPCC to secure a lasting and running interest in climate change (CC) – targeted not only at scientists and authors – but maybe to reach a broader audience

Web platform-

- There's a need to hear from the IPCC between the large reports which often are several years apart. An idea could be to establish a web site with running and highly reliable info on CC – today there is confusion as to what is reliable information, possibly due to the many conflicting interests warring to influence the perception of CC. Scientific papers are often little available, both due to complicated language and specialist approach – the "layman", even if scientifically trained will find many topics outside own field difficult to understand due to the specialist nature of papers – also there is a growing problem, in my opinion, with the tendency that one will have to pay for papers, e.g you have to pay to get hold of information on CC (this raise a question as to whom science wants to reach – what is the target groups)
- It should be possible to design a communications strategy and -platform that presents results from the IPCC work without being policy descriptive, but relevant – and where new results, that the IPCC find significant and relevant , are presented on a running basis . A task force or groups of for instance former or current authors (or other willing specialists/professionals) could be established, maybe as a temporal construct to qualify information set out on the web - or to manage a web platform communicating CC
- IPCC needs to find a way to reach not only other specialists but also ordinary people – One of the main problems (again in my opinion) is communicating key findings on CC and showing the general public that CC is real and must be addressed.

Magazines, articles, visual media, animations etc

- Other types of communication platforms or tools where the IPCC are actively communicating in regard to CC as an ongoing phenomena, and where there is a constant stream of papers/articles etc. being published –

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

- The current structure can be perceived as a loose collection of people (authors are "members" of the IPCC only in a writing period – then leaves – who then, are the IPCC? Do the IPCC have a clear and visible presence in the world?) – the perception of IPCC and what it is, should/could be better explained
- The current structure could continue – however, communicating results could be a new distinct function/task
- In my opinion, the general public do not understand what the IPCC is doing – on the one hand the IPCC do not do science on its own – on the other hand totally new knowledge emerge following the extensive reviews done by the authors – this sets up a kind of paradox where the IPCC communicate that they only look at what various research institutes, universities, scientists, papers etc have found, while in reality they create new knowledge – The IPCC should be better at explaining this to the public – in this regard also the uncertainty language and what it means, needs better (more popular, pedagogic?) explaining
- Continue with main reports and special reports – secure better quality assurance between the various drafts, especially between the second order draft and the final draft
- Address cultural and language differences in author teams better
- Utilize former (and willing) authors/participants as a resource, for instance outside or in-between writing processes

- Nominate only persons that can deliver – a geographical mix of authors is preferred, but only if everyone delivers
- The role of authors, chairs, TSUs need to be permanently on the agenda to optimize processes – the role of the TSU is a bit fuzzy – in the final stage of the SRREN, the TSU made decisions regarding the chapter I was responsible for, that I was not informed about – the decisions made was all in all good, but the lack of information makes it unclear what role the TSU actually has, and created insecurity on my side (again, this to me highlight the necessity to educated both LA's, CLA's and members of the TSU better before these complicated writing processes is launched).
- Secure a better/closer dialogue between the TSU and CLAs'/LAs' – an example: If/when the TSU makes contact with e.g. CAs' outside the chapter author group – take care that at least the CLAs' are informed of this (in "my" chapter on Hydropower in the SRREN, there appears CAs' that I did not knew about before I saw the printed version)
- Set up teams to provide "in-between" reports or communication – maybe as virtual teams meeting only on a website (?)
- Establish (a) team (s) of science journalists/authors/web specialists to create a platform for communicating CC
- If communicating more frequent and on one or more platforms an editorial board/committee/group etc is probably needed – (as mentioned, maybe as web-based groups)
- The peer review mechanism is not infallible – do quality checks on peer reviewed papers that are central or form the basis for key/important messages – I have found that this is not always done – and take care not to base key statements on one paper only! (as is done for hydropower in figure 7.6 and 7.7 (WGIII Mitigation).
- Some topic belong firmly in universities or research institutions, other topic may be less "academic" – for data/information/knowledge collecting, a "one approach fits all" may not be efficient or may not give the best picture of a topic/issue – WGIII Mitigation is an example – knowledge of fast developing technologies is seldom found in peer reviewed papers – again this raise a questions as to how IPCC can address/qualify information
- Find ways to qualify data/information/investigations conducted outside academia – some industry data/information is subjected to third party verifications but are not accepted by the IPCC since, again, the information do not appear in an academic, peer reviewed paper – if in doubt apply fast-working groups of specialists to check on unconventional or controversial info, that may be of relevance.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Set up an active dialogue and make the IPCC more visible. Enhance interest by highlighting topics of special interest in a given developing country (DC) – maybe supporting and initiating programs at universities or research facilities on CC topics that will be of concern in a particular DC. Demonstrate how CC and IPCC activities are/can be tied up in processes of relevance already ongoing in that particular country.

D. Other matters

Special attentions should be given authors new to the IPCC writing processes. When I first attended the IPC writing process I knew absolutely nothing about what was expected, what all the acronyms/abbreviations meant, the "culture" or "tribal" language" of the IPCC etc. I was appointed to be a CLA. I had no clue as to what that was, and nobody told me. Organizing the writing of a chapter and also take care of your own inputs to that chapter, and at the same time following a number of activities, meetings etc during author meetings, is a huge task. I believe I was halfway through the writing process of the SRREN before I understood that a CLA actually attended the management team.

When in a fulltime job outside the IPCC and when physical meetings take place no more than 4-5 times during, for the SRREN, 3 years, it is a challenge to pick up all the information needed to do a good job.

I believe the total writing process could profit if new members where trained/educated/given courses in the "lore "/methods/language/contexts etc. of the IPCC at the onset of a process – also experienced members could profit from such offers –

The audience is, as mentioned already, not only other scientists or professionals – but certainly quite ordinary people, media, politicians – it should be a target for the IPCC to create documents or presentations (e.g. graphics, figures etc) with a message that is easily perceived by most people. When looking at the AR5 it is difficult to use the information directly as figures, tables are often too technical and difficult to grasp (however, there are certainly also exceptions from this!). Also, some downloadable documents are of a highly technical nature and seem to be meant for internal use (some workshop reports are examples here).

The current webpage of the IPCC lets one download the AR5 – however, only as single chapters – this makes the AR5 difficult to search for specific topics, since I will not know where in the total volume the topic is found – the pdf "find" function of Adobe will certainly work best when I have the totality of the report before me –Todays web is complicated and difficult to use.

NAME: Jim Skea
Involvement in IPCC: Working Group III
Function: (CLA / LA / CA / RE): Bureau/Review Editor
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): SRREN, AR5 WG-III
Previous reports (please indicate): SAR, TAR
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Assessment Reports and Special Reports

There should continue to be both Assessment Reports and Special Reports. If possible, I would shift the balance of effort towards Special Reports and streamline the Assessment Report process (see Section B).

Publication formats
Given technology-driven changes in publishing practice, the book-style three-volume Assessment Report is looking increasingly outdated. It will be necessary to structure the material into three parts for the purpose of gaining approval in plenary, but in publishing the material a greater variety of approaches could be considered:
a) Chapters jointly authored by more than one Working Group, e.g. on integrated assessment models, adaptation-mitigation links and synergies at both the global and sectoral levels;
b) Weblinks to datasets and detailed tables/figures
c) Wiki style approaches to updating between Assessments (with the qualification and that there needs to be transparency about non-approved material).

Figures
The quest for the IPCC iconic figure is the quest for the Holy Grail. My view is that "iconic figures" are discovered rather than invented and that a forced quest results in figures that are complex, difficult to communicate in presentations and in need of explanatory notes that take up as much space as the figure itself. The only truly "iconic" figure in AR5 is SPM.10, the "budget" figure. I would work more on figures that convey simple ideas, as in a presentation, particularly in the SPM.

C. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Drafts and reviews

I start with Parkinson's Law: "work expands so as to fill the time available for its completion".
I think some lead authors teams have marked time through Zero, First, Second and Final Drafts. The government review stage is effectively a government review coupled with a re-review by experts. I would suggest considering the option of: a) cutting out one draft; and b) merging the expert and government reviews. As this is untried, an option would be to pilot the approach on a Special Report in order to learn lessons. However, streamlining the assessment cycle for the major Assessment Reports could bring significant benefits.
I believe this approach would not result in discernable loss of quality and would: a) cut the length of the assessment cycle; b) reduce demands on everyone's time especially in light of the increasing burden imposed by tracking responses to comments in a transparent way; and c) reduce travel needs and IPCC's carbon footprint.

Working Group Structure

One alternative to the current three Working-Group structure that has been informally discussed is to have only two Working Groups, with climate impacts merged with the physical science, and adaptation merged with mitigation. I call this the "problem-response" model. I do not have a final view on this model, which could be made to work. However, I would observe:
a) The two Working Group problem-response structure might will be appropriate for an ambitious collaborative research programme.
b) The different purpose of IPCC is to assess the scientific literature in a policy-relevant way.
c) With some exceptions, the current three group structure maps better on to scientific communities, disciplines and journals. For example the strong links between impacts and adaptation would be lost with a two-group problem/response structure and some communities would have to "double up" to participate in IPCC.
d) Policymakers concerned with adaptation and mitigation generally work in different departments and administrative sections. In my own country I serve in an advisory role on a climate committee primarily concerned with mitigation – a sub-committee addresses adaptation but operates quite separately. The committee and sub-committee are sponsored by different government departments. The agencies responsible for delivering adaptation and mitigation policies are also different.
e) For these reasons, the intellectual attractions of linking adaptation and mitigation notwithstanding, I believe that the current model is most "fit for purpose".
f) However, there should better exploitation of links and synergies between the working groups (see responses under Section A).

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

There are two challenges: 1) ensuring that developing country participants are there in sufficient number; and 2) ensuring that their participation is active and voices are heard. In my view, the second challenge is at least as important as the first. Many developed country authors are articulate in the English language, have a great deal of (perhaps in some cases too much!) self-confidence and come to dominate chapter meetings. A few suggestions:

Level of participation

a) Ensuring Trust Funds are adequate to secure participation
b) Taking account of travel/visa constraints in locating meetings
c) Timely travel arrangements which do not greatly inconvenience participants in order to make modest savings in travel costs (i.e. stop implicitly attaching little value to developing country participants' time)

Quality of participation

a) Training and guidance for Convening Lead Authors and Technical Support Units on how to draw out contributions from developing country participants
b) Training and guidance for developing country participants on techniques for contributing effectively to meetings, perhaps led by leading and experienced developing country people
c) 'Caucus' meetings for developing country participants at Lead Author meetings to raise awareness and spread good practice

Other
a) The possibility of a major developing country hosting a TSU
b) Investigate bureaucratic means (secondments, fellowships) for embedding developing country people, perhaps from the home institutions of the developing country co-chairs or other Bureau members, in the TSUs.

D. Other matters

Lessons need to be learned from the approval session of the AR5 WG-III SPM in Berlin. There is a view that all approval sessions involve robust exchanges of view and the Berlin session was not unusual in that respect. My different view is that the antagonisms that emerged went beyond past experience and have left some authors disillusioned with the IPCC process.
The SPM is in no way an inaccurate reflection of the underlying report, but it is certainly incomplete. The fact that 13 countries expressed reservations about parts of the underlying report is a significant cause for concern.
In AR5, there was an attempt to mix established IPCC participants with newcomers to the process. It is striking that those who took to the blogosphere following Berlin appear to have been "newcomers", while those whom I have heard making the case "that it was always thus" tend to be veterans. If IPCC is to maintain the support of the scientific community and to refresh itself, it is vital that the process retains the confidence of the wider community not simply those who are "old hands".
I would suggest the following considerations:

Tactical

It is possible that many of the antagonisms could have been scaled down or even pre-empted through some practical process measures:
a) the SPM draft presented to plenary should be available before the meeting starts and should ideally include only changes that reflect country comments on the final draft. If the authors continue to revise, following lines of debate that have been rehearsed throughout the assessment cycle, delegations will be unprepared resulting in antagonism and a slower process. It is imperative that the plenary draft is as close to the final draft as possible to facilitate preparation by delegations.

b) Asking a lot, but it would help if delegations did not raise new major issues in plenary that had not previously been raised in comments on the final draft.

c) It might help if the assessments minimised the number of potentially normative assumptions made in presenting analysis. For example, instead of classifying countries into particular group without an explanation, the following approach might be considered: "some sections of the literature choose to classify countries according to XXXX because YYYY". If this approach is followed, Figure ZZZ shows that WWW". There could then be a classic UN statement of the type used to qualify implied territorial inferences.

Process

It is my belief that a much earlier start on the SPM, perhaps circulating a draft alongside the SOD of the main report, would be helpful. One view is that a summary cannot be produced until the underlying report is well-formed. My view is that a summary and main report can be produced in parallel, with the

summary having provisional status and being subject to revision. A further potential benefit is that the process of generating even a provisional summary can suggest stronger narrative lines that can strengthen the main report. ,
In any event, mechanisms for earlier engagement between delegations and authors on the SPM seem desirable.

Point of principle

The agreed outline for WG-III required authors to assess bodies of research and scientific literature that took policymakers and the policymaking process as the subject matter. Countries then had to approve the summary of an assessment of the literature which they were the subject of. It is arguable that this is an impossibly conflicted process.
In establishing the outlines of future reports, IPCC might like to consider whether there are areas of research and scientific literature, especially in the social sciences and economics, that are not amenable to assessment through an intergovernmental process and should therefore be excluded. The issues raised are likely to be well aired outside any intergovernmental process by scientists, think tanks, NGOs, lobby groups and politicians.

Gaps in IPCC coverage

In my view there are strands of literature which were not adequately covered in AR5, notably in the social sciences other than economics, and notably in relation to behavioural responses to climate change. It is for the 6th assessment cycle, but future outlines could address this gap

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NAME: Joel Smith
Involvement in IPCC:
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX)
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

I think the IPCC has, with appropriate humility, served the world well. For over two decades, the IPCC has carefully and thoughtfully assessed the literature on climate science, vulnerability, and policy measures. It has provided a careful review of the state of knowledge on climate change. At times it has been called conservative. I consider that a badge of honor as IPCC should be careful in how it assesses the evidence on climate change.

Having participated in the last three Work Group II assessments, I have found my participation to be important and personally rewarding. Yet, I also feel that in many respects, the AR5 seems to be more of slight updating and reworking of insights with few new insights added. This is most unfortunate, given the thousands and thousands of hours put into the reports by scientists and researchers. It is important to note not just that this is a sacrifice for the hundreds of researchers participating in the process but also that it takes them away from undertaking and publishing new research.

One important exception to this is the Work Group I report. Having a routine updating of the science of climate change is very important for the science and policy communities.

Therefore, I share the view expressed by many that there *should not* be a Sixth Assessment Report with all three work groups preparing reports to be followed by a Synthesis Report. I think IPCC could much better focus its efforts in special reports. For example, there could be special reports on observed impacts of climate change and adaptation. I also think that based on the 5AR, special reports on such topics as climate change and agriculture and climate change and security would be warranted.

I also recommend that there continue to be regular updates of the science assessment. As noted above, these assessments are needed by policy makers and others. I defer to the scientists on how frequently such updates are needed. Perhaps even there, special reports on key aspects of the science may suffice.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

I can see continuing Work Group I and preparing special reports as was done with the highly successful SREX report. I think this will still necessitate an IPCC secretariat (which I argue below should be strengthened) with technical support units created for individual reports.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

IPCC should continue to actively recruit developing country researchers to participate in the IPCC reports and subsidize their travel and other key aspects of their participation

D. Other matters

Should IPCC continue as it is, I think it could strongly benefit from a professional research staff. I suggest examining how the United States National Academy of Sciences is structured. This staff can be of great assistance to IPCC authors in conducting research, preparing bibliographies, and ensuring high quality across IPCC reports and individual chapters within them. Such a structure can work very well with special reports.

I also strongly recommend that the total number of chapters be reduced. Thirty chapters in Work Group II is simply too much for anyone to read or absorb. There is a lot of overlap among chapter topics. My fear is that IPCC, like a bureaucracy, can only keep adding chapters and not remove them. That will be a shame. In the end, the IPCC has to be careful about collapsing from its own weight.

I think the role of regional chapters in Work Group II should be rethought. I was a CLA on North America. We had a great team of authors, chapter scientist, and contributing authors. I have two fundamental concerns about preparing regional chapters. One is that there are too few authors to cover an entire continent. We do not have enough expertise across author teams nor enough depth to cover the breadth of material and the complexity and diversity of subject matter. Second, in developed countries, national assessments are prepared and these have far more depth than we can hope to have. So I suggest eliminating the regional chapters and instead prepare special reports for developing continents i.e., Asia, Africa, Central and South America with another report on small islands. With special reports more authors can be used and more space can be devoted to assessments of vulnerability.

NAME: Pete Smith
Involvement in IPCC: WGIII, NGGIP contributions
Function: (CLA / ~~LA / CA / RE~~)
Report: (AR5 ~~WG1; WG2~~; WG3; ~~TFI, SRREN, SREX~~)
Previous reports (please indicate): AR4 (CLA), SAR (CA), NGGIP GPG and Guidelines (1996, 2001, 2006 – LA and CLA), LA for SR-LULUCF in 2001.
Other (e.g. workshop participant): WGI expert workshops on factoring out and LULUCF

A. What should be the future products of the IPCC?
More special reports with shorter timescale for production and delivery. To provide objective and non-policy-prescriptive synthesis of best science and knowledge available. Shorten time between assessment reports (every 2-3 years) – updates only.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Much as now except shorter timescale required. More power to the WG co-chairs to define report and chapter structure - approved chapter outlines are frequently not fit for purpose, and co-chairs and authors should have more power to vary the contents as the chapters evolve. Reduce bureaucracy.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

I have worked with some exceptional developing country lead authors, but there are still many examples where developing country authors are poorly informed and not well engaged in the process. Whilst these individuals attend meetings, their contribution can be negligible. There is clearly a need for some training and capacity building in some developing countries both in the wider science base but perhaps more specifically, some targeted training about the process and what is expected of them. Allowing CLAs and WG chairs more discretion to pick effective developing country LAs, rather than having government proposed Las landing in chapter teams, would help to get effective developing country contributions. This would enhance developing country contribution effectiveness, and would hopefully thereby enhance effective participation.

D. Other matters

Adoption plenaries seem to have become more politicized since I have been attending them (since about 2000). They used to be more about ensuring that the science was correct but increasingly appear to be being used to position national interests for forthcoming COP negotiations. Many interjections appear to be similar to those made during COP negotiations (and often by the same country representatives).

NAME: **Brian Soden**
Involvement in IPCC: LA WG1 AR5, LA WG1 AR4
Function: (CLA / **LA** / CA / RE)
Report: (**AR5 WG1**; WG2; WG3; TFI, SRREN, SREX)
Previous reports (please indicate): **AR4**
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

The Assessment Reports should be every 10 years, not 7. There is not enough new material to warrant a full AR every 7 years and it creates an undue burden on many in the climate modeling community resulting in "rushed" science - yet the AR reports have become increasingly longer and less useful with each round.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Convene full ARs every 10 years and allow for more focused Special Reports in between (e.g., every 5 years). The SREX was very successful and much more useful than the AR5.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

D. Other matters

NAME: **Zoltan Somogyi (Hungary)**
Involvement in IPCC: author and reviewer
Function: (CLA / LA / CA / RE) LA, several times
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): GPG for LULUCF, AFOLU of IPCC 2006 GL, 2013 KP Supplement
Previous reports (please indicate): as above
Other (e.g. workshop participant): participant of, and contributor to, many workshops; reviewer of many reports

A. What should be the future products of the IPCC?

IPCC reports have been, and continue to be, important sources of information at the global level. However, thanks to the great work that has been done in the last quarter of century, we now probably know most of what can be known, and only details can change in the future, most of the main messages may not, or not much. Therefore, I suggest to **re-focus the work of IPCC** as detailed below.

- **New form of assessment report**: an **annually updated short "status quo" report** on the advancement of climate change (temperature, extent of snow cover, extreme events, glaciers, species etc.) and its drivers (CO_2 emissions, CO_2 concentrations etc.), and some new and important findings or confirmations or rebuttals of previous climate change statements or beliefs. This should be discussed together with a kind of a **"gap report"** (UNEP has something like that), i.e., a continuously updated scientific summary of the probably most important facts to **report the world about any advancement, or lack thereof, of closing the gap** between allowable content of CO_2 in the air (and the oceans) and actual content. A very short **"message" of this report should be the most important (scientific) message of the IPCC website**, and should be on the front page. Such a report is also necessary to bridge the gap between consecutive assessment reports. I believe that such continuous and updated reporting is the job of a scientific institution like the IPCC. The UNFCCC also collects data through its annual greenhouse gas inventory system (which is in turn based on the methodological guidance by the IPCC), but the IPCC could also do some more work to jointly report data from different sources and assess uncertainties.
- **New (assessment-type) report**, partly compliable from existing reports: **summary of standard climate change knowledge** (in form of both dedicated website as a sub-domain under ipcc.ch and booklets). These summaries should also be in a format that would advise anyone on climate change issues. The current IPCC website is mainly about that there are assessment reports. This is no information compared to what readers might be interested in, e.g. if there is indeed climate change, how much it is and how much it is going to be, what are its causes, and what we can do to manage it.
- **Reports on new findings of regular scientific analyses only in new format**: summary reports of new findings produced at regular intervals just like the assessment reports so far. These new reports would be the new types of the assessment reports, and should only highlight, based on any new findings, former statements that are confirmed, former statements that are proven wrong, and new statements/hypotheses. This structure would enable one to better see progress than the current assessment reports. Confirmed knowledge and new statements/hypotheses could become part of the standard climate change knowledge.

- Methodological reports should be updated as before, because both **needs keep changing and new methodologies and techniques become available or applicable**. These reports and the TFI have been, however, neglected so far too much, although it is mainly these reports that countries actually use. It is these reports that have become international standards, and that have been adopted by the UNFCCC and are the basis for other methodological developments, too. Why not **re-structure IPCC** to reflect this, and other current challenges? (see below).
- **New special report**: list, some details, and **analysis of possible mitigation programs** at various levels to demonstrate possibilities, requirements and potential impacts. This would be extremely important as what mankind should do, after having learnt much of what climate change is and might become, and in addition to adapting to it, is mitigation, but rather little is known with respect to what and how could be and should be done at all levels (from individuals to the global scale), and many

have no or little idea about what and how they could do. Given that mitigation might well be one of the most important topic, if not the most important one, about which we badly need information, this report might not need to be a “special” report, rather, “the” report. This report should not be the same as the analysis of what has been done since the last assessment report, rather, an analysis of potential changes to lifestyle, technology etc. that requires creativity.
- **New methodological report**: **methodological guidance for at least the most important possible mitigation measures** at various levels (households, companies, cities, projects etc.) to assess mitigation potentials.
- **New methodological report**: **guidance on the standards of methods of developing projections** of emissions and removals. Such projections are necessary for any mitigation project to justify, and for planning. Projections should cover (1) baseline scenarios, (2) country-level mitigation programs/measures/actions etc., (3) other types of scenarios, e.g. project-level scenarios (by activity such as afforestation, by sector, by scale such as companies, cities, projects etc.). Countries have already had to develop country-level projections for National Communications and similar documents as requested by the UNFCCC, but no general guidance is available as to how these projections should be done, or what general or specific criteria they should meet.
- **New methodological report**: **methodological guidance for at least the most important possible adaptation measures** at various levels (households, companies, cities, projects etc.) to assess potentials and generate ideas. Again, this report should not be the same as the analysis of what has been done since the last assessment report, rather, an analysis of potential changes to lifestyle, technology etc. that requires creativity.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

(1) The work of IPCC should be re-structured to allow for a proper recognition of the tasks to be dealt with, and to re-focus its activities. What is current structure? WG I, II and III, and the rest, which has only traditional explanation and nothing else. What is actually “I” for? What does this name suggest (especially to those that are new – and they will become more and more)? Nothing. Why is it so that TFI reports can be currently found under the Obituary section on the IPCC website (on the right hand side), and not right below (or right above, why not?) the WG links, although it is not temperature that we have to manage directly but emissions?
I suggest the following structure that would cover all important fields of activities (always only covering assessment or methodological issues), together with more meaningful, tentative designations:

Assessment Program
- **WG Climate Change Assessment**
- **WG Impacts, Adaptation and Vulnerability Assessment**
- **WG Mitigation Assessment**

Greenhouse Gas Program
- **WG Inventories**
- **WG Projections**

Mitigation Program
- **WG Mitigation Methodologies**

Adaptation Program
- **WG Adaptation Methodologies**

(2) IPCC has so far concentrated on global and regional issues in its assessment program, and country-level issues in its greenhouse gas inventory program. Also, IPCC has targeted “policy makers” (mainly at country and global level), whoever they might be, in its assessment program, and technical people working at the country level in its greenhouse gas inventory program. In the meantime, other institutions started to fill in important niches at various other issues and levels such as the Emission Gap Report by UNEP UN/global level or greenhouse gas inventories at levels other than the country level. There are other fields where little has been done by anybody, e.g. projections, i.e. estimation of future emissions as a function of different mitigation scenarios at the planetary level, at regional/country/sub-regional level, and at the project/program/activity etc. level. IPCC should analyse

all these fields and fill in any gaps where scientific contribution is needed. IPCC is already a global think-tank on climate change to a certain extent, but it should become the authoritative body on all major fields where science matters.

(3) There are more than seven billion people in the world. Not all of them are scientists of course, but the number of scientists that could potentially participate in the work of IPCC is much more than the number of those that have participated so far. I could list several types of cases when participation was not promoted. Without going into details, let me just suggest that I find this quite inappropriate. In the interest of the efficiency of IPCC's work, I suggest to adopt strict administrative rules to both broaden participation (which may limit the participation of some people, although their contribution should of course be acknowledged). In addition to avoid unfair situations, "in-breeding" may become a problem which is something very important for IPCC to avoid (mainly in the interest of the outside world).

(4) IPCC is an "intergovernmental" body. This is necessary. However, the current modus operandi, which is based on the work of the "focal points", is just not efficient. I know many cases from several countries when the focal points have not done their job in informing, encouraging or even nominate people to participate in the work of IPCC (rather, hold back information). This has led to a situation when potentially good contributors could not participate, or when only one or few experts from a country have been promoted. Given that the basis of the work of IPCC is technical, and should stick to scientific principles, the above procedure is not appropriate. Fortunately, there has been another way to get on board, i.e. that IPCC invited people based on their expertise. However, this is not effective enough, either, as even this procedure required that IPCC knew about the experts to invite. I suggest a more formal way to broaden participation. One part of the new structure would be what has worked so far: (a) governmental suggestion of a pool of experts from which IPCC selects authors; and (b) IPCC's occasional invitations. The other, new part would be (c) a self-nomination and/or a nomination by local or international institutions via an open web-based system, exclusively run by IPCC independently from any government. It is up to IPCC then to select an appropriate number of experts from this pool, while also considering the pool from (a) and (b). This system is more complex (and requires more resources to select people), but if nominees in this (c) pool should be requested to prove that they will be able to finance their participation, than this would limit the numbers from at least those countries that have enough resources. Such a web-based system could, however, also direct people to their focal point whom they would not know that they exist at all. However, the new method (c) would generate a larger pool, and IPCC could also request from countries some financial support to establish a fund to support experts from this third pool (or use the IPCC Trust Fund for this purpose). This system could thus ensure that there is a way for anybody in any country to make a contribution.

(5) The historical products of IPCC have mainly been books and reports of various formats of the Guttenberg technology, including copies of books in the internet. There exist, however, many other, more effective ways of presenting content. What is at stake here is our climate, and although I am also a scientist with limited knowledge on modern media technologies, I believe that what we better need in the future is better ways to get the message across to as many people as possible so that they understand the situation and act. A very good example of what kind of information is needed, I believe, is the concise answers to questions, in one recent IPCC report, like "why is it not true that CO_2 is not important, because water vapor in the air is a more effective greenhouse gas?" These summaries have been due for a long time, to-the-point, addressing relevant questions. I believe that there are more questions like these in many fields (including those related to greenhouse gas inventories/assessment); that these should be found in prominent places of the IPCC website; should not be updated very often, so it is worth investing in developing them; and should be in a format (even including smart phone applications – not because I am a big fan of small screens, but because many people use them) that brings the messages to as many people as possible. I think that a dedicated group of people should be established to deal with this issue.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

One way is the one I suggested in my idea (4) above. Another, related one can be that IPCC goes to all kinds of conferences organized by developing countries, in developing countries, and presents not only its recent results but also how it operates. It is this way that more people in the developing world (not only those at, or close to, governments) get more information than so far, or information at all. Also, IPCC could specifically target institutions in the various countries (universities, research institutions etc.) via e-mail, by inviting them to consult its products and modus operandi. Does this activity require resources? Sure it does. However, we can only break information barriers actively, i.e. by an active campaign, and I believe that these barriers are the most important one that prevents experts from the developing world to join.

D. Other matters

I would like to use the opportunity to express the sincere appreciation to the IPCC Trust Fund, and to all people working on supporting people and organizing participation, for their help that enabled my participation in actions and at meetings. I always did my best to contribute to the work of IPCC, but that would not have been possible without the support of this Fund. I suggest that this Fund is maintained and probably broadened so that it can support able and dedicated people from all over the world whose only disadvantage is the lack of the ability of their institute or country to support their involvement in the work of the IPCC.

NAME: Asuncion Lera St.Clair / asun.lera.st.clair@dnvgl.no
Involvement in IPCC: LA AR5 WG2, Chapter 1, Contributing author chapter 13, member editorial board for Glossary
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG 2
Previous reports (please indicate):
Other (e.g. workshop participant):UNFCCC SED 3, Bonn June 2014

A. What should be the future products of the IPCC?

Given the absolute importance of a continued dialogue between science and society and in particular with UNFCCC processes, it is central that IPCC produces products yearly that address burning questions and gaps in research needed for transformation to a low carbon future and to avoid dangerous climate change.

These yearly products can be a combination of Special Reports with AR6, but it may be important to consider an eventual no distinction between Special Reports and Assessment cycles. And AR6 that starts bridging that distinction may initiate the process.

An issue that calls for serious attention is the framing and development of products that move across what is now rather separate worlds, the different Working Groups with their independent TSUs. IPCC needs to recognize the field of climate change is very different today than what is was when IPCC was created. The most burning questions lie in the interface across working groups, a combination of assessing impacts to both nature and societies and in the barriers and drivers for societal transformation to a resilient and low carbon future.

A Special Report that addresses the links between Adaptation and Mitigation is wanting. In particular, there is urgent need to expand the analysis of mitigation options from interdisciplinary perspectives and not only from economic perspectives. At the same time, adaptation and adaptation costs need to be more thoroughly assessed and understood. In addition, a lot of the scientific basis (wg1 material) will benefit from being situated better in analysis of mitigation and adaptation. In order to raise the urgency to act societal actors need

to understand what science means in the real world. Thus, on the one hand, there is space and already existing literature that has not been assessed from the perspective of looking together at adaptation and mitigation. Also, and given IPCC themes and reports act as a driver for research, such a report has enormous societal relevance today. I would envision this special report as having authors from the three working groups together in each chapter. Their work to revisit AR5 for making appropriate links that cannot be done now in the synthesis report (given those links are not in the actual working groups products), and that take on the very rapidly literature that has come since 2012/2013 and add literature that was never assessed in AR5 (for example, a lot of mainstream social sciences and the humanities were outside the scope of the chapter produced).

A distinction between the problem and the solutions may be something for further consideration beyond this need to address options, experiences, synergies, win-win and co-benefits and trade offs between adaptation and mitigation with the goal to enhance sustainable development for all and in order to properly assess questions of justice. Ethical issues are very thinly addressed in the wg3 AR5 report and mainly missing from wg2 AR5. A special report which central focus is assessing these links as well as the multiple strands of existing literature on climate resilient pathways linking adaptation and mitigation will be of great value for any UNFCCC decisions made in 2015. If a report is known to be released, say in 2016, or 2017 part of the job of the authors can include understanding of the policy processed in 2015. My recommendation is that such special report is lead and had authors from multiple disciplines, including the humanities and that interdisciplinary is fully architecture, promoted and monitored.

A second issue is regional reports, to enable better localization of climate change problems and solutions in concrete locations. I am aware this is a common issue and thus I simply note here I support such regional reports. But in my opinion the regional reports must follow the same structure of linking issues across working groups and displaying a more holistic and integrated view of climate change as an issue that requires the views from “all” sciences and grey literature from societal actors. I do not see much improvement in repeating AR4 or AR5 at the regional level.

I am assuming and hoping that the next IPCC Chair is someone who truly understands the need for interdisciplinarity as well as societal relevance and had demonstrated ability to do so while maintain scientific excellence. See comments in C.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

It will be important for IPCC to work with one central product at a time and concentrate all attention to this product. The creation of concrete author teams with co-chairs and author teams that represent a very broad view of the issues is important. Another important issue regarding the modus operandi is to assure and enhance the communication skills of the author team and in particular the choice of very holistically minded CLAs with skills and knowledge for communication and narrative creation. Careful attention to a combination of disciplinary backgrounds, perspectives and geographical distributions, along with an optimal gender distribution can contribute to optimal merging of perspectives.

For many, IPCC has really not been able to fully respond to the IAC Review. In terms of improving communication this is, I think, the case. I would argue that it is of fundamental importance to assure author teams have qualified authors with skills on communication, with awareness of epistemological issues and the ways in which framing matters for a particular set of arguments and their impact in readers.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

This is a tricky and fundamental issue. On the one had we know the literature assessed in dominantly western (male white). It is not in IPCC mandate to produce science, but IPCC acts, asmentioned earlier, as a driver of certain Developing country authors need to be very carefully selected and very carefully supported. Paying for their time is a key issue. On the one hand we know that for example, African scholars has a work load much larger than their western counterparts, so paying them for their IPCC work is a clear solution. On the other, it is of fundamental importance that this payment is not misused. Monitoring that is difficult and certainly outside the scope of IPCC. But agreements can be made at an institutional level. Say you have appointed an author from Makerere University; then the agreement for payment to buy out the author's time for IPCC work can be made with Makerere university and not with the author directly. That is indeed within the scope of IPCC mandate.

A second way to ensure enhancement of the participation of developing countries is to monitor CLAs are indeed inclusive in their practices when leading the author team. This can be achieved thorough a very careful selection of those CLAs, looking into their personalities and management skills. Many very good and hard working western authors are at the same time too self interested and take all the credit, while rejecting good content in a text that may just be not properly written in English. Other CLAs are extremely open and generous always careful to assure all voices are heard. If a developing country author deliver not too good English text, in my opinion the duty of the CLA is to make sure the text is rewritten properly. So some practices that establish the task of the CLA is to help all authors are heard and actively participate in the discussions is a must. This also applies for any possible dominance of disciplinary backgrounds. I will go as far as to argue for some sort of duties for affirmative action inside the author teams, so all CLAs are nudged and instructed to protect developing country authors while making sure their views (even if not so mainstream) are as fundamental as any other.

C. Other matters

This is a critical moment for IPCC. The legitimacy and credibility of the organization will be judged, in my opinion, by the capacity of the institution to refresh and adapt to new times. Climate change "science" is now an interdisciplinary science. Leadership in IPCC that moves beyond the usual consideration of climate science and natural sciences, economics, and (maybe) political science is part of the past. Being able to see the blind spots of IPCC is central, and so is an IPCC that really really values and is aware of the science-policy-society interfaces but only from the perspective of science. IPCC needs a new Chair that has the skills to assure a very broad minded IPCC, a better communicator, a policy oriented yet scientific leader. A well-known scientist is still a key issue, but a legitimate scientist able to work across the disciplines and across social actors. This includes being able to reach out to the private sector, making sure scoping processes and author work includes looking into relevant private sector literature with the care and carefulness of not falling into conflicts of interests. I have for a long time though through this issue of policy relevance and science/policy, and my academic background enables me to know the debates. I think IPCC must keep first and foremost ifs scientific integrity. Awareness of what is and what is not societally relevant is a matter of framing issues in specific ways. The more inclusive of social sciences and humanities and grey literature for om societal actors the better. It is well known, and this is not an attack on my natural scientists colleagues, that the vast majority of natural scientists and many economists will think their work is policy relevant if it is accurate. There are thousands of excellent social science research papers written about this. And they tell us it is simply not true that accuracy is the only factor in policy relevance. Climate change poses very complex issues and as such requires very complex analysis.
The best way to make IPCC more societally relevant is not by having a policy chair, but a scientist that understands society and communication and that reaches relevance by reaching out to the mainstream social sciences and the humanities and research done under the strategic research plans of many private sector actors. Scoping exercises could also follow

these guidelines in order to assure mainstream social science and humanities' research in actually assessed.

NAME: Martin Stadelmann
Involvement in IPCC:
Function: (CLA / LA / CA / RE): CA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): WG3
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

- 6th Assessment Report; the publication (or outreach) could be more split into smaller reports, in order to attract media attention to sub-topics
- Special report on climate finance (needs, flows, policy/financial instruments and their effectiveness)
- More interactive websites, webinar, blogs+: the IPCC has to adapt its comminuncation, using the newer web-based tools in order to reach the younger generation, which is mainly affected by climate change
- outreach workshops (local), particularly developing countries

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The current process should stay the same but comments and answer to comments could become more easily accessible on the web.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Some ideas
- outreach workshops (local) in developing countries, particularly at local universities to attract interests of local researchers
- fixed allocation of functions to developing countries should stay but more should be invested in selected developing country CLAs and LAs (e.g. research visits in other countries, and from other countries)
- targeting developing country researchers affiliated with universities in industrialized countries may be a good strategy

D. Other matters

NAME: David Stern
Involvement in IPCC: LA, AR5 WG3
Previous reports (please indicate): No
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

The advantage of the current assessment reports is that their release does get a significant media splash. On the other hand, there might be more actual reading of IPCC outputs if they were updated more regularly possibly in a Wiki type environment. Perhaps chapters should be regularly updated and SPMs/SR's based on the updated science be released every few years as the primary product.

I think that either all three reports should be released simultaneously or they should be released further apart. Releasing the WG1 report in September 2013 and then the two other reports two weeks apart in

April 2014 was confusing and reduced media interest. The SPM is important but a lot of the key points in the WG3 SPM were watered down or eliminated at the government plenary. This went far beyond "review" by the government delegations. I agree with the government submissions that the language of the SPM's is too technical and that they are hard to read. This aspect could be much improved.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

I think the working group structure is appropriate. It is important that the TSU has sufficient resourcing. Access to data to prepare the graphics and analysis in the WG3 AR5 report was essential but the TSU was slow to recognize this need properly or to organize a proper data set. Initially they planned to provide far less support to authors than was actually necessary.

I think that the instructions authors receive from the IPCC plenary are too prescriptive. Not only were the subheadings in our chapter and their ordering dictated prior to our work starting but also a sentence or two of indicated content. The experts should be given a freer had to explain the science in the best way possible.

The current review process is cumbersome and added little value to the final report. Most comments were either uninformed or were from authors requesting that we cite their paper. More genuine peer review of the work should be considered.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

There is significant involvement of developing country LA's in the process currently. Some of these LA's are good researchers but others are not at the level of the typical developed country LA's and their work also faces barriers of lack of access to the scientific literature etc. So, it is necessary to try to identify the high quality researchers from developing countries to participate in the process and support their work better.

D. Other matters
None

NAME: John M R Stone
Involvement in IPCC: Bureau Member for TAR and AR4, Author for AR5
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WGII
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

A clear shift in focus to "solutions". The IPCC has been very successful in defining the threat of climate change and raising awareness. Governments, business and the public are now looking for information on how they might respond – what works and what doesn't work. This can be done in a manner that is not policy prescriptive – see the Special Reports of carbon capture and sequestration and on aviation.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

We need to open up the IPCC process to a much wider range of expertise and to a broader spectrum of literature (technical journals, industry reports etc…)

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

It will be essential to incorporate traditional knowledge not necessarily captured in academic journals.

D. Other matters

NAME: **Avelino G, Suarez**
Involvement in IPCC:
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) **AR5 WG 2 as CLA; SREX as LA and RE.**
Previous reports (please indicate): **FAR WG 2 as LA; TAR WG 2 as LA; SAR as LA; IPCC TR V as CLA and RICC as CLA**
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

- **The three volumes produced by the different working groups of the AR5 compiles the published current knowledge of the Climate Change Science. They are excellent documents. But I have the perception that not so many policy makers, scientist, and experts will read completely or consult them.**
- **I'm not sure if the traditional format of WG 1 should be preserved. There could be enough scientific information to produce in five year a product similar to the AR5 WG 1 Report?**
- **Maybe the WG 2 and WG 3 reports could be integrated (adaptation + mitigation + sustainable development). The regional chapters could be prepared as different study cases. The experience of the AR5 WG 2 to include social science topic and chapters into the report was excellent. Would be very good to include the participation of the social science experts into the different writing teams.**
- **The SREX and SRREN special report experience would be very good to be replicated in the future to address new or emerging topic related with the climate change, of course before the new assessment report.**

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

- **The production of several special reports addressing emergent or not fully address topic during the next years would be useful.**
- **The WG 1, WG2, WG3 products could be reduced in length or integrated some of them. To address new results or not fully address topics, integrating the results of the special report produced, and including different FAQs.**
- **A Synthesis Report of the whole report with a SPM should be maintained.**
- **The electronic communications (emails, etc) would be the basic instrument or method to elaborate the future report. But some authors meeting would be necessary, oriented to exchange ideas and discussion of the different writing teams. Reduce as much as possible the time devoted to general plenary. Maybe would be more useful a chapter or topic oriented writing team meeting.**

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC.

- **Improve *more* the participation of authors *living and working in developing countries*, as CLA, LA, RE and reviewer of the future products of the IPCC.**
- **Promote the use of scientific literature produced on developing countries or based on information from those countries.**

- **English is the current working language of the IPCC authors' team. Would be good to promote the incorporation on those writing teams, authors able to speak other developing countries languages, in order to assess the existing scientific literature from those non English languages.**
- **The next IPCC scoping meeting should consider as important aspects to be consider in the future work of the IPCC subjects related to current problems of developing countries like: adaptation, poverty, food security, livelihood, sustainable development…**

D. Other matters

NAME: Taishi SUGIYAMA, Mr.
Involvement in IPCC:
Function: (CLA / LA / CA / RE) CLA
Report: AR5 WG3
Previous reports (please indicate): AR4 WG3 LA; AR4 SYR CWT.
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Let WGs 1 through 3 continue their works

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

WG2 SPM and WG3 SPM have major problems, as Robert Stavins pointed out. To correct the process, WG2 SPM and WG3 SPM should be very short (say 2- 4 pages) in next round and line-by-line negotiation should be limited to 1 day.

WG2 , in particular its SPM, is problematic. - it is overly alarmist and it does not convey scientific findings in appropriate manner. To correct this, the membership of WG2 should be expanded to include many other discipline.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

n.a.

D. Other matters

n.a.

NAME: Lynne Talley
Involvement in IPCC: author
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG1
Previous reports (please indicate): AR4 WG1 (LA)
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

I am comfortable with the structure of both AR5 WG1 and AR4 WG1, which were very similar, which summarize literature of several years, and are subject to intense review, response, and editing.

There could be room for a special report on changes in the cryosphere given the major acceleration in knowledge, observations, and actual changes in the physical climate, along the lines of the SREX report that was sandwiched between AR4 and AR5.
If there are good ideas about how to structure reports or emphasis on particular types of content to persuade the intransigent economic groups that are opposed to discussion of climate change, these should be pursued with utmost vigor. At a mininum, the existing IPCC structure is the best I can think of, as it is truly international and unself-serving.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Same as AR5 and AR4.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Appointment of true CLAs from these countries, which of course requires that more resources be assigned to the CLAs – it has been important for the chapter I was associated with to have strong technical support, funded by the institution of one of our CLAs. As this was a European country, the support was available.
Regional analyses for areas that include many developing countries might be useful – again like interim reports between AR's – perhaps Africa, South America, island nations

D. Other matters

NAME: Jeff Tester
Involvement in IPCC: US representative for Special report on Renewable Energy
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) SRREN
Previous reports (please indicate): None
Other (e.g. workshop participant):

A. What should be the future products of the IPCC? Updated analysis of renewable energy options highlighting both technology needs and economic investments needed to transform our current energy systems to a low carbon state

B. What would be the appropriate structure and modus operandi for the production of these IPCC products? Simplify the working group structure have one general meeting at the beginning and end of the report - allow for frequent meetings of the subgroups covering each technology at locations convenient to the panel members.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Make sure that the role is relevant and pay for their travel expenses if necessary

D. Other matters

NAME: Hilton Thadeu do Couto
Involvement in IPCC: KP Supplement
Function: (CLA / LA / CA / RE) : LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): TFI
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

The IPCC has a clear mission to produce reports on climate change in its various aspects, using the results of the most current scientific research. It is also IPCC mission developing guidelines for national, regional or even organizational inventories. We suggest three future products:
a) Guidelines for GHG inventories in public and private organizations.
b) Guidelines for national inventories which are self explanatory (no need for consultations or referrals to other sources).
c) Guidelines for REDD+ projects.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The current structure of the IPCC to develop these products are appropriate as well as the modus operandi.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

The participation and contribution of developing countries is appropriate. It is suggested that regional meetings (Africa, Americas, Europe, Asia + Oceania) are held to raise regional demands and later general meeting with representatives from all regions to set priorities.

D. Other matters

NAME: Marcelo Theoto Rocha
Involvement in IPCC: 2013 KP Supplement
Function: CLA
Report: 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol (KP Supplement)
Previous reports (please indicate): None
Other (e.g. workshop participant): None

A. What should be the future products of the IPCC?

1) **Sub-national guidelines for GHG inventories:** nowadays sub-national governments (e.g. states and/or cities) are taking a more proactive role in developing and implementing climate change policies/laws, in particular, policies/laws related to mitigation opportunities and emissions constrains. As a basis for such policies and to better understanding the GHG emissions and removals in its geographical/political territories, these governments are elaborating GHG inventories, using most of the time the IPCC Guidelines for National GHG Inventories. In theory such Guidelines can be applied *mutatis mutantis* at the states and/or cities level; but it would be advisable to IPCC to evaluate what changes and/or further guidance can be given to facilitate the elaboration of GHG inventories at the sub-national level;
2) **National assessment reports:** the IPCC assessment reports are a key instrument to policy-makers; but in some cases the information is presented at a global and/or regional level that is not complete compatible to the national circumstances or doesn't go at the level of details that would be desirable to the country. In such cases, the country should try to elaborate it's own assessment reports. IPCC could help countries in developing assessment reports based on the

national expertise/authors; sharing not only the knowhow of establishing and coordinating different Working Groups; but also working together in the review and publishing process;

3) **Training sessions and materials**: nowadays the information produced by the IPCC is used in several training sessions and materials from different organizations around the world. IPCC together with its authors could develop and deliver training sessions and materials on specific topics (e.g. national GHG inventories, mitigation and adaptation assessment and opportunities, etc.). This will not only help to disseminate the information already available, but also allow to "get the information direct from the source";
4) **Methodologies to assess the national contributions:** assuming that the 2015 Agreement will need to accommodate different types of national contributions to mitigate climate change (e.g. BAU; absolute targets; intensity targets, etc.); it will be necessary to assess and compare these contributions with common methodologies. Even if IPCC needs to wait for an invitation from UNFCCC to develop such methodologies, it would be advisable that IPCC starts to discuss what kind of methodologies could be develop to facilitate such assessment.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

For 1, 3 and 4: the current structure and modus operandi (i.e. creation of working groups composed by a balanced group of experts from develop and developing countries) is appropriated

For 2: the decision to elaborate national assessment reports need to be taken by the country; therefore the structure and modus operandi would be defined together with the country

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

The **training sessions** could be used as a way to enhance the participation and contribution of developing countries in the future work of the IPCC.

Also, in the case of 1 and 2 there are already (at the national level) several experts that could be direct involved; but were not nominate by the national governments to previous IPCC works, because they have more national publications; which should not be an impediment for 1 and 2.

In general, the **financial support** for the participation of authors/experts from developing countries needs to continue.

D. Other matters

NAME: Peter Thorne
Involvement in IPCC:
Function: LA
Report: AR5 WG1
Previous reports (please indicate):
Other (e.g. workshop participant): Sydney workshop after AR4

A. What should be the future products of the IPCC?

I see no reasonable alternative to the status quo of a series of comprehensive assessments on a regular basis supported by a handful of essential additional products. The IPCC process gains its very functional importance from the fact that it releases very few very important reports with line by line approval of the summaries by the parties. Adding more frequent reports or changing in a fundamental manner the way they are done would serve to debase and devalue the very tenet of the IPCC process and reduce their impact to a huge variety of stakeholders and actors. That is not to say that they

couldn't be improved, but the essential strategy of a few comprehensive reports is compelling and one to which I see no viable alternative that does not carry significant risks to the standing of IPCC.

As noted in my answer to Part B I do see some value to a set of regional reports focused on regions in the developing world that bring together the outcomes of all three WGs and answers the questions important to stakeholders in that region. So, essentially a set of regional SYRs focusing on regions where the ability to conduct national or regional assessments themselves is limited e.g do not duplicate / compete with the US NCA, UKCIP etc. but rather produce reports for C. Amer + carribean, Africa, S. America, S. E. Asia, Pacific Islands etc.. The regional chapters in WG2 go some way in this direction but only apply to the WG2 remit so are not comprehensive.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The current 3 WGs plus SYR structure appears to be embedded and work reasonably well. Some of the partitioning particularly between WG2 and WG3 feels a little artificial but whichever way you slice it this will exist to some extent. The assessments could benefit from being better phased allowing each WG to build upon the final outcomes of the others. There is insufficient time after WG1 is finalized for WG2 and WG3 to capture all the outcomes in their final drafting without considerable effort and much of the material in WG2 and WG3 has undergone one or both rounds of formal review before WG1 report is available in final form which is deleterious to between WG report consistency. The WG2 and WG3 phasing is even closer still and WG3 must be cast in stone before WG2 is public as things stand.

Within WG1 and presumably other WGs it was difficult to ensure cross-chapter consistency on how given subjects (e.g. precip, temperature, cyclones etc.) were being treated until pretty much the last gasp in the final lead author meeting in many cases when the deadline served to sharpen minds considerably. LA teams rightly care about their chapters with their names against them in the first instance but this leads to a degree of silo mentality particularly between lead author meetings when there is no reason to interact beyond the chapter team. It is not viable (or at least it is hugely sub-optimal) to leave this solely to TSU, lead author meetings, or public review or add it to the burden of CLAs. There were very many author nominations not taken up. There would be significant value in creating a team of cross-chapter (and WG?) coordinating authors from this pool or retasking the review editor role to this same end. Like the current review editor role, they would not be tasked with providing text. Rather from ZOD onwards they would be charged with reading across the chapters for a given theme (so not the entire report draft!) and providing support to TSU and CLAs in identifying inter- and intra-chapter issues of consistency, highlighting potential gaps, conflicts, and also redundancies and providing expert advice on the subject area as it is treated across the report including suggestions as to how to partition discussion between chapters to ensure balance and narrative continuity.

We should recognize that for many countries the IPCC is the sole report they get. There is a dichotomy implicit in Question C here in that countries that are developing are the very countries for which the capability does not exist to create their own report and assessment meaning the countries which provide fewest authors are disproportionately reliant upon the report. But the WG contributions to varying degrees are fitful in meeting the needs of these countries. For example in WG1 we did not address changing seasonal cycle of observed rainfall yet it became abundantly clear far too late that this was important to many tropical developing countries. The one additional report series that therefore may be useful, after AR5 (or AR6) is having a set of regional reports for set regions that summarize for those regions the outcomes of all three WGs, so a series of SYR style reports but tailored to different regions recognizing the important questions and climate concerns differ fundamentally by region. These would be written by largely authors from the region and for the stakeholders in the region. See also answer to Part A in this regard.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

As noted in my answer to Part B placing specific regional chapters / regional assessments would mean that authors from a region perhaps felt more qualified to contribute.

From limited personal experience authors were more forthcoming in person than remote working. Funds to facilitate time at CLA or LA institutions inter-sessionally may yield greater involvement and would have without any doubt co-benefits in terms of capacity building and personal development. Ideally each developing country LA would have travel and institutional support to spend up to a month across at least two of the other author team members' institutions to work with them on aspects of the report. The provision of such a tangiable benefit may also serve to ensure greater engagement in the nomination stage of a higher caliber of developing world candidates.

D. Other matters

I note with some concern that there is rightly a participation of developing countries bullet above but there is no questioning of author gender balance or career stage balance issues which are arguably as important aspects of the author team composition question for the long-term vitality of both IPCC and the broader community. IPCC should strive for gender equality in all author teams including CLA roles. It is very far from achieving this. Each author team should also have at least one author <7 years out from PhD graduation and one more <12 years out from PhD graduation who are recognized as being capable / potential rising stars in the field. These people likely have the energy and drive to make important contributions. More importantly they bring different generational perspectives as well as constituting the potential future of the field. It would give them a tremendous career development opportunity as well as potentially assuring better chapter balance. There are too many late career scientists in author positions in general and far too few early and mid-career authors. This top-heavy representation of the underlying population of active climate scientists is understandable to some extent but appears extreme and its remedying by explicit quotas for early-end career scientists on each chapter would yield indubitable benefits both to IPCC and to the community more generally.

Key is providing the CLAs with sufficient support to oversee chapter completion. This role in particular cannot be entirely voluntary on top of additional responsibilities and nominee's institutions or their sponsoring governments need to provide sufficient practical support / resource.

In the present day and age it should be a basic requirement that all software and data used to create all tables, figures etc. be archived in an open source manner and associated with the report through a doi. In any subsequent report this should be a stated requirement at outset rather than optional to authors. The CMIP-5 data are already archived as are almost all observational datasets. Therefore this is not insurmountable yet the argument for openness and transparency in all aspects of the IPCC reports on which important policy decisions are being made and will be made in future is inarguable. The authors are creating the code and figures and the additional archival step should be minimal extra effort. The code does not need to be operational quality, just functional.

Responding to all review comments was incredibly onerous and many of them were simply pointing out typographical errors or the same error being pointed out twenty times. I think the IAC recommendation in this regard had merit and if AR6 (if there is an AR6) sees a further increment in the number of comments being received that this may become untenable for certain aspects that are either hot topic issues or where everyone lays claim to being 'expert' yielding a huge wealth of comments to wade through.

NAME: Sirintornthep Towprayoon
Involvement in IPCC: TFB of NGHGI, LA of2006 GL and CLA of 2013 wetlands supplement
Function: (CLA / LA / CA / RE) CLA and LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) TFI
Previous reports (please indicate): 2013 GL wetlands supplement
Other (e.g. workshop participant): series of expert meetings

A. What should be the future products of the IPCC?

There are several products from IPCC WG and TFI which are to be references globally. Nevertheless, some products take long time (more than 6 years) to complete assessment . The degree of comprehensive and robustness of each major contents are different in timeliness concern. For example policy and economics issues are highly fluidized than scientific facts. Communication of policy and climate economical situation are to be addressed more frequently in order to have lesson learnt flow from the pioneer parties to the follower parties. Their necessity can not wait for the5 to 6 years cycle of the assessment report. **Mid term report (every two or three years) on policy and economic aspects** before integrated into the AR should be considered.

In addition to the large volume of AR and more complicated information in the future, **assessment report by regional basis** (continent or region) would be one of the midterm report choice particular with the adaptation assessment. Assessments by region allow numbers of local competent scientists and researchers (who know more about their region but do not have a chance to participate) to be engaged in the IPCC assessment process. This will increase the frequency of IPCC report and can be a good materials to be integrated in the full cycle of the common assessment report.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Data acquisition is the most important part of IPCC products and often come from literature review with clear cut off date. The process is crystalized in term of scientific quality and acceptability. Nevertheless in some cases, different opinion can be raised even with the high quality journal. Discussion in the specific forum can reduce these controversial issues. IPCC may wish to accommodate new Modus operandi for IPCC product, apart from the conventional process, such as **creation of annual scientific conference** on the specific issues and introduce related scientist to present their scientific finding based on their publication. This activities may need to have competent team to draft the summary of discussion and the scientific conclusion. This summary can actually be one of the IPCC product and to consider being used in the common assessment report.

A review paper on relevance issue is one of the good materials for the assessment report. IPCC may wish to **promote review paper on specific topics by announcing the relevant topics to challenge scientist for the review manuscript submitted to publisher**. These specific topics can be identified by experts in the specific expert meeting**.**

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

1) Create the scientific network that allow developing country scientist to engage.

2) Enhanced collaborative research and funding through international funding agency, particular those with the UN associate.

3) Set up research initiatives for group of developing countries (such as ASEAN countries or West Africa countries) The project should include academic assistant team from competent scientist conduct the long term research with capacity building scheme.

4) Request parties to have competent scientist data base (roster) and network with annual updating.

D. Other matters

NAME: Kevin Trenberth
Involvement in IPCC: CLA (twice), LA, RE, CA many times, reviewer
Function: (CLA / LA / CA / RE)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG1
Previous reports (please indicate): FAR, SAR, TAR, AR4, special reports
Other (e.g. workshop participant): scoping meetings, etc.

A. What should be the future products of the IPCC?

Focused specialized reports that are more end-to-end, involving WG1 and WG2 together. In particular, a lot of stuff should be taken away and become routine/operational. Any current restrictions on special reports should be removed. Any modeling under IPCC should be revised in major ways to produce the best forecasts and predictions, not the latest model results from unproven models. Many models should be cast aside as inappropriate. This is no longer assessment but actual research.

Part of this relates to what does develop under GFCS and climate services, and perhaps under WCRP. So there is a need for a transition of sorts. The routine reports exist to some extent (best known is annual BAMS issue) but they do not have the rigor or review procedures of IPCC. By the way there is nothing routine about these reports, they very much involve research and innovation and must be done by experienced researchers, not functionaries pushing buttons.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The IPCC developed thorough procedures that have considerable merit but which went out of control in AR5. Too many CLAs, too many LAs, not enough real experts, and reviews that were not thorough. AR4 was better, at least for WG I. The intergovernmental aspect should be retained if possible to ensure the report has impact. A way needs to be found to include the developing country scientists but recognize that many are not state of the art experts. WG3 is a different "special report" than WG1 and 2.

Funding is distorted. It goes to assessment and not enough to the underlying science and development of a climate observing system or comprehensive climate information system that is essential to know what is happening and why, what we should be planning for and adapting to, what is internal variability (and thus not sustained) vs what is human induced, and some serious top level discussions are needed to better fund the development of the climate information system and associated observing system.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Briefings and outreach along with opportunities to comment are essential. This is difficult because it can come across as patronizing, and yet few developing country scientists have a global view. The IPCC must come across as authoritative and expert, and that has been undermined recently.

D. Other matters

The IPCC findings have evolved over time to express increasing confidence that humans have influenced climate, but then surely the questions change to "what do we do about it?" There is now an imperative to recognize that climate change is with us and we must plan for it in every way possible. The climate of the past is simply no longer a good guide to that in the future. I argue that we need to develop climate services in the broadest sense to provide a continuous stream of information on how the climate is changing, why it is changing, what the expectations are on various time horizons, and how best to plan for the future climate. It is no longer pragmatic to wait for 6 years or so for another report.

Avoid the working in parallel that has dogged the 3 WGs and even the chapters.

NAME: Ramiro Trujillo
Involvement in IPCC: LA, RE
Function: (CLA / LA / CA / RE): LA, RE
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX): W3, SRREN, AR5
Previous reports (please indicate): AR4
Other (e.g. workshop participant): Pre COP 20

A. What should be the future products of the IPCC?

The IPCC should keep the current level with the active participation from specialists from developing countries to have a general overview in each of the chapters. Seems to me that the IPCC should have more contact with participants of the reports encouraging their research through different activities

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Because the reports must be prepared in advance it seems that direct contact with researchers is very important to creating contact groups in areas of interest

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

The LA, CA, RE are people involved in the different IPCC topics, that is why is important to develop their capabilities to the future work of the IPCC.

D. Other matters

I think that the IPCC is one of the most important instruments to address the climate change and people CA, LA, RE are the strategic resource to improve the IPCC results.

NAME: Penny Urquhart
Involvement in IPCC: AR5
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 (Chapter 22)
Previous reports (please indicate): N/A
Other (e.g. workshop participant): Part of IPCC team in Structured Expert Dialogue and Adaptation Committee meeting in Bonn, June 2014

A. What should be the future products of the IPCC?

I am aware of the discussions around reducing the scope of the IPCC assessment process. However, I believe there is still great value in and demand for a periodic comprehensive assessment such as was conducted for AR5. I feel there is similarly great demand and need for more detailed and integrated regional assessments – i.e., a southern African / Central American etc integrated assessment (drawing together the areas of WGs I, II and III within the same assessment). This will allow for more a more regionally specific and detailed assessment that can also be targeted towards the key priorities and regional contexts. Thus I would recommend the IPCC consider conducting regional assessments as a next step, with the next global comprehensive assessment delayed until the next round.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The regional integrated assessments could be run along similar lines to the AR5, but with one global coordinating secretariat and separate but linked regional secretariats.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

I recommend convening a specific task team, with strong representation of developing country authors, to discuss this important question.

D. Other matters

From my albeit limited exposure to the workings of the IPCC, I feel it would be very important to have clear mechanisms and review procedures, with agreed milestones at which progress would be reviewed, to ensure that all authors deliver on their tasks / mandates. I noticed that several chapters had problems with non-delivery on the part of some authors, which had negative impacts on the workings of the chapter and on the assessment. In some cases, dealing decisively with this issue was felt to be politically sensitive, resulting in delayed / no solution. A clear framework, agreed to by all authors upfront, could reduce these problems.

NAME: Katharine Vincent
Involvement in IPCC: Author
Function: (CLA / LA / CA / RE) LA for chapter 9 (Rural Areas); CA for chapter 22 (Africa)
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) AR5 WG2
Previous reports (please indicate): AR4 WG2 (CA for chapter 9-Africa and chapter 17-Adaptation)
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Shorter, more focused reports that answer specific emerging questions (perhaps reflecting questions arising from the policy process) that can be produced more rapidly than the current 4-5 year cycle. This also allows scope for further integration between working groups (as requested by some governments).

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The secretariat/TSUs can maintain databases of the authors and their specific areas of expertise, and bring together author groups as appropriate to the specific requested reports. Timeframe of production can be more rapid (perhaps 2 years at the very most, ideally shorter). The modus operandi for production should likely be similar; CLAs, LAs and CAs working together but remotely, but with occasional in-person meetings. The review process could still exist, but only on one version.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

It is a fact that there are fewer developing country scientists, and of those with relevant expertise the majority do participate, so encouraging further inclusion is a long-term goal (with which the scholarship programme helps). A key point to note is that many developed country authors work in developing countries, and so even the smaller number of authors from certain regions does not necessarily mean that the regions are less well represented in terms of the assessments themselves.

D. Other matters

NAME: Professor Coleen Vogel
Involvement in IPCC:

Previous CLA Africa chapter, Summary Policy Makers WG 4; LA chapter 12, WG5
Function: (CLA / LA / CA / RE)

Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX)

Previous reports (please indicate): See above.

Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Timely and more user-friendly science/policy and science/practice reports on negotiated themes of interest.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Shorter process (not every 4-5 years) and more inclusive processes (e.g. co-design science and wider community).

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

By encouraging more co-design and buy in up front and also channeling everything through departments of environment and or weather services is a problem. If greater co-design, in the process, from the beginning, is ensured then the participation should follow naturally.

D. Other matters

The science is critical and should always be paramount but currently the lack of focus on the context of the reader, those who will have to deal with the issues (e.g. at the local level), is unfortunate. The documents are too dense and need to be co-brokered to make them more useful and uptake smooth and useful!

NAME: Michael Wehner
Involvement in IPCC:
Function: LA
Report: AR5 WG1
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?
Many lead authors feel that fewer large assessments and more targeted assessments, such as the SREX, would be an improvement of the process. In general, I agree with the sentiment but do not wish to advocate a significant reduction in the number of general assessments (like the AR5).

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?
I am ok with the current structure and MO. My only suggestion is to hire a professional graphic arts team to aid in the design of figures. Past report graphics span the range from insightful to confusing. Professional help at the outset can reduce the latter.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC
This is a question larger than the IPCC. How do we train and then support scientists in developing nations? Qualified IPCC participants can only follow from a well trained base. I don't offer any suggestions but emphasize how important their participation is, especially when assessing climate change in developing regions as there is no substitute for local knowledge and expertise.

D. Other matters

Wilbanks, Thomas J. <wilbankstj@ornl.gov> Fri, Jun 20, 2014 at 8:34 PM
To: "ipccfuture@wmo.int" <ipccfuture@wmo.int>

Hi, Renate and all:

Back in 2007, a number of us put together the attached set of ideas about alternative futures for the IPCC, which we submitted to Dr. Pachauri at his invitation. Shortly afterward, Patchy found that IPCC was to share in the Nobel Peace Prize, and discussions of alternative futures were eclipsed by that event. We think that most of the ideas are still relevant, especially in light of the findings of the external evaluation of the IPCC process a few years later (we recommended such an evaluation ourselves).

All the best,

Tom Wilbanks
ORNL
USA

4 September 2007

DRAFT

ALTERNATIVE FUTURES FOR IPCC

Observations Arising from Discussions Stimulated by the Energy Modeling Forum, Snowmass, Colorado, USA

September 2007

4 September 2007

DRAFT

ALTERNATIVE FUTURES FOR IPCC

Introduction

No government, participant, or observer thinks that the current IPCC process is working very well.

IPCC has made significant contributions over a decade and a half. Most importantly, it has fostered and indeed accelerated the development and communication of collective global scientific views about important climate change issues, and it has stimulated and facilitated the development of an international climate change research community. If imitation is the sincerest form of flattery, the Millennium Ecosystem Assessment is a powerful and very public tribute to the successes of IPCC.

On the other hand, there are growing concerns that the IPCC process is increasingly ponderous, expensive, and bureaucratic and that it is showing diminishing returns on the investment as it plows ahead, essentially continuing to do the same things in the same ways even though both the issues and the associated knowledge bases have evolved – apparently in desperate need for an evaluation to take stock of where things stand and what changes should be considered.

Many of IPCC's supporters fear that the future of IPCC could be in doubt unless it shows a capacity to change. This concern was a theme of informal discussions at the annual meetings of the Energy Modeling Forum (EMF) in Snowmass, CO, in 2006, and an ad hoc group was formed to brainstorm informally about issues and options, interacting with and listening to colleagues at the meetings of the three IPCC Working Groups over the following year, trying to be constructive without being uncritical. An informal discussion was scheduled at EMF 2007, with several dozen international IPCC veterans contributing. This brief document summarizes views that emerged from this series of discussions over a period of a year.

Strengths of IPCC That Should Be Preserved

One starting point for a constructive discussion is to recognize strengths as well as weaknesses. At least two strengths stand out and should be sustained in any modifications of IPCC policies, practices, and approaches:

(1) Governments are integrally involved in IPCC, and the results of scientific analysis and synthesis are endorsed by governments. This aspect of IPCC strengthens linkages between science and policy, and it increases the value of IPCC's efforts for decision-making and action.

(2) From the outset, IPCC has assured broad participation, using such mechanisms as "Contributing Authors" to open up opportunities for involvement to as wide a range of expertise and geographical representation as possible. Although some of its practices are less than open to all interested stakeholders, IPCC has in principle sought to be open to participation by qualified colleagues in the various expert communities, in some cases working to enhance expertise in groups that seem to be underrepresented.

Changes in the Context for IPCC That Might Suggest Changes

At the same time, a second starting point is to consider changes in the context of IPCC to which its processes should probably be sensitive. Again, two issues stand out:

(1) Since the IPCC was established in 1988, the needs of policymakers and other stakeholders for information about climate change research findings have changed. Many things that were in dispute in the early 1990s are now widely accepted, and many issues that were not a major concern at the outset are now the major issues of concern. Given these changes, it would be quite remarkable if the same mandates and purposes still apply without modification.

(2) Since 1988, the information technology revolution has transformed scientific communication and interactions between science and society. Now, virtually any message communicated by e-mail, and virtually any document posted for reading on the Internet, regardless of password protection, must be considered essentially publicly available information. During the plenary sessions of IPCC's Fourth Assessment Report in 2007, where the press was in principle excluded, reports from individuals in the plenary sessions were being streamed to the press in real time; and, earlier in the process, draft materials that were being circulated in confidence for external review were being widely circulated. It is at least arguable that these developments are irreversible and that, as a result, IPCC needs to rethink how its internal deliberations relate to

external audiences, probably choosing to open up processes that can no longer in fact be kept closed.

Alternatives for Demonstrating That IPCC Is Seeking Ways to Adapt

We suggest that alternatives for modifying IPCC's processes fall into three categories, from the gently evolutionary toward the more revolutionary: (1) continuing the same general process but improving it, (2) modifying the general process without departing from its general mold, or (3) breaking the mold – considering very different approaches for meeting similar needs.

Improve the Current Process

Alternatives for improving the current process include:

- Reconsidering charges, guidelines, and other instructions to the three Working Groups. For the Fourth Assessment, guidelines were extensive, related to such things as chapter outlines, lengths, protocols for considering references for citation, etc. Many of these guidelines forced authors into molds that limited the ability to treat larger issues in coherent ways, they tended to limit uses of knowledge bases outside conventional peer-reviewed publications (e.g., knowledge in literatures other than English, "grey literatures" reflecting knowledge in developing countries, and knowledge of practitioners not being published in academic outlets). It seems possible that less conventional sources will become more important as impact and adaptation issues become more prominent, and is worth considering whether in other regards as well Working Groups and their authors should be allowed somewhat more latitude in organizing their material and their presentations.

- Revisit organizational approaches and schedules. An IPCC mold seems firmly set regarding such matters as author team size and composition, number and participation in meetings, and review policies and procedures. Meanwhile, it is not clear that if one started from scratch to develop an approach this is the approach that would emerge. As one example of a problem, in author teams assembled by rather mysterious interactions between governments and Working Group leaders, the result is that many authors are only slightly involved in document preparation, while a few carry such a heavy workload that their science suffers and their willingness to contribute in the future is jeopardized.

- Change time intervals between IPCC assessment reports. Opinions differ about whether, now that the knowledge base about many climate change has matured since IPCC was initiated, its assessment reports should continue with the same time intervals, about six years between reports. Some observers feel that extending time period somewhat would enable more significant advances from one report to another and reduce exhaustion among the climate change science community. Others are concerned that extending the time period significantly, say from six to eight or nine years, would undermine the relevance of climate change science in the intervening period, especially when knowledge about impacts and adaptation potentials is increasing relatively rapidly.

- Increase attention to what is not known relative to what is known. In many respects, the focus of IPCC has been on summarizing and reporting what is known, and suggestions of research needs are little more than casual add-ons. For Working Group II in particular, but perhaps for the other Working Groups as well, in some ways it is as important to recognize and focus attention on what is not known – but needs to be – as on what is known from an as-yet incomplete scientific understanding of key issues.

- Develop more effective ways for getting plenary session approvals of SPMs. If there is any one focus of participant concerns about the current process, it is that plenary session approvals are unacceptably arduous and agonizing. Changes in process and/or practices are urgently needed. Examples of changes that might be considered include: (a) requiring governments to submit their comments on the final government review draft SPM in time for author teams to make revisions and send the revised draft back to the governments before they arrive at the plenary session; governments should not see new text for the first time at the plenary session; and (b) establishing as policy that, if after an appropriate discussion only one or two governments object to specific language in the SPM, the text can be adopted by the plenary with a footnote indicating which governments were not in agreement.

- Expect Working Group leaders to work together constructively. Without getting into issues about personalities, there is very widespread agreement that the IPCC process is adversely affected if the Working Group leaders are not able to communicate and collaborate actively, frequently, and positively. It would seem to be appropriate to make such a commitment (and capacity) a prerequisite for appointment to Working Group leadership.

Modify the Current Process

Many observers are convinced that more substantial changes should be identified and seriously considered. Among the ideas suggested by participants in the group discussion are:

- Revisit the number of Working Groups and their scopes. Although three is a convenient number and the topics have shifted modestly from one assessment to another, the current subdivision is not the only alternative. For example, it is awkward in dealing with issues regarding adaptation and sustainable development, and it has made it difficult to overcome cultural differences regarding such issues as the treatment of uncertainty. Taking a step back and surveying the current climate change science and policy landscape might result in a different set of foci and boundaries.

- Reduce the emphasis on massive comprehensive general summaries of knowledge, increasing the emphasis on answering key questions. In many ways, IPCC has become a massive, labor-intensive process of producing ponderous comprehensive summaries of information in a large number of pre-determined categories when it turns out that a great deal of the information is unrelated to key questions for policymakers and other decision-makers. The Third Assessment Report began with a set of questions, although the assessment process evolved largely separate from them; the Fourth Assessment Report had no set of questions as a focus. If a future assessment were to begin with key questions and organize it efforts to answer those questions, it might take quite a different form in terms of the structure of the reports and the processes to produce them.

- Involve governments and other users more actively during the assessment process, which would mean opening up the process. Relationships between governments and scientific author teams in IPCC remain awkward, with governments setting guidelines, reviewing draft reports, and approving SPMs but in principle being kept at arms length otherwise. In many of IPCCs countries, this is not only unhelpful but unrealistic. Increasingly – and this is a welcome development – boundaries between the scientific and policy communities on climate change issues are breaking down as the policy side becomes more scientifically sophisticated and the science side becomes more actively involved in decision support. There would be many advantages in recognizing this change and incorporating it in an ongoing discourse during the IPCC process.

- Incorporate the synthesis effort in the process from the beginning rather than splicing it on at the end. If a synthesis of IPCC's results is important both to science and to decision-making, as seems beyond argument, then synthesis should be taken more seriously. There should be more synthesis early and often, with ongoing attention to issues, opportunities, and gaps throughout – which would require far more interaction between Working Groups, and between chapters within a Working Group, than has occurred to date. Overcoming the inertia of subject-matter fragmentation that is imposed by the current Working Group chapter structures is a serious challenge that calls for changes in how IPCC operates.

- Revisit how regions are defined and treated. The definition of regions for IPCC, emphasizing continental subdivision, seem more rooted in administrative convenience than subject-matter relevance. Neither climate dynamics, nor climate change impacts, nor realities of climate change adaptation potentials, nor in most cases decision responses respect these sets of boundaries. Are there alternatives? Is this the right scale? Are there useful concepts available, such as the Millennium Ecosystem Assessment's "loosely-nested" multiscale approach?

- Reconsider whether the schedules for the three Working Groups should be essentially the same or whether some sequencing might be appropriate. This issue has been around for a decade or more, related to an idea that if WG I were completed well ahead of WG II and III, its scenarios and results could be used as a basis for the other reports. Actually, since WG II and III reports are based on peer-reviewed published literature and, from (a) the time new scenarios are distributed to (b) the time when research based on those scenarios has been funded and completed and peer-review/publication processes have also been completed is generally five years or more. In fact, many of the cited literatures are not scenario-based at all; so the original idea seems impractical. On the other hand, having WG I findings in hand in time for WG II and III to consider them in the early stages of SPM creation would often be useful.

Replace the Current Process with a Different Process

Finally, more drastic options should be considered as well. For example, consider the importance of synthesis judgments as well as comprehensive coverage. Two alternatives to the current process would be:

- Drop the three general Working Group assessments, at least in the next round, instead producing a synthesis report from topical and regional *expert workshops* focused on key questions. Many

participants in the Fourth Assessment process found the series of expert workshops to be far more informative than the Working Group summary reports. The workshops could be targeted on central issues for a synthesis report and for decision support, they could invite participation by the right people to consider those issues, and they could product reports with greater agility and timeliness. One could imagine a set of ten or a dozen expert workshops, defined in terms of key questions, that would be a stronger foundation for a coherent synthesis report than the current Working Group reports.

- Start with a synthesis rather than comprehensive assessments, incorporating user interactions from the beginning, adding workshop-based attention by scientists to key questions and uncertainties as they arise. A somewhat more extreme alternative, although not necessarily incompatible with the previous one, would be start the IPCC assessment process with a synthesis team that would, as its discussions evolve, organize workshops and other interactions with the research community as needed. For instance, many committees of the U.S. National Academies/National Research Council operate according to this model, which tends to increase prospects for focus, coherence, and clear synthesis messages without eliminating broader participation.

Other central issues might call for similar kinds of idea generation about new molds for IPCC.

Recommendations

The participants in this informal brainstorming session over the past year have developed three consensus recommendations for IPCC, along with the larger group of ideas that might be considered:

Evaluation. Even if the effect is to delay the next stage of IPCC, it is essential to arrange for a formal evaluation of the IPCC process by an independent group. In most of our countries, it would be inconceivable for an institutional undertaking of the scope and cost of IPCC to proceed for more than a decade and a half without an evaluation; in fact, continuing financial support would be conditional on such an evaluation. Our ideas in this informal document are far from the last word, but we believe that they indicate the range of issues that should be considered..

Synthesis. We are convinced that it is essential to treat synthesis as a core commitment of IPCC rather than as an afterthought which does little more than summarizing WG results. A synthesis should be more than a summary of summaries; it should be a central element of the process from the beginning, to

which all parts of the IPCC leadership structure are committed and with respect to which the various parts of the IPCC process are structurally related.

Openness. It is time to recognize that historic IPCC processes that call for keeping WG discussions and drafts confidential, within the IPCC author community, are no longer either practicable or desirable in the current information technology and science-policy environments. We need to open up the process to more active information exchange and science-stakeholder interaction from beginning to end, welcoming the challenges as unavoidable aspects of how science relates to policymakers and the public in this age.

NAME: Harald Winkler
Involvement in IPCC: AR4, AR5
Function: LA
Report: AR5 WG3
Previous reports (please indicate): AR4 WG3
Other (e.g. workshop participant): Scoping for AR5; community meeting on shared socio-economic pathways.

A. What should be the future products of the IPCC?

My view is that there are diminishing returns on continuing complete assessments in cycles of 5-7 years. There is less new to report, simply given several previous assessments, and more focused, specialized efforts seem appropriate, as climate research has matured. My suggestion would be

1. Assessment reports on a longer cycle – once a decade to review all the literature
2. In between, a set of special reports or other more focused IPCC reports

Very specifically, the focus on international negotiations became highly politicized in AR5, even more than before, including in the final plenary. The IPCC should not become another forum for negotiations, that is the UNFCCC. Box 13.7 of AR4 was used extensively in the negotiations – which is reasonable, but perhaps made negotiators on many sides wary of further information

3. The IPCC should consider whether it is advisable to have another "chapter 13" in AR6. If such a chapter is included again – and no doubt there will be further literature to assess – then perhaps the outline needs particular attention – and there would have to be an agreement not to negotiate that section of the SPM in UNFCCC style, but somehow differently

Finally, it is my view that AR5 moved backwards on the integration of sustainable development, which had from SAR, TAR and AR4 become increasingly cross-cutting. My impression of AR5 was that it was dominated by economics as a discipline, and IAMs as a tool.

4. AR6 should return to the integration of SD across all chapters, rather than dealing with it in a couple of chapters. The perspective of all disciplines should be balanced, not privileging economics.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

In general, the IPCC structures seem appropriate; but some specific matters can be improved. Reflecting on experience in WGIII, I suggest there are some elements that need serious attention:

5. The culture that emerged in WGIII AR5 of a 'leadership' that was deemed superior to authors is inimical to scientific collaboration

6. The practice I experienced of prohibiting lead authors from meeting, when CLAs were in "management meetings", does not draw the maximum input from other authors, each one of whom has a contribution to make; it should be not be permissible. The briefs to CLAs should make clear that their role is to facilitate work among their peers, not to 'govern' it. Equal respect should be shown, structurally, to the contribution of all authors – coordinating, lead, contribution, or indeed review editors.
7. The Co-Chairs should act as equals. Having one Co-Chair (almost invariably from a developed country) with a large team in a TSU, and others acting as part-time individuals, does not enable collaborative leadership – which is crucial to the IPCC process

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

8. Support to developing countries Co-Chairs (and possibly CLAs) would improve the situation described in point 7 above. This could be in the form of financial support, but also human capacity – support staff, or sharing the resources available within the TSU
9. Grey literature from developing countries should be encouraged. The letter of guidance in AR5 said that grey literature could be motivated; *de facto* the message was clear that peer-reviewed literature was the main basis of assessment. In addition, research reports by institutions, e.g. the OECD, were accepted as if peer-reviewed – even though they are not journals, nor have formal academic peer review. This further disadvantages developing countries, which have not established such international institutions.
10. Developing countries authors might be offered support with research assistants. Probably this might be done by governments - for those with higher capacity, but some assistance from the IPCC centrally should be extended to CLAs from LDCs.

D. Other matters

11. It might be useful to collect statistics on the use of IPCC reports (assessment, special, technical and other reports) – citations in the academic literature, metrics on use by governments (perhaps the UNFCCC Secretariat could track?), alt-metrics on use in public dissemination

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Poh Poh Wong (Singapore)
AR3, LA, WG2
AR4 and AR5, CLA, WG2
E-mail: wong3921@gmail.com
Date : 28 July 2014

COMMENTS - FUTURE WORK OF THE IPCC

A. Future products

The IPCC should not be involved in producing more products as this would dilute its efforts as there is no end in producing various additional reports. The IPCC should keep to the essentials : the SPM (Summary for Policymakers), TS (Technical Summary), AR (Assessment Reports), and SR (Special Reports). Knowledge technology is available for governments and other interested organizations and individuals to produce products from the IPCC reports for their own purposes or use. For example, Cambridge University and CDKN have produced briefs from the AR5 reports on various sectors and some regions and more are likely to appear.

It would be helpful for the IPCC to issue a guidance brief for policymakers and others on how to use the available products more effectively. For example, the SPM is a negotiated summary and therefore should not be the end document for consultation; more technical details are in the TS; the chapters of the AR should be consulted for a fuller picture; and more importantly, the references should be followed up for additional information, e.g. on adaptation and mitigation. The IPCC authors have assessed tens of thousands of references and those of relevance are listed for others to consult.

B. Appropriate structure and modus operandi

In general, the existing structure and modus operandi have operated successfully without any major problems. If the IPCC does not get involved in meeting further requests for additional reports, then the present modus operandi does not need to change much.

Of new deliverables, I would like to suggest one supplementary product for each WG (Working Group) that would be useful for both the existing AR and the next AR. This is a short update of only relevant and critical literature to supplement existing the AR (new Review Editors can be appointed to do it). The update can be initiated halfway and made available three-quarters way before the next AR, respectively. It can be useful for the scoping meeting of the next AR.

Based on past experiences I noted that some new LAs do not have enough understanding of the seriousness of being authors. The IPCC should made clear that authors must be prepared to work outside their 'comfort zone' although they are selected to work in their specialties. An appropriate advisory from the TSU would help.

Another aspect to be made clear is that the writing process should not be interrupted by additional demands/requests from the governments after the adoption of the approved outline and the first authors' meeting. Such demands/requests were passed down to the authors by the TSU during the subsequent authors' meetings.

C. More involvement of developing countries

Of various measures suggested for the increased involvement of development in the IPCC, I strongly recommend that the IPCC reinstate the parallel process of self-nomination of authors for the AR6. This process was done for the AR4. Some (possibly many) developing countries have no proper process of nominating authors; to some extent, the problem lies with the national focal point. Thus, it is necessary that the announcement for self-nomination of authors be made in the IPCC website and other scientific networks.

D. Other matters

This is a small outreach item to increase the IPCC profile in the eyes of the public and to generate interest in its work. The IPCC could get a contractor to manufacture windbreakers bearing the logo "IPCC" (20 mm height) in white on the back and on both upper arms of the garment. To keep inventory manageable, the windbreaker can be unisex with a front zipper but no hood and be available in one colour (dark blue) and standard sizes. It can be sold to IPCC scientists and the public (at a higher price) with all profits going to the IPCC fund for training scientists from the developing countries.

NAME: Kaoru Yamaguchi
Involvement in IPCC:
Function: LA
Report: SRREN
Previous reports (please indicate):
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?
- Focus on scientific integrity
- Direction and strategy for mitigation and adaptation measures (not just alarm against GHGs, but solutions for potential climate changes) are becoming more important, if considered the reality

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?
- Responsibilities of emerging economies (BRICS) are critical: how the structure and operation can address this matter? Operation focus on climate changes in these countries should be considered.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC
- Link the activities of IPCC to MDGs and improvement of energy access through investment for energy efficiency and renewables.

D. Other matters
- Continuous distribution of current level of GHGs and the prospects of climate changes is very important
- The issues of adaptations are now getting more important

NAME: Mitsutsune Yamaguchi
Involvement in IPCC: 3rd, 4th and 5th assessment report
Function: (CLA / LA / CA / RE) LA
Report: (AR5 WG1; WG2; WG3; TFI, SRREN, SREX) WG3
Previous reports (please indicate):TAR/WG3, AR4/WG3
Other (e.g. workshop participant):

A. What should be the future products of the IPCC?

Continue to be independent scientific assessment report. The more government interventions, the less credibility of IPCC scientific report will get.
Especially with respect to AR5/WG3/SPM, it was clearly got involved in politics, even though co-chairs try not to.
What I am afraid of, as a lead author, is that we will lose momentum to write the best quality report. For example, even though we would like to show policy relevant facts or information based of statistics or pure reviewed literatures, if we may think those will be rejected at the final government review, we will lose incentive to provide the best information to policymakers.
The above will lead to lower the credibility of the report.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Current government review process should definitely be reconsidered.

If it is impossible to keep out negotiators to attend to the government review, we need a new rule for the government review, for example, any intervention not based on science should be rejected by the chair. Alternative idea is to abolish government review process itself. IPCC just provide policymakers policy relevant scientific information (including social science information, of course) and let policymakers interpret freely as they like. Even in this case, this will not undermine the established credibility of IPCC report.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

D. Other matters
Transparency

We had quasi final WG3/SPM subject to the government review. But the version submitted to the government review was not the same as we knew as a lead author. My guess was that CLAs got together and revised the SPM reflecting various comments from governments. At this stage, even before government review, several important changes had been made (ex. Table SPM.1). Though I have sympathy to CLAs because of time constraint and though I really appreciate their last minutes hard work, those changes should have been forwarded to lead authors (at least the LAs of the relevant chapters).
In addition to the change at CLA meetings, the reasons of important change at the government review stage should be feed-backed to LAs in view of their contribution to the report.

COMMENTS OF PROF. VLADIMIR ZUI (BELARUS) IN RESPONSE TO THE IPCC MESSAGES OF 26.05.2014 AND 18.06.2014 (QUESTIONNAIRE ADDRESSED TO THE AUTHORS, CONTRIBUTING AUTHORS AND REVIEW EDITORS OF THE IPCC)

A. What should be the future products of the IPCC?

The IPCC is and will remain very important as a globally recognized institution for the climate change estimates in the coming years. The IPCC successfully produced reports of a high quality, due to the support of the worldwide scientific community.

The IPCC Assessment Reports represent in a condensed form the available knowledge and reflect the scientific consensus on the climate change in future and the availability of solutions.

The IPCC should continue the practice to attract the best scientists to work at the future reports with the need to increase a participation of scientists from developing countries with a better geographical balance. The practice of the IPCC to continue cooperation with top scientists as authors of both current and future of IPCC reports should be considered as a positive factor.

A lot of publications devoted to the Problem are published in non-English literature, for instance: French, German, Russian, Chinese, Japaneze, Spanish, etc. literature done for the AR, by a number of specifically targeted authors. Resources could be sought to hire translators of literature from other languages than English. It would be useful to take into account such published results in future IPCC reports as a valuable source of information. It would be useful also to provide an on-line platform with references on international scientific publications devoted to climate change in all fields.

The assessment period in future reports could be considered to be in frameworks of 4 to 6 years.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Involvement of scientists from developing countries in the reports as well as in the structure for instance: Technical Support Unit, Bureau, could be considered.

In the procedure of author selections, it is important the continuity and use of those scientists already gained experience and knowledge, as well as having among them some of experts, who already have participated in a preparation process of the IPCC reports. The IPCC considers how to invite and use experienced experts and introducing new authors.

Working in IPCC projects for authors should remain attractive to involve the world's best scientists; which will guarantee in high quality scientific results.

It would be useful not to ignore also the grey literature as a valuable source of information when working at the future IPCC projects including those in national languages in addition to English.

The current formation of the working groups, task force groups and the technical support units seems to be acceptable and effective in general.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

It is believed that the support for developing country Bureau members and authors (CLA,LA,RE) should be discussed in future projects.

It would be a justifiable act to consider ways to enhance research in developing countries and countries with economy in transition promoting the IPCC activity. One of ways could be the IPCC Scholarship Programs taking into account, regional, gender, young scientists. Involvement of and support by institutions in these countries, which are in a position to do related investigations, would be useful.

Support and looking for other ways of motivations and means to get involved in IPCC's scientific assessment for developing country and countries with economy in transition for Bureau members experts and authors (CLA,LA,RE) could be useful to facilitate their activity.

D. Other matters

Independent on the location of the TSU, it would be desirable to enhance geographical balance and increase the involvement of developing countries and countries with their economics in transition in future IPCC projects.

B. OBSERVER ORGANIZATIONS COMMENTS

Climate Action Network

Submission on the Future of the IPCC

July 31, 2014

Climate Action Network (CAN) is the world's largest network of civil society organizations working together to promote government action to address the climate crisis, with more than 900 members in over 100 countries.
www.climatenetwork.org

Scientific intelligence is key to understanding the facts and challenges of human induced climate change. For CAN, the Intergovernmental Panel on Climate Change (IPCC) is the most authoritative scientific body on these issues, because there is no other body whose methodologies guarantee a scientific quality of any comparable level as the IPCC.

Science is a strong driver for progress in the UNFCCC negotiations.
The First Assessment Report of the IPCC (FAR) previously led to the UN Framework Convention on Climate Change (UN FCCC), the Second Assessment Report (SAR) to the Kyoto Protocol, and the Fourth Assessment Report (AR4) helped to mobilize the public and 120 heads of state on a global scale for COP 15 in Copenhagen, which was expected to produce an important climate treaty. Furthermore, the Fifth Assessment Report (AR5) should now prepare for an effective outcome of COP 21, in Paris.

Based on these experiences, CAN considers the work of the IPCC essential for the UNFCCC and strongly supports the establishment of a Sixth Assessment Report (AR6). Some adjustments stimulated by the lessons learnt during AR5 could further improve the products of the IPCC.

Suggestions and Adjustments for the next IPCC Cycle

A. Future products of the IPCC

CAN agrees with the division of work of the IPCC in three working groups on science, on vulnerability, impacts and adaptation and on mitigation. As every cycle by now, the 6th cycle of the IPCC should be completed with an Assessment Report (AR). From AR5 we have learnt that the volume of AR6 could be smaller compared to AR5 so that the work over-load of the authors could be reduced.

Nevertheless, on several items AR6 will be more detailed than AR5. CAN sees this because of research for the 1.5 degree-target. We refer to the Copenhagen Accord, which demanded an evaluation of the 1.5 C target, and the Cancun agreement, where more than 100 countries called for a 1.5 C target. The IPCC should call on science to develop more scenarios where warming won't exceed 1.5 degrees compared to preindustrial levels. The Assessment Report of AR6 should have a chapter on coastal ecosystems and human settlements, which are threatened by sea level rise above 1.5 C.

The tradition of Special Reports should be maintained. CAN has identified several themes as potential subjects for a Special Report for the 6th cycle:

i. Non-linearities in the climate system, which may lead to major or even catastrophic impacts, including a detailed analysis concerning the ”tipping point” of the ice-sheets.

ii. If possible, the IPCC should give a clear answer at which local/regional temperature rise the tipping point for irreversible melting of ice sheets will take place.

iii. Ranges for expected sea level rise in the light of a better understanding of Antarctica, Arctic sea ice, Greenland ice sheet and high-mountain glaciers.

iv. Numerous countries rely on exporting fossil fuels as a central pillar of their economy. This is why many of them do not favor phasing out of fossil fuels nor are they active on policies for ambitious emission reductions. To increase understanding of alternative models of economic growth that are decoupled from greenhouse gas emissions, the IPCC should call for more research on development alternatives for these countries and then summarise the achieved results in AR6.

In generalising, the notion of a ‘just and fair transition’ for all countries gains ground in the discussion. IPCC could develop a Special Report on components and elements of such a needed transition which are of course tailor-made in all countries depending on their economic, political, etc, circumstances but still there are some general principles to work on and agree with domestic and international stakeholders. This is true for high- and low-greenhouse gas emitters, importers, exporters of fossil fuels and those depending on their own sources, etc.

v. On ‘Energy Efficiency & Conservation, low carbon materials and resource efficiency’.

IEA came out recently in their June 2014 ‘Investment Report’ that Energy Efficiency Investments are at only $US 130 billion annually (2012 & 2013) but to achieve their 450 ppm scenario this has to go to almost $US 1.1 trillion by 2035 in all sectors in addition to clean energy investments such as renewables. The IPCC/AR5 in WG III (2014) also showed that investments in Energy Efficiency have to go to up to $US 600 billion by 2029. Also, low carbon and efficient processes as well as new materials mainly for infrastructure are needed such as at least partly to replace high process emissions from metallurgical coal-based blast furnace steel, clinker for cement and certain chemicals (polyethylene). Recycling and re-use are fundamental parts of that approach. Unless we reduce overall energy consumption while growing energy services and useful energy demand, world runs in problems with the need for extractive minerals in highly sophisticated [renewable] energy and ITC devices.

B. Appropriate structure and modus operandi for the production of IPCC products

i. Approval of reports is essential because all states agree formally with the findings of the IPCC. For Approval Sessions CAN would welcome a development that increases the transparency on the draft texts and on the text already adopted without damaging the approval process.

The IPCC secretariat might consider if it is possible to make a file available - in the papersmart, barcoded if necessary - at the end of each negotiating day with the agreed text or to follow the agreed text on personal screens.

ii. The IPCC should call on the science and governments for more research of political and social sciences on the implementation of climate policies, which reduce emissions. This research should not only analyse obstacles, which avoid efficient and effective climate regulation, but research should focus on how to overcome these obstacles.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

CAN suggests the establishment of a fund for scientists from developing countries so that they are able to have enough time to work as an IPCC author. To encourage more scientists from developing countries CAN would welcome if IPCC could increase communication and outreach to IPCC focal points in developing countries in the nomination process.

D. Other matters

i. Such as in the past, the scheduling of the release of the coming IPCC report should be synchronised with the UNFCCC negotiations. AR6 should be adopted well before climate summits where big outcomes are expected. The work and timing of AR6, to come out several years after COP 21, in Paris, in December 2015, will depend on the results of COP 21. Only from then on IPCC can begin to schedule the preparation and release of the different parts of AR6.

ii. After the restructuring of the IPCC (reforms of the processes and procedures) where the proposals of the IAC (InterAcademy Council) were taken into account, CAN does not see a need for any additional major change on the formal level.

However, CAN calls on the IPCC to step back from its positivist role. Also, if global emissions develop in a way that is not compatible with the objectives of the UNFCCC anymore, scientists have the responsibility to communicate this.

CAN expects from the IPCC to list a portfolio of actions might become necessary or at least to provide substantive information on the actions that are available so that Art.2 of the Convention can be achieved.

iii. As we have learnt from AR5, even if we successfully implement the Cancún pledges, we are still not on track for keeping warming below 2 degrees. Without further ambitious emission reductions we head for a world with 3 degrees warming or more. Therefore, in the next cycle, WG 2 of the IPCC should communicate more intelligence on the impacts of climate change in a 3-degree-world.

iv. As work on the 6th cycle will begin only after COP 21 in Paris, the IPCC may analyse which ambitious warming goals are achievable under different conditions taking into account the results of COP 21.

v. Numerous countries rely on exporting fossil fuels as a central pillar of their economy. This is why many of them do not favor phasing out of fossil fuels nor are they active on policies for ambitious emission reductions. To increase understanding of alternative models of economic growth that are decoupled

from greenhouse gas emissions, the IPCC should call for more research on development alternatives for these countries and then summarise the achieved results in AR6.

vi. Nearly 200 countries are Parties to the UNFCCC. However, good governance is not practised in every country, and even so called 'failed states' exist where governance has faded away. In these countries, climate policies cannot be implemented, and there is no powerful regulator who rules greenhouse gas emissions or who restricts deforestation or mining of fossil fuels. More prominent than in AR5 AR6 should include a short description and analysis of this situation on governance and what this means for combatting climate change.

دولة فلسطين
سلطة جودة البيئة
State Of Palestine

Environment Quality Authority

No :----------

Date:2nd June 2014---
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Country: State of Palestine

Stat of Palestine responses are as following about questions that have been structured around the mandate of the Task Group agreed by the Panel.

A. What should be the future products of the IPCC?

- *What would be the optimal overall length of an assessment period?*

A: Assessment period length shall be full cycle timing i.e. 5 years period, as Assessment Reports are reliable, comprehensive and independently reviewed (three-tier) products. In addition, this give a reasonable time for new emerging scientific research findings.

- *Whether emphasis should remain on comprehensive Assessment Reports (AR,) supplemented with occasional Special Reports (SR) agreed according to the "Decision Framework for Special Reports, Methodology Reports and Technical Papers" (as agreed by the IPCC 20th Session and amended at the 29th Session)*

A: Emphasis shall remain on comprehensive Assessment Reports supplemented with occasional Special Reports since Assessment Reports and occasional Special Reports are reliable, comprehensive and independently reviewed products.
Assessment Reports shall be comprehensive in nature and receive three-tiers of review process. Moreover, there is a need to involve more experts, reviewers and authors from different regions and from developing countries in particular. Regional issues should also be highlighted within these reports on issues such as Desertification and food security, water issues and sea level rise etc.
Thematic Reports (Special Reports) must be limited to very specific topics if relevant and must have short cycles. These reports should be informative in nature to very specific topics through technical short-cycles reports if relevant. They should also focus on specific issues such as desertification, water issues, coastal zones, sea level rise etc. Short updates of these reports could be of good value.

- *Whether a mix of assessment reports and/or focused thematic assessments/SRs may be planned at the beginning of an assessment period?*

A: IPCC should refrain from producing thematic assessments in parallel with Assessment Reports as it may overlap engagement by scientists and results/outcome may vary.

- *Which would be optimal timing of preparation of reports within an assessment period?*

A: Optimal timing of preparation of reports shall be full cycle i.e. 5 years as this will ensure three-tier independent reviews in order to be verified for being reliable and comprehensive.

- *What would be the role, scope and timing of Synthesis Reports?*

A: Role of synthesis report shall be to convey messages from Assessment Reports outcomes to the policy makers in making policy decisions. Scope of Synthesis Reports shall be covering all issues from the Assessment Reports. Timing of synthesis report shall be well planned as it shapes along the way to produce final Assessment Reports.

- *Whether additional fast track products are needed to respond to emerging science or policymakers needs or can these be accommodated though focused SRs prepared according to current procedures?*

A: IPCC shall not produce frequent fast track products as it may jeopardize IPCC's unique position in preparing comprehensive Assessment Reports that conform to three-tier review process. Special Reports could be produced along with Assessment Reports as these could assist understanding and decision making on emerging issues. Even though a large time gap exists between every assessment, the special reports, thematic reports or fast track reports should be informative in nature. Indeed the IPCC's unique position remains in providing scientific evidence influences long-term policies.

- *Whether the IPCC should continue to prepare Methodology Reports (MR) on national greenhouse gas inventories?*

A: IPCC may involve preparing Methodology Reports on national GHG inventories as these are useful for countries where no such data are available.

- *Whether the IPCC should prepare MRs on other topics?*

A: With IPCC's capacity on methodology, IPCC may prepare Methodology Reports on relevant topics such as mitigation and adaption measures.

B.What would be the appropriate structure and modus operandi for the production of these IPCC products?

- *Current IPCC Working Group (WG) structure and mandates* (with three WGs I, II, and III) is adequate.

However, balance shall be between developing and developed countries and regional groups.

- *Means to enhance cooperation, consistency and integration among WGs.* Enhance cooperation could include: joint meeting, joint workshops, webinars, cross WGs collaboration at various levels of engagement i.e. between Authors, Co-Authors to Co-Chairs level on various topics. Enhancing cooperation shall focus on consistency i.e. using a common database and datasets during assessment.

- *Effective ways to cover cross-cutting matters:* Cross-cutting issues often less focused in Assessment Reports as less detail of cross-cutting issues are covered in the Assessment Reports. However, some crosscutting issues require special attention for example, climate financing, response measures,

emerging issues – loss & damage, extreme vulnerable regions, biodiversity, desertification, water issues, coastal zone and sea level rise. These issues may be covered by producing Special Reports focusing on cross-cutting issue and nexus between different thematic areas and by engaging cross WGs scientists.

- *Adjustments to the IPCC Bureau structure and terms of reference, including definition of more specific tasks for Bureau positions.*

Number of bureau members:

Number of Bureau Members from Asia region shall be increased by at least 2 in IPCC Bureau. This is due to that Asia not only has a large number of countries and various sub-regions but it also bears complex situation that involved various interest and different national circumstances.

The Asian regions contains the most populated countries and hold unique characteristics such as containing both developed and developing countries, containing different regions and sub-regions and each with their own unique characteristics and interests. For example, Asia region include developed countries like Japan and South Korea and developing countries like China, India and some developing Arab Countries etc.

Vice Chairs of WGs should be given more responsibility especially to outreach within their respective regions.

- *Adjustments to the IPCC Executive Committee composition, terms of reference and modus operandi.*

Based on adjustments in composition of Bureau, Executive Committee shall be adjusted – its composition, terms of reference and modus operandi. Executive Committee shall be balanced in terms of regional groupings and developing and developed countries. Current mandate of Executive Committee is adequate and fulfilling the tasks that's why it was established.

- *Ways to address the challenge of dramatic increase in literature.*

IPCC can maintain a central database with all literatures as they become available. This will also ensure developing country scientists to use the common database source as central resource center. In this way, IPCC can take a leading role as information source. Representation of literatures in IPCC review assessment shall be balanced sourcing from both developed and developing countries. *Knowledge Management could be an appropriate approach to manage this huge amount of information.*

- *Further clarification of the respective roles and interrelations of the IPCC Secretariat and the Technical Support Units (TSU):*

TSU is always hosted by a country and not by an Intergovernmental entity such as IPCC. In order to avoid the risk of having the host country's influence, the TSU should be held by IPCC. This would guarantee equal authority, responsibility and engagement by Co-Chairs, which shall be treated equally by TSU. TSU (Technical Support Unit) appears to be dominated by host country as it bears high risks to express views by host country. In order to avoid such impartiality risks, TSU shall not be with Co-Chair's host country.

TSU shall be comprised by both Developing and Developed Country Institutes. TSU shall be managed by Secretariat and under the IPCC Chair. Direct management shall be with two Co-Chairs. Financing shall be sourced from several countries and shall be managed and coordinated by the Secretariat. Developing country institution as part of TSU shall be sponsored by Developed countries. Developing country institution (as part of TSU) shall get finance and contribution directly. This will assist capacity building in developing countries.

- *Adjustments to the structure and support of TSUs:*

Change should include a balanced representation between developed and developing country Parties as well as an unbiased platform to perform in. TSU (Technical Support Unit) appears to be dominated by host country as it bears high risks to express views by host country. In order to avoid such impartiality risks,

TSU shall not be with Co-Chair's host country. TSU shall be comprised by both Developing and Developed Country Institutes. TSU shall be managed by Secretariat and under the IPCC Chair. Direct management shall be with two Co-Chairs. Financing shall be sourced from several countries and shall be managed and

coordinated by the Secretariat. Developing country institution as part of TSU shall be sponsored by Developed countries.
Developing country institution (as part of TSU) shall get finance and contribution directly. This will assist capacity building in developing countries.
Other governance and administrative matters include strengthening the role of WG Vice-Chairs via consulting and involving them thoroughly in the selection of authors, reviewers etc.

C.Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC.

- *Strengthened support for developing country Co-chairs (e.g. through Panel guidance*

on the establishment and governance of TSUs, co-hosting and hosting of TSUs in developing countries).

TSU (Technical Support Unit) appears to be dominated by host country as it bears high risks to express views by host country. In order to avoid such impartiality risks, TSU shall not be with Co-Chair's host country.
TSU shall be comprised by both Developing and Developed Country Institutes. TSU shall be managed by Secretariat and under the IPCC Chair. Direct management shall be with two Co-Chairs. Financing shall be sourced from several countries and shall be managed and coordinated by the Secretariat. Developing country institution as part of TSU shall be sponsored by Developed countries. Developing country institution (as part of TSU) shall get finance and contribution directly. This will assist capacity building in developing countries. This step can be achieved by providing them with proper background and legal advice on the IPCC process. They should be included in governing manual and all aspects of the WGs as well as any other meetings, bodies and units.

- *Support for developing country Bureau members and authors (CLA,LA,RE).*

Enhance financial support through IPCC Secretariat to developing country Bureau Members and authors (CLA, LA, RE). Provide supports (accessibility to literatures via accessing several databases). If TSU is being located in universities, a formal arrangement could be initiated with universities to receive complementary access of several databases. IPCC can maintain a central database with all literatures as they become available. This will also ensure developing country scientists to use the common database source as central resource center. In this way, IPCC can take a leading role as information source. The support should be in administrative, financial and technical form.

- *Ways and means to utilize and enhance involvement of Bureau Members and Co-Chairs from developing countries in their respective regions.*

Training for the expert and staffs working for Bureau Members and financial support to Bureau Members and Co-Chairs from developing countries to enhance collaboration for example with regional scientific agencies, MoU with developed and developing country institutions and joint workshops. As a first step, they should be able to access all materials containing information specific to their regions. Hence, they should be provided by packages underlining the main literatures and sources as well as providing them with access to the authors and respective agencies.

- *Access to literature and facilitation of assessment of literature in languages other than English.*

Literature other than in English shall also be included in the database as being maintained by IPCC. Indigenous information and literature other than English shall be given higher priorities when citing specific examples. Selected authors could be asked to serve as contributing author in order to reflect outcome from such literatures.

IPCC can maintain a central database with all literatures as they become available and shall be accessible by developing country authors. A central database can be maintained by IPCC in order to use unified database for assessment. This will ensure harmonized information in all WGs assessment reports. Government reports, studies/reports from universities and papers/reports on climate change from specialized institutes in developing countries shall be dealt likewise from developed countries.
IPCC should consider providing all literatures in the main languages of the UN (English, French, Spanish, Arabic, Chinese and the Russian).

- *Other ways and means to facilitate engagement of developing country scientists and experts.*

Bureau Members and Co-Chairs from developing countries to enhance collaboration for example with regional scientific agencies and interest groups via dialogue and expert meetings and facilitate engagement of developing country scientists and experts.
Call for contributing authors and experts to provide review comments shall be facilitated by Bureau Members and Co-Chairs from developing countries.

- *Other ways and means to enhance coverage of knowledge from developing countries, including both published and government reports, and in languages other than English.*

Bureau Members and Co-Chairs from developing countries shall play important coordination and information dissemination role in order to encourage developing country experts to engage expert review of IPCC reports. IPCC shall acknowledge government reports and literature published in other than English language from developing countries. UN-based language service could assist in translating such documents. Authors of such literature could be approached to provide expert opinion or specific inputs on relevant topics.

- *Ways to support and expand access to knowledge to fill existing gaps in data.*

A centralized database shall be maintained by IPCC. IPCC shall coordinate with national governments and international agencies to contribute creating centralized inventory systems. Gaps in data shall be identified as part of IPCC's database management and shall coordinate with respective agencies to build database.

- *Ways to enhance research in developing countries without jeopardizing IPCC objectivity.*

IPCC could initiate leading cooperation role with several regional institutes in developing countries, funding agencies and developed country partners with identified developing countries scientists/experts and respective institutions. IPCC with support from member countries can initiate exchange research program/visits by developing country scientists/experts in TSU or relevant institutions and IPCC Secretariat. Bureau Members and Vice Chairs of WGs from developing countries shall play important coordination and information dissemination role in order to identify such possibility with developing countries.

Ways to contribute to capacity building and knowledge sharing in developing countries, including expansion of the IPCC Scholarship Program.

IPCC could initiate leading cooperation role with several regional institutes in developing countries, funding agencies and developed country partners with identified developing countries scientists/experts and respective institutions. IPCC with support from member countries can initiate exchange research program/visits by developing country scientists/experts in TSU/IPCC Secretariat or relevant institutions. Short visit/guest scientist scheme for developing country scientists by IPCC in coordination with relevant organization/funding agency or governments.

D. Other matters

- *Cooperation with UN bodies and other relevant international organizations.*

Cooperation with all UN agencies and other international agencies shall be enhanced. This cooperation could cover accessing database and information and using local premises if such facilities are available particularly in developing countries.

- *Matters related to communication.*

IPCC communicates notices and other information particularly via Internet and email systems. Knowing a vast population is still lack of electricity as well as lack of such communication mediums, more target-based communication systems shall be established particularly in developing countries. Examples could be workshops, information dissemination sessions and via printed materials

- *Process to discuss future IPCC work, including input from wider user groups and feedback on value and use of IPCC reports.*

IPCC works/outcomes primarily are used by policy makers. In order to broaden wider use of IPCC work and receiving feedback, IPCC shall be reached to all relevant stakeholders including disseminating IPCC reports as supporting reference. Bureau Members and Co-Chairs from developing countries shall play a pivotal role.

- *Final Additional comment.*

Observer countries in IPCC (like the case of State of Palestine), should be given proper access to effectively participate and being involved in different IPCC processes including meetings, workshops, etc. Sponsoring their participation in the whole cycle of Assessment Reports should be enhanced and supported.

NAME OF THE ORGANIZATION: **International START Secretariat of START International, Inc.**

A. What should be the future products of the IPCC?

The IPCC Special Reports are very timely and useful in highlighting specific challenges and opportunities related to climate system variability and changes on which place-based actions are possible. IPCC should focus on such high-value products to draw attention of scientific, practitioner and policy communities. Production of special reports on pressing and anticipated challenges/issues would still entrain leading scientists and others, but not be as time-labor intensive as the full scale assessment volumes are.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The IPCC SRES report is an excellent example of appropriate structure. Production of a few, 2 to 3, such related reports per year seem sufficient to sustain a production pipeline that addresses current and emerging issues, challenges and opportunities.

A series of special report on urban 21st century is timely and should be done soon. Likewise, and in association, special reports on low carbon growth potential and related incentives-tradeoffs might foster better opportunities for concerted actions by IPCC member nations. Likewise special reports that deal with urban-rural linkages seem most timely.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

This is a continuing problem. The current system of picking participants and contributors has a built in inherent weakness. While nominations are solicited from member countries, international and other observer organizations, such nominations are not considered seriously by member countries (focal points do not seem to be open to accepting nominations that are not just internally generated or blessed through an internal political process). This leads to at best weak participation and contributions of developing countries. The inputs, especially from Africa, are often so poor that someone from outside has to step in and spend inordinate amounts of time/energy to sift and winnow out garbage contributions and distill relevant contributions.

The IPCC needs to think out-of-box approach to ensuring that lead and contributing authors can make significant and substantive contributions. Perhaps if the focus in future were more on production of Special Reports, then this problem might be tractable.

NAME OF THE ORGANIZATION**: International Petroleum Industry Environmental Conservation Association (IPIECA)**

We are the global oil and gas industry association for environmental and social issues. There are 38 IPIECA member companies, and additional associations, including all the major publicly owned oil companies and a number of national oil companies. IPIECA was created in 1974, in response to the creation of the UN Environment Programme, to work with that body and similar intergovernmental organizations. IPIECA, and experts from its member companies, has engaged with the IPCC since its beginning in 1988. We find the work of the IPCC – to provide an objective assessment of climate change – to be most valuable.

A. What should be the future products of the IPCC?

As future products of the IPCC, IPIECA affirm the continuing need for major scientific assessments. Specifically, there is value in continuing the work of the task force on (national greenhouse gas) inventories, as there is significant importance placed on accurate, efficient and consistent methodologies for inventories. However, a balance must be struck, as incremental efforts in the accurate measurement of CO_2 inventories may relatively quickly bring diminished returns. Increased attention is therefore suggested on strengthening the assessment of what emissions inventories mean in terms of impacts

Furthermore, special reports, such as SRCCS and SREX, are also of value and should be considered within the IPCC's future products discussion.

IPIECA underscores the importance of sharing information on IPCC findings and specifically the AR5, ensuring full outreach to stakeholders. IPIECA held an outreach meeting following the AR4 report, back in 2008, and we have an AR5 outreach meeting organized for 25th September 2014. More information is available at the IPIECA webpage: http://www.ipieca.org/event/20140602/ipcc-fifth-assessment-report-business-engagement-workshop. There are opportunities to gather feedback and input on future products of the IPCC at these events.

In relation, IPIECA support the importance of continuing to improve the IPCC process to ensure it continues to produce effective materials.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

IPIECA support the continued need for periodic thorough assessment reports. However, an annual update on the core science and impacts could be a helpful addition. These more nimble updates would provide supplementary and timely information, and allow the larger assessment reports to have a little more time between releases and less contingent pressure.

Whilst IPIECA acknowledges the improvements in the IPCC assessment process, we also recognise the importance of continuing to improve it. The review process must be comprehensive, clear and transparent.

A full range of valid perspectives should be incorporated into the development of the IPCC assessment report. For example, IPIECA has been encouraging and enabling engagement from experts in business, which is especially critical as few experts from business are key authors within the assessments. These perspectives are crucial to provide relevant, usable information for the business community. Expert meetings with business have been supported by IPIECA for the AR4, SRREN, and AR5 reports, and we welcome further interaction at the workshop on the AR5 results scheduled for 25th September 2014 (http://www.ipieca.org/event/20140602/ipcc-fifth-assessment-report-business-engagement-workshop).

A further consideration for the appropriate structure and modus operandi for the production of the IPCC products, focuses on the important role of involving experts from the energy sector. These experts are critical in a number of areas, including: in addressing technologies for mitigation; assessing practices for adaptation; methodologies for emissions estimation. As an example, IPIECA have run a workshop highlighting how adaptation is being managed, which focused on possible impacts of climate change to the oil and gas industry and identified the types of responses being considered. More information is available at the IPIECA webpages:
http://www.ipieca.org/event/20120621/addressing-adaptation-oil-and-gas-industry
and
http://www.ipieca.org/publication/addressing-adaptation-oil-and-gas-industry

IPIECA has also actively produced a number of publications on emissions methodologies, both guidance and topic summary, including:

- *Petroleum industry guidelines for reporting greenhouse gas emissions – 2nd Edition (2012)*
-
- Greenhouse gas emissions reporting: Perspectives on voluntary and regulatory reporting mechanisms, and emerging changes in practice (2011)
- Addressing uncertainty in oil and natural gas industry greenhouse gas inventories (2009/14)
- Oil and natural gas industry guidelines for greenhouse gas reduction projects *series (2007-09)*

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

IPIECA agree with the importance placed on broad participation, both from developed and developing countries, as well as their contribution to the future work of the IPCC. IPIECA are the global oil and gas association for environment and social issues, and therefore have member experts at a global scale. These members have the expertise to provide a range of global perspectives to enhance the future work of the IPCC.

Further, improvement in the quality and coverage of field observations, such as temperature, land use changes, species migration etc., in developing countries is supported. For example, there are areas in Africa and other parts of the world where data maps are blank, as the relevant dataset retains no observations. Thus, an increase in the participation from developing countries in impacts would be beneficial.

D. Other matters

We welcome further engagement with the IPCC on any of the issues raised in our response.

Robert Siveter
Senior Manager, Climate Change IPIECA

NAME OF THE ORGANIZATION: **Organisation for Economic Co-operation and Development (OECD)**

A. What should be the future products of the IPCC?
The OECD places great value on the information contained in IPCC reports. The OECD supports continued future development of IPCC in-depth reports, as well as summaries for policy makers. In order to maximize the usefulness of future IPCC reports, the OECD would suggest that the scope of future assessment reports is focused on issues on which there is currently limited certainty, i.e. where the likelihood is defined as "likely" (66-100% probability) or less. This could include an examination of more region-specific information such as the regional distribution of risks and impacts.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

Understanding of climate science and climate impacts has evolved considerably since the IPCC's First Assessment Report (AR). Focusing future reports on areas that are currently less certain could allow for the structure of future ARs to be streamlined, e.g. by merging assessments on the physical science basis and assessing the risks and impacts of climate change (i.e. working groups 1 and 2).

The OECD considers "special reports" useful, and supports their continued preparation. These are particularly useful as they can be prepared on a shorter timescale than the assessment reports. Possible topics for upcoming special reports could include the economic impact of inaction, impact of climate change on achieving sustainable development goal(s), or SRs on the expected climate and economic impacts on a specific region.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

Focusing future reports in the manner suggested above would allow for the resource-intensive research and writing process to be streamlined. This in turn would reduce the time commitment from individuals involved in co-authoring IPCC products, and could thus facilitate increased participation from countries with limited capacity – including developing countries.

D. Other matters

NAME OF THE ORGANIZATION:
United Nations Convention to Combat Desertification (UNCCD)

A. What should be the future products of the IPCC?

The IPCC assessment reports have gained global recognition and credibility for consolidating knowledge and being representative of the scientific consensus on climate change. They provide a high-quality, unbiased and policy relevant information. The UNCCD believes that these global reports should be kept as one of the main products delivered by the IPCC.
In addition, the UNCCD recommends that the IPCC conduct a special assessment focused on the land-use sector. This would provide the scientific evidence for synergistically addressing: climate change adaptation and mitigation, food security, combating land degradation and desertification, while maintaining ecosystems services, including biodiversity. The preparation of this special report would benefit not only the UNFCCC but also other multilateral environmental agreements such as the CBD and the UNCCD.
The UNCCD also suggests that the IPCC carry out regional assessments and prepare reports on specific topics that can be used by institutions and organizations dealing with regional-focused activities.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

To move forward with the development of a global assessment report, the UNCCD supports the current structure, which comprises three working groups.
It is recommended that new products adopt a production cycle that is shorter than the global assessment report cycle. These could be developed as fast-track reports, to meet ad-hoc requests by policy-makers or emerging priority issues. However, the preparation of special and regional reports must maintain the same quality standards, level of autonomy and non-biased approach that is currently followed by the IPCC for the preparation of the global assessment report.
The IPCC should explore the option of increasing collaboration with other scientific advisory mechanisms (e.g. IPBES, the SPI of the UNCCD, ITPS) to produce special reports on emerging issues in partnership with these mechanisms.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

The UNCCD is of the view that the IPCCC should identify scientific institutions and organizations in developing countries. These could act as regional nodes for fostering and facilitating the participation and contribution of the scientific community from developing countries. Some of these regional nodes could also serve as Technical Support Units in the preparation of specific reports on topics of regional interest.

E. Other matters
F.

Despite the growing prominence given to adaptation in the latest IPCC report (particularly the WGII report) compared to the past ones, the UNCCD recommends that further attention be given to this issue in the future IPCC work. On top of reducing the immediate risks from climate change, adaptation can provide long-term benefits and help build a more efficient, sustainable and resilient society. Adaptation is especially critical for the most vulnerable populations as well as communities whose livelihoods are strongly dependent on natural resources. Rather than focusing on the limits of adaptation, future IPCC reports should further emphasize its added value and contribution to mitigation efforts. Mitigation and adaptation activities need to be examined within the same system. For instance, one could look at reducing agriculture's emissions as strictly a mitigation measure. However, some agricultural adaptation measures—such as planting trees on farms to help retain or restore water retention in soil as temperatures increase –can also help capture greenhouse gas emissions. Constraints on implementation of adaptation are coming from uncertainty in the impacts, limited resources to develop effective policies, lack of guidance on principles and priorities, limited coordination of governance, different perceptions of risks, competing values, absence of adaptation leaders and advocates and limited tools to monitor adaptation effectiveness. Addressing adaptation

throughout the world will ultimately require a diverse set of local-level, context-specific solutions and the blending of traditional and modern knowledge and technologies. We recommend that these issues be given due attention in future IPCC reports including through the newly proposed regional products.

NAME OF THE ORGANIZATION: **United Nations Environment Programme (UNEP)**

A. What should be the future products of the IPCC?

-*The IPCC Assessment Report*, which is released every 6-7 years, represents an excellent reference point for UNFCCC negotiators and other main stakeholders and should be produced in the future.

-*Updates (Compendia) of Recent Climate Change Science* to be released every 1-1.5 years between the main *IPCC Assessment Reports* with the main focus on emerging science.

-*Special Reports* and *Methodology Reports* as requested by UNFCCC parties.

- There should also be an effort to ensure that the citations referred to in the IPCC reports are made available as open access articles. This could be undertaken in partnership with UNEP and CERN, as part of their efforts in this area.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The current governance structure of the IPCC is only just adequate to the task of delivery of the products mentioned in section A. Given that mitigation and adaptation policies are now being developed in concert, there could be benefits in moving adaptation experts to Working Group III. The IPCC may also wish to arrange *ad hoc* task force(s), consisting of representatives of Working Groups and observer organizations, to look into issues/themes that cut across the whole of the assessment and therefore require enhanced coordination among the Working Groups. Examples include, but not limited to RCPs and their implications, renewables, human health, carbon/climate neutrality, data/knowledge gaps.

Regional dimensions: It should go without question that regional components of the IPCC Assessment Report must be further developed and strengthened to help identify current priorities and adaptation needs in specific countries and societies, especially in highly vulnerable regions. Here the growth of initiatives such as PROVIA (with UNEP and WMO support) could be used a source of input.

On the *timing*, it seems to be a common perception that the 6-7 years between the IPCC main assessment reports is inappropriate in terms of keeping abreast of rapid developments in science as well as economic and political decisions. A shorter cycle report would be greatly appreciated by governments and the major stakeholders.

Such as report could focus on emerging science, especially when there are new trends or developments, and solutions and reflect the issues/developments relevant to the three IPCC working groups. The feature focus of the report might as well be chosen based on the demands from UNFCCC parties/IPCC member states.

In fact., IPCC may not necessarily have to produce such reports, but rather the task could be delegated to other organizations that have proven experience of successful production of fast-track assessments. Reference may be made to UNEP and its Emissions Gap Reports, Short-lived Climate Pollutants assessments etc.

As to the *IPCC Special Reports*, the member states may wish to produce updates of the IPCC special reports on extreme events and renewables within the AR6 assessment cycle. Other topics, such as food/water security, Arctic amplification, Short-lived Climate Pollutants could also considered.

Remuneration: The task of IPCC Coordinating Lead Authors is demanding and time consuming. However they have never been given any financial compensation. The IPCC might wish to reconsider

this situation and allow for a modest fee to be paid to CLAs. Likewise the IPCC should provide travel support to all Review Editors of the assessment drafts notwithstanding their affiliation.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

UNEP has abundant experience in capacity building of developing country scientists and experts to undertake integrated environmental assessment. It is currently developing a series of MOOCs (Massive Open On-line Courses) with leading universities, including the UNU to support assessment practitioners and those working in the area of climate impacts, adaptation and vulnerability. A series of modules, featuring IPCC authors could be included. to train developing country scientists and experts to effectively contribute to the IPCC assessment work. The IPCC might wish to further elaborate on that with the UNEP Chief Scientist.

D. Other matters

UNEP is currently working with various international initiatives, institutions and ministries in member countries to develop on-line systems and link these to UNEP Live to provide open access to up-to-date environmental information, including scientific articles and relevant national reports published in all the UN languages, national mitigation and adaptation plans, MEA reports and their underpinning data. There is also an implementation plan for publishing and updating via live links, many of the global data sets used by IPCC scientists and to open up on-line moderated communities of practice in these areas. This facility could support the work of IPCC.

NAME OF THE ORGANIZATION: **University of Nijmegen (Radboud University Nijmegen; Netherlands), 29 July 2014**

A. What should be the future products of the IPCC?

(a) Digitalize the available scientific information and develop web-based assessments with **up-to-date** information on the state of the global and regional climate, its trends, its determinants and its ecological, social and economic impacts; digitalization should also shorten the assessment process.

(b) Continue to publish (more) regular, focused and accessible Summaries for Policy Makers and for specific user groups, as well as Special Reports and related (tailor-made) communication/media products.

(c) Develop – in cooperation with other UN agencies - a repository of successful (and not-successful) policy experiences and options, technologies, financing mechanisms, and educational/awareness raising actions/campaigns.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

(a) Expert group (working group) for assessing state of the global and regional climate and its major trends, and main determinants; incl. scenario studies.

(b) Expert group (working group) on ecological impacts of climatic changes and on social (incl. gender) and economic impacts of climatic changes.

(c) Expert group (working group) investigating current policy experiences and options, technological developments, financing mechanisms, and educational/awareness raising actions/campaigns.

(d) Communications advisory group, including regular (user) needs assessments; searching for balance between complexity (of climate issues) and accessibility (of information).

- Each of these groups consists of subject experts, climate policy experts, governmental representatives.
- Regular consultations take place with civil society and private sector (a.o. stakeholders)
- Equal regional and gender representation in the expert groups.
- The work of the IPCC is supported by its Secretariat, that is adequately resourced, and is guided and represented by an Executive Director a Board (see IAC recommendations).

C. Ways to ensure enhancement of the participation and contribution of developing countries (DCs) in the future work of the IPCC

- Develop and support strong capacity building programme(s) on climate science, related policies and communication in developing countries and regions; as well as the development/strengthening of national/regional centres of climate expertise.
- Peer work (S-S, N-S), including between advanced students in climate and related sciences and between policymakers.
- Strengthen and support meteorological and climate services particularly in vulnerable regions, within the framework of the Global Framework of Climate Services (GFSC), and ensure public accessibility of such services.
- Media training on the published and available IPCC products, in order to enhance informing a broader public in DCs.

D. Other matters

- Include both manmade and natural climate change phenomena in IPCC's work (incl. their interactions).
- Focus on special areas of societal and policy relevance, new insights and controversial issues.
-Recognize the IPCC as a boundary organization, bridging the boundaries between science and policy, and stimulating science-policy debate; it has also the potential to become a science-(broader) public boundary organization.
- Further develop and communicate IPCC's Principles (and related indicators), including guaranteeing scientific integrity, transparency throughout the whole assessment and publication process, flexibility, multidisciplinary approach and user-friendliness.
-Investigate the possibility for the development of bottom-up assessments on climatic changes and their impacts.
- Ensure clarity and widespread agreement on the role of the IPCC and its position in the UN system, as well as the role of civil society a.o. stakeholders.

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C. TECHNICAL SUPPORT UNITS (TSU) AND SECRETARIAT COMMENTS

NAME OF THE TECHNICAL SUPPORT UNIT: **Working Group I TSU**

Submission of the WGI Co-Chairs and Technical Support Unit

The Working Group I Co-Chairs and TSU thank the Co-Chairs of the Task Group on the Future of the IPCC for the invitation to provide input on the Future of the IPCC. We appreciate the opportunity to provide our thoughts on this important topic and in an effort to contribute most efficiently to these discussions, we submit a combined contribution from the WGI Co- Chairs and Technical Support Unit rather than individually.

Our input builds not only on our collective experience working with the IPCC, but also on the feedback provided by authors which was collected through a WGI Questionnaire for WGI AR5 Authors and Review Editors. A synopsis of the results of that questionnaire is included as Appendix A.

A. What should be the future products of the IPCC?

Comprehensive scientific assessment reports have been the cornerstone of the IPCC products and have contributed to the state of knowledge on climate change for over 20 years. They were invaluable for the policymaking process as they provided objective and robust scientific information on climate change, and thus a common basis for negotiations. The value lies in the regular sequence of comprehensive, end-to-end reports, each of which has provided a snapshot of the state of knowledge. Together they have illustrated the progress of the scientific understanding of climate change in the past 25 years.

However, the amount of literature to be assessed and data to be analyzed has grown exponentially since the first assessment was published in 1990 (e.g., in the WGI AR5 the authors assessed more than 9200 scientific papers and analysed over 2 Petabytes of numerical data). As the information available has increased, so has the scope of the report -- the WGI contribution has grown from 365 pages (FAR) to 1535 pages (AR5). The burden on the scientific community and the expectation of what can be asked of those who serve the IPCC in a voluntary capacity is reaching a critical threshold.

Special Reports, which are more focused and produced on shorter timescales, are able to address specific questions posed by policymakers, e.g., on extreme events and disasters or on renewable energies. Recent Special Reports have been produced across WGs which has been an effective approach to address certain cross-cutting themes. It is clear that a series of Special Reports cannot replace end-to-end comprehensive reports. Special Reports also do not enjoy the world-wide attention and do not generate the same level of impact with the stakeholders and the wider public as the comprehensive reports do. Therefore, a model could be considered in which a comprehensive report is produced over a more expanded timeline (e.g., 10–12 years) which would be preceded by a series of targeted and cross-WG Special Reports. This series of targeted and cross-WG Special Reports could include an overarching Synthesis Report and SPM. These additional summary products would be subject to the same government approval processes as is currently required for the WG Assessments Synthesis Report and its SPM.

The WGI Co-Chairs and TSU do not support proposals for fast-track assessments or continuous wiki-type updates. First, such products will not have the same high IPCC standards of scientific rigor, balance and quality. Second, they would not be different from many "assessment" products currently produced on an annual basis by professional organizations (e.g., meteorological societies), national academies, or UN organizations (e.g., UNEP). Third, and most central, the government approval process of the Summary for Policymakers, a key element of the success and usefulness of the IPCC for the UNFCCC and other users, would be entirely unclear in such a new mode of operation.

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B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The WGI Co-Chairs and TSU support the current three Working Group structure, but would also support the proposals for a condensed structure that would result in two Working Groups -- one WG focusing on the physical science aspects and impacts of climate change from global to regional, and a second WG focusing on the solution space, including adaptation and mitigation.

Regardless of the WG structure (or the products produced), it is clear from our collective experience and the input received from the WGI authors and the broader scientific community that certain changes are needed to the modus operandi to ensure the continued success of the IPCC.

We would highlight three areas that require consideration for the next assessment cycle:

1. **The workload and the need for additional support for CLAs and LAs.** The most challenging aspect of producing an assessment report is the sheer amount of work involved and the challenge of managing the time to meet the demands of the work on the assessment and the normal work and other responsibilities expected of our experts serving as LAs and CLAs. The scope of the assessment reports continues to expand. The amount of literature to be assessed and data to be analysed continues to grow. The chapter page lengths and the number of review comments are at an all time high. The focus on post-approval outreach and communication has resulted in an overall longer time commitment to the assessment cycle for authors. As the time commitment required to produce an assessment report has grown, the support has not. What has remained constant is the need for rigor, robustness and transparency. To ensure the quality of the IPCC reports and the effectiveness of the authors who write them, serious consideration must be given to providing additional support for the authors volunteering their time, and in particular, to CLAs. Dedicated assistance, through the provision of an assistant or post-doc for CLAs should be considered to become a standard approach in future assessments. Nominations of CLAs by governments should come with a commitment of continued assistance throughout the assessment cycle in the form of e.g., partial relief of workload, personal assistance within the employing institution, or through funding for assistance.

2. **The review process.** The review process is integral to the quality assurance of the IPCC products. However, the expert review component has grown from a peer-review by experts to a world-wide, internet-based review without a clear definition of 'expert'. The overall number of comments submitted is at an all time high (54,677 for the WGI report, TS and SPM) with a resulting increase in the workload required to respond to each comment. The number of non-substantive comments has been a major frustration for an already over-burdened author team. This aspect of the assessment process needs to be considered and effective changes could be implemented that would reduce workload but not compromise the rigor of the review process. We propose that the procedures could be amended to allow authors to not respond in detail to non-substantive or unsubstantiated comments. In addition, we would urge that the criteria to serve as an expert reviewer by clarified to ensure that the experts submitting a review have similar standards and scientific expertise as the team of authors.

3. **The role of the REs**. Throughout the WGI AR5 process, Authors and REs alike have struggled with the current role of the RE. Many have expressed concern or dissatisfaction with the role, questioning the general usefulness of the role as currently defined. Some REs have suggested that the role be expanded to allow for either more "control" over the content of the chapter or the ability to submit their own reviews of the chapter. However, many authors voiced concern beyond the usefulness with the role, with several commenting that the REs were more of a hindrance than a help and that some of the REs pushed their own views. The role of RE was constructed for a specific purpose and it is good to reflect on whether this role still serves that purpose.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

The participation and contribution of experts from developing countries is a key component of the IPCC. The WGI Co-Chairs and TSU would seek early and more involvement by experts from developing countries. We would propose that what is most needed in increasing participation from these experts, is an increased involvement by the Focal Points. The WGs need the Focal Points to assist in identifying experts from their countries and regions during nomination and review processes. We note that of the over 150 IPCC member DC/EIT countries, only 44 submitted nominations for the WGI AR5. Moreover, only 18 IPCC member DC/EIT countries submitted a review during the government reviews of the WGI AR5. The additional participation by Focal Points in all steps of the IPCC assessment process from scoping to nominations and from reviewing to outreach activities will significantly and immediately increase the participation and contribution of developing country experts.

The WGI Co-Chairs and TSU would also support the continued efforts to ensure accessibility to peer-review literature during the assessments. The WGI E-Journal Programme, which provides free access for DC/EIT CLAs, LAs and REs to Journals, has been successful for two assessment cycles and the continuation of such programmes offers benefits to not only the individuals but also to the assessment.

We would also note the need for a transition from capacity building to capacity implementation. After more than 25 years of capacity building in climate change science, a new generation of scientists from DC/EIT is now ready to contribute in responsible positions to the IPCCC assessment. This new generation needs to be actively involved and promoted for the participation in Expert Meetings, Workshops, Scoping Process. The new generation should also be informed on a regular basis about IPCC activities. This could be done jointly by the Focal Points and the IPCC Secretariat. Most importantly, the new generation of scientists should be available for the nomination process of the next assessment cycle.

WGI would also encourage that IPCC WG meetings continue to be hosted in all regions of the world and in particular those countries where there has not been recent IPCC meetings. Hosting meetings in developing countries provides additional opportunities for capacity building, e.g., through outreach events held in conjunction with the meeting.

However, for all these aspects to improve in the future, increased support by, and continued engagement of, the IPCC Focal Points from developing countries and countries with economies in transition is crucial for effective and sustainable capacity building.

D. Other matters

On 25 April 2014, the WGI Co-Chairs and Technical Support Unit invited all WGI Coordinating Lead Authors, Lead Authors and Review Editors to complete an online questionnaire about their experience of working on the WGI contribution to the IPCC Fifth Assessment Report, their views on the scope, size and frequency of IPCC assessment reports, the scale of the task, the assessment process itself and cross-WG interactions. The questionnaire contained a combination of multiple-choice, scaled and open-ended questions that allowed the authors to critically assess their experience in the activities of the last four years and to express their opinions about future assessments. It was anticipated that the results and feedback received would not only provide valuable learning for the next IPCC Co-Chairs and TSUs working with the WGI community, but also help inform the work of the IPCC Task Group on the Future of IPCC. A synopsis of the results that highlights the common themes and key conclusions arising from the comments that were specific to the future work of IPCC is provided as an appendix to the WGI Co-Chairs and TSU submission. The WGI Co-Chairs and TSU would kindly refer the Task Group to Appendix A of our submission. The synopsis of results addresses a number of other matters that we support.

IPCC Questionnaire on the Future of IPCC

Submission of the WGI Co-Chairs and Technical Support Unit **Appendix A**

WGI Questionnaire for WGI AR5 Authors and Review Editors

Synopsis of Results

Submission of the WGI Co-Chairs to the IPCC Task Group on the Future of IPCC

Introduction

On 25 April 2014, the IPCC WGI Co-Chairs and Technical Support Unit (TSU) invited all WGI Coordinating Lead Authors (CLAs), Lead Authors (LAs) and Review Editors (REs) to complete an online questionnaire about their experience of working on the WGI contribution to the IPCC Fifth Assessment Report (AR5), their views on the scope, size and frequency of IPCC assessment reports, the scale of the task, the assessment process itself and cross-WG interactions.

The questionnaire contained a combination of multiple-choice, scaled and open-ended questions that allowed the authors to critically assess their experience in the activities of the last four years and to express their opinions about future assessments. It was anticipated that the results and feedback received would not only provide valuable learning for the next IPCC Co-Chairs and TSUs working with the WGI community, but also help inform the work of the IPCC Task Group on the Future of IPCC. This document provides a synopsis of the results and highlights the common themes and key conclusions arising from the comments that are specific to the future work of IPCC.

The WGI AR5 team included 255 experts serving as CLAs (29), LAs (176) and REs (50). Of the 255, 47 are women and 60 reside in developing countries. A total of 172 questionnaires were submitted, which is 67% of the combined total for the chapter teams. The rate of return was higher for CLAs (83%), but very similar across the other two roles (LAs: 65%; REs: 66%) and between developed (68%) and developing country (67%) participants.

All responses were anonymous with the identifying information limited to chapter, role and country of residence. WGI Bureau members were requested to fill in the questionnaire considering their role as an RE, rather than their broader Bureau role. Where possible, feedback submitted as 'general comments' has been incorporated into the relevant sub-section summaries. All pie charts are given based on the total number of respondents (100%=172). All bar charts are given in absolute numbers.

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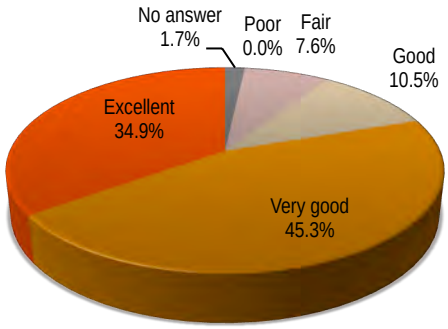
WMO UNEP

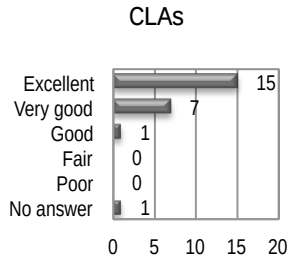
Section 1: Experience of Working on the WGI AR5

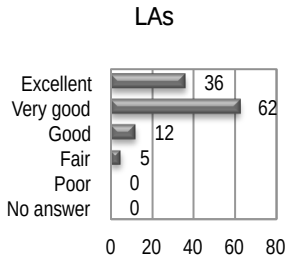
This section included questions about their experience working on the WGI AR5, the best and most challenging aspects of it, how it could have been improved, and if they would be willing to do it again.

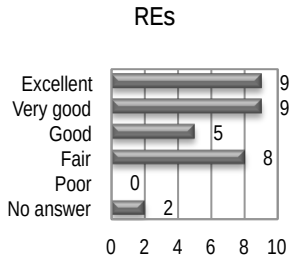
Please rate your overall experience working on the WGI AR5.

The overall experience working on the WGI AR5 was a positive one, with 138 of the 169 respondents describing it as excellent or very good and none rating it as poor. *(right)*[1] When the responses were considered by role, the results indicated that those who were less satisfied with their experience were more likely to be an RE, with 62% of the fair ratings coming from that group. However, there was a wide range of response within the role as well. *(below)*[2]









Authors and REs alike from all backgrounds and levels of expertise appreciated most the opportunity to work with colleagues from around the world, to engage in lively scientific discussion often of difficult topics, to learn from one another, including by being exposed to different areas of science from their own, and to be part of an activity with a worthwhile product of value to society.

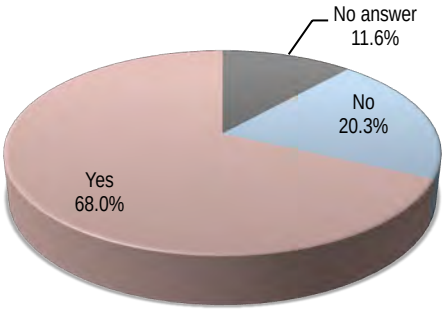
The most challenging aspect mentioned most often—even by those who rated the experience as excellent or very good—was the sheer amount of work involved and the challenge of managing the time to meet the demands of the work on the assessment and their normal work and other responsibilities. In addition, the review process, and specifically the very large number of review comments received, was also cited by many respondents as being the most challenging aspect of their experience. Many REs also voiced frustration with their limited role and/or the constraints of the process as the most unsatisfactory aspect of their experience.

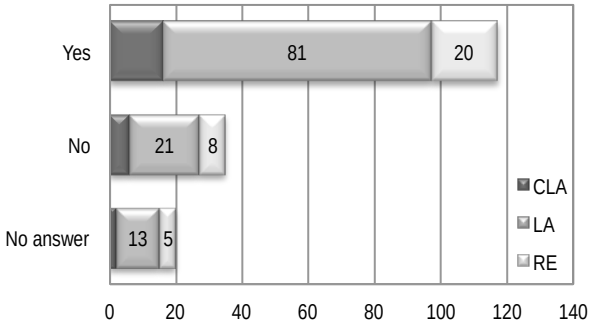
The most consistent comment for improving the experience was a call for more support for authors to help alleviate the increased workload. In addition, varying suggestions regarding changes to the review process were made (e.g., more focused review comments, better defining an 'expert reviewer', or the introduction of some sort of screening of comments). Several REs suggested re-defining or clarifying this role to allow for more direct involvement with the content (e.g., being able to review the chapter).

[1] All pie charts are given based on the total number of respondents (100%=172).
[2] All bar charts are given in absolute numbers.

Given what you know now, and assuming that the mode of operation and procedures defined by IPCC were the same, would you be willing to serve again as a WGI CLA, LA or RE?

Overall the response to this question was positive, with significantly more of the 152 respondents reporting that they would be willing to serve again (117) than not (35) *(left)*. When the responses were considered by role, LAs were slightly more willing than CLAs or REs to agree to serve again.*(right)*





Of those who said that they would not be willing to serve again, several noted that they had been involved in more than one assessment cycle already and felt that it was time to step back to allow fresh people in. However, a number of respondents cited the burden of work in addition to their day job, in particular where there is little support from their home institution or government. Some respondents called for changes in the procedures before continuing, whether it be by reconsidering the WG structure, reducing the size and limiting the scope of the WG reports, or reconsidering the deliverables and their timeline. Even among those who would do it again, some reservations were expressed due to the time commitment required and the lack of support by their governments or home institutions. Those who chose not to provide a definitive answer to the previous question stated they were either undecided or their return would be contingent on a change in procedures (e.g., the role of RE) or an assurance of support from their government or home institution.

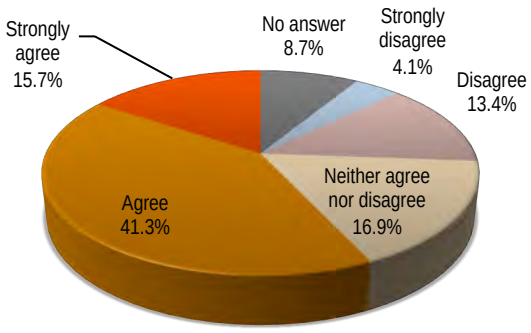
Section 2: Report Scope / Size / Frequency

This section included several issues relevant to the future of the IPCC, including the structure of the WGs, future products and the timeline for their development. The options and questions were developed based on the recent discussions within the IPCC Panel Sessions and its Task Group on the Future of IPCC.

The current IPCC assessment structure with three Working Groups (WGI: The Physical Science Basis, WGII: Impacts, Adaptation and Vulnerability; WGIII: Mitigation) is still the best option to fulfill the task given to IPCC.

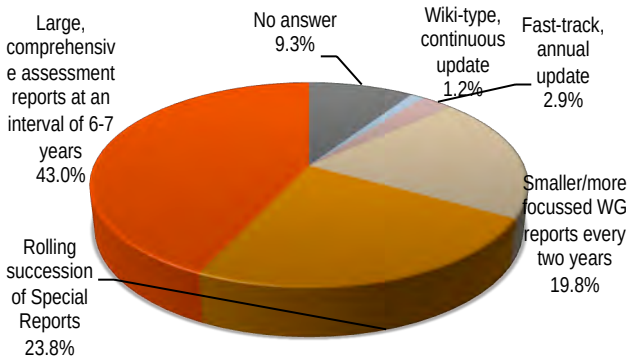
Of the 157 respondents, many more respondents agreed (98) than disagreed (30). Of the respondents in support of the current structure of three WGs and providing comments, some still expressed the need for more end-to-end assessment involving more than one WG and/or strengthening cross-WG cooperation.

For those disagreeing with the current structure, the most frequent suggestion—if continuing with a long assessment cycle—was to combine the impacts part of WGII with WGI and/or to merge adaptation and mitigation.



What is the best timing and frequency of the IPCC report cycle from a WGI science community perspective?

The 156 responses covered the full range of options proposed *(see chart).* Those supporting large, comprehensive assessment reports at an interval of 6–7 years commented on its impact on policymakers and public, the opportunity for intense interaction between scientists and governments that probably could not be sustained on a more frequent timeline, the need for a certain period of time for scientific topics to mature and new research to be published, and the requirements of the coordinated modelling efforts. Several suggested narrowing the focus, often stating that the scope of the reports has grown unnecessarily large.



Several respondents suggested that the intervals between comprehensive assessments could expand up to 10–12 years and combining this longer comprehensive assessment cycle with more focused interim reports or a rolling succession of Special Reports. Some respondents suggested that an assessment cycle consisting of Special Reports could be concluded with a technical summary or synthesis report from the Special Reports produced during that cycle to further support this choice. Others proposed exploring the possibility of producing a series of cross-WG regional assessments, which could replace or be out of phase with the full reports.

Respondents preferring smaller, more focused WG reports every two years recommended that these should be cross-WG thematic assessments. Some supported the principle of smaller, more focused WG reports but felt that a two year interval was too short. Others proposed specific topics where the science supported the pace, and that this could be done in combination with a longer—10 to 12 year—comprehensive assessment cycle.

There was little support for fast track annual updates and those who selected this option saw this only as an addition to the current structure rather than a replacement, noting that it should be combined with either Special Reports or the traditional comprehensive reports. Some cautioned that there might not be enough new findings to make an impact and others noted that there are many other organizations doing annual reports on climate change. The two respondents who chose the Wiki-type, continuous update provided no additional comments. However, several respondents who selected another choice raised concerns that high-frequency reports or Wiki-type continuous updates would present challenges of ensuring rigor, balance and quality.

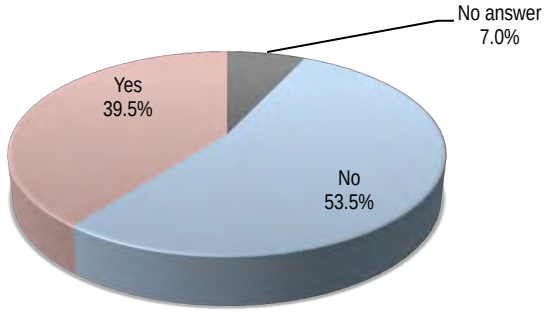
Section 3: Scale of the Task

This section focused on the report production process, including the scale of the assessment (i.e., literature and data) and the amount and type of support received.

It is clear from the responses to the questions and the comments received that the amount of literature to be assessed and the amount of data to be processed/assessed was considered a significant challenge. Furthermore, many authors expressed concern for the ever-growing amount of data and literature becoming available and the ability to provide a comprehensive assessment in the future. When considering the coverage of peer-reviewed literature in languages other than English, authors from all regions noted an increased awareness, availability and inclusion of peer-reviewed literature in languages other than English, but that it also needs to remain a priority. There was general support for making available the data underlying the figures published in the assessment, but comments were split between those who supported it in the interests of transparency and those who disagreed based on practical considerations including resources.

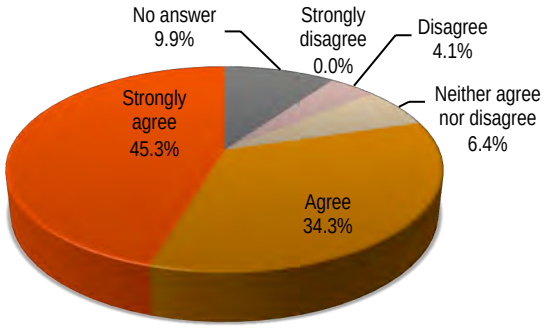
Did you receive assistance for your role on WGI AR5?

Of the 160 responses, 92 said no and 68 said yes *(right)*. The most common assistance noted was specific to the travel funding provided to attend the meetings. Many authors received funding in varying amounts to free up time to work on the assessment or a tacit agreement from superiors to do so, or were freed of certain duties (e.g., teaching). Only 7 CLAs and 3 LAs reported partial or full support from the nominating government or home institution in providing an assistant or post-doc who supported one or both CLAs, the LA, or served as an assistant to the chapter.



Dedicated assistance for CLAs should be a standard approach in future assessments.

The overwhelming majority of the 155 respondents supported dedicated assistance for CLAs, with 136 either agreeing or strongly agreeing. Comments reinforced the need for dedicated support through an assistant or post-doc. The majority suggested that this support come from the nominating governments rather than the home institutions.



Section 4: Process of the Assessment

This section was broken into a number of subsections, focusing on the size and composition of the chapter team, the number and programming of Lead Author meetings, IPCC procedural requirements, the role of the RE and the support received from the TSU.

Chapter teams

Over three-quarters of the respondents felt that the size of their chapter team was 'about right'. Comments on this area focused primarily on the composition and working of their chapter team noted that the largest fraction of the work was done by a smaller fraction of the team. Many comments were made about either missing expertise or redundant expertise, and it was repeatedly suggested that CLAs should have a say in the selection of authors. Some respondents called for more gender or regional balance. Others suggested that more focus be placed on bringing younger scientists (i.e., in their 30s and 40s) into the process, while others voiced frustration over chapter members being selected for reasons other than scientific expertise.

Lead Author meetings

Over three-quarters of the respondents felt that the number of Lead Author meetings was 'about right'. Comments on this area focused primarily on the location of meetings, with most respondents suggesting that meetings be held only in destinations where there are airports with intercontinental flights.

IPCC procedures

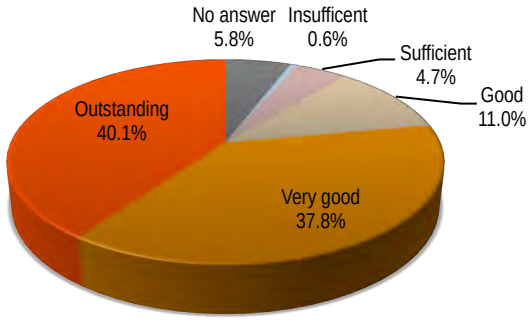
In general, respondents were neutral or did not consider the IPCC procedural requirements as a burden or of limited benefit. Those providing additional comment saw them as mostly necessary to ensure transparency and quality assurance. However, the review process did receive a number of comments voicing concern and the need for amendment. Authors noted difficulty with the sheer number of comments received and the requirement to provide responses to each one. It was suggested by some that either the requirement to respond to every comment needed to be reconsidered and/or a higher standard needed to be defined for an individual to serve as an expert reviewer.

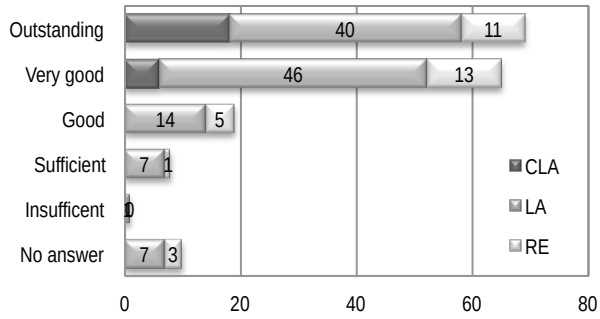
The role of the Review Editor

Some very strong opinions were expressed on the role of the Review Editor. Many authors and REs alike expressed the view that the role needed to be revised or eliminated. Many thought that the senior experienced people appointed as WGI AR5 REs were underused, and several respondents suggested that the REs could perhaps be brought in earlier. Many REs voiced frustration over the limited role and felt that the REs should have a role in shaping the content of the chapter, with several suggesting that they should be able to review the chapter. A number of comments proposed that the REs should act more like a journal editor and have the final say on a chapter. However, many authors felt that the REs were not useful, with several authors commenting that the REs were more of a hindrance than a help, and that some of the REs pushed their own views too much.

Technical Support Unit

Please rate the overall support that you received from the WGI TSU throughout the AR5 cycle.





Of the 162 responses received, the overwhelming majority of respondents (134) rated the support they received from the TSU during the AR5 cycle as outstanding or very good.

Comparing the responses by role resulted in slightly more favorable response from CLAs, with no CLA rating the TSU support less than very good.

Relatively few suggestions for improvement were received, but multiple authors suggested that they and the assessment would have benefited from dedicated graphics assistance. Others suggested the development of improved tools to support the assessment process, noting difficulties with references/EndNote and/or the challenges of drafting text with multiple authors.

Section 5: Production of the Technical Summary and the Summary for Policymakers

This section focused entirely on the internal production of the Technical Summary and Summary for Policymakers. The majority of respondents rated their experience with Technical Summary and Summary for Policymakers as positive. However, although multiple respondents commented on the importance of the Summary for Policymakers and the overall high quality of the final product, many comments were received questioning the need for a Technical Summary, citing the additional burden to produce a product that was not seen as particularly essential or useful.

Section 6: Cross-Working Group Interactions

This section focused on cross-WG collaboration. Individual experiences with cross-WG collaboration ranged widely, but more than half of the respondents rated their experience as absent or difficult. About three-quarters of the respondents thought that cross-WG collaboration needed to be made easier or improved. A variety of suggestions were received, with some authors proposing changes to the assessment structure, suggesting that IPCC only do cross-WG assessments such as Special Reports. Many noted the positive experience of the Expert Meetings and Workshops on cross-WG topics. Others suggested having a joint LA meeting for those cross-WG topics identified, while others suggested having authors who work on more than one WG report specific to the cross-WG topics identified.

Section 7: General Comments on the Assessment

In this section, a list of possible topics was provided for general comments on various steps of the assessment process. Comments were received on a wide range of topics. Where possible, feedback submitted as general comments has been incorporated into the relevant sub-section summaries above. The text below is a synthesis of the other main comments submitted but not summarized elsewhere in this synopsis.

Scoping and nomination process

Several respondents considered these steps to be the least transparent of the IPCC assessment process. It was noted by some that this may arise because of a disconnect between the national IPCC Focal Point and the scientific community in a country and/or because the authors drafting the report are not necessarily involved in the scoping of it. Some suggested that more flexibility should be provided to the authors to adapt the scope/outline during the drafting process to allow for changes due to unforeseen difficulties or the evolving science.

Writing of WGI AR5 (including cross-cutting issues and FAQs)

Respondents commenting on cross-cutting issues were consistent in their suggestion that these needed to be coordinated better, identified sooner in the process and authors involved earlier to ensure adequate coverage. Respondents commenting on the FAQs provided almost exclusively positive feedback, noting their importance and/or praising the support received from the Science Editor and the TSU.

Review process

This topic received the majority of comments. Many respondents expressed concerns over the increasing number of comments received, the resulting workload and the inadequate quality of many of the review comments received. The number of comments received and the requirement to provide a response to all comments was considered a major frustration and an unnecessary drain on their time given the relatively few high-quality comments often received. Pleas for changes to the procedures were made, suggesting that either authors be allowed to not respond to non-substantive or unsubstantiated comments or the standard required to submit a review be increased. Several suggested that the reviewers should be selected with the same standard of scientific expertise as the authors are. A few suggested that comments could be sorted by either the TSU or REs, with editorial and non-substantive or unsubstantiated comments being removed and answered by the TSU and REs respectively.

WGI approval process (including CLA pre-meeting and the preparation for the approval session)

Few comments were received on this component. Of those providing comments, many stated that this was overall a challenging but positive experience and that the pre-meeting and approval session were well organized. A few voiced concern over the role of governments and their ability to change text or delete content.

Post-approval production process (i.e., copyedit, error correction, layout)

This section received few comments, but some did voice frustration at the time commitment still required of them post-approval.

Communications and outreach on AR5 (both WGI and IPCC in general)

Of those submitting comments on this topic, many voiced appreciation at the increasing focus on outreach and communication, but thought it could be further strengthened. A few suggested that post-SPM release activities could be more formalized or better coordinated across the regions. Several authors noted that the Headline Statements, the SPM and the FAQs were useful resources. The media training was received positively and some suggested this activity be expanded. The press conference received some criticism, with some commenting that it could have been set-up or managed better. There was a call for more outreach in developing countries, including more cross-WG events/activities.

Conclusion by WGI Co-Chairs and TSU

The questionnaire was well received and many authors clearly committed significant time to provide feedback. The results and comments provide three common themes that may be relevant to the IPCC Task Group on the Future of IPCC.

1. **The workload and the need for additional support for CLAs and LAs.** The most challenging aspect of producing an assessment report is the sheer amount of work involved and the challenge of managing the time to meet the demands of the work on the assessment and the normal work and other responsibilities expected of our experts serving as LAs and CLAs. The scope of the assessment reports continues to expand. The amount of literature to be assessed and data to be analysed continues to grow (e.g., in AR5 the authors assessed more than 9200 scientific papers and analyzed over 2 Petabytes of numerical data). The chapter page lengths and the number of review comments are at an all time high. The focus on post-approval outreach and communication has resulted in an overall longer time commitment to the assessment cycle for authors. As the time commitment required to produce an assessment report has grown, the support has not. What has remained constant is the need for rigor, robustness and transparency. To ensure the quality of the reports and the health of our authors, serious consideration must be given to providing additional support for the authors volunteering their time, and in particular, to CLAs. Dedicated assistance, through the provision of an assistant or post-doc for CLAs should be considered to become a standard approach in future assessments.

2. **The review process.** Concerns were voiced in several subsection topics over the increasing number of comments received and the resulting workload required to provide a response to each. This aspect has become a major frustration due to the increased amount of time required to respond to the very large number of comments (54,677 for the WGI report, TS and SPM), in particular given the number of non-substantive comments submitted. This aspect of the assessment process needs to be considered and effective changes could be envisaged that would allow authors to not respond to non-substantive or unsubstantiated comments and/or that would ensure that the experts submitting a review have similar standards and scientific expertise as the authors.

3. **The role of the REs**. Although not all REs voiced discontent with the role and some REs specifically commented on the understanding and need for their specific and limited role, a large number of REs responding to the questionnaire (and some CLAs and LAs) expressed concern or dissatisfaction with the role, questioning the general usefulness of the role as currently defined. Many REs suggested that the role be expanded to allow for either more "control" over the content of the chapter or the ability to submit their own reviews of the chapter. However, many authors voiced concern beyond the usefulness with the role, with several commenting that the REs were more of a hindrance than a help and that some of the REs pushed their own views. The role of REs in the assessment process could be reviewed and consideration could be given to defining this role better or differently.

It should be stressed that although the purpose of the questionnaire and the focus of this synopsis is on improving the process and the experience for the authors, overall respondents used this questionnaire to not only provide valuable feedback and constructive criticism, but also were clear in their compliment expressing their appreciation for the support received from the Co-Chairs and TSU and commenting that their overall experience in AR5 had been challenging, but equally rewarding.

ME OF THE TECHNICAL SUPPORT UNIT: **Working Group II TSU**
30 July 2014

Note: Several of the suggested changes to IPCC reports and operations might work best if deployed gradually. On most, IPCC might decide on an AR6 intermediate between the present and full implementation, with the concept that the plans can be adjusted and fully implemented later.

A. What should be the future products of the IPCC?

- IPCC should continue to produce high-quality, thoroughly reviewed reports that take full advantage of the strengths of the IPCC procedures and traditions
    - The current number of review cycles and lead authors meetings works well.
    - With better financial and logistics support, it should be possible to slightly accelerate report preparation, taking it from something like 1.5 to 2 years from scoping meeting to release, in contrast to the current 2.5 years.
    - The plenary approval process is fundamentally sound and should be preserved.
- IPCC should strive to produce a steady stream of major reports, with a target of one report per year
    - The current schedule, with several reports in one year and none in many years is ineffective for providing information to stakeholders and a large burden on the community of authors, reviewers, and focal points.
    - Some of the annual reports would cover topics similar to existing WG reports. Some would be topically more similar to special reports. Occasionally, one of the reports would be topically similar to a synthesis report
    - The distinction between “Special Reports” and “Full Assessment Reports” is no longer useful. All IPCC reports should have the same stature.
    - Scheduling a cycle so that several reports are released in one year and none are released over several years
- To provide a feel for the topics that might be addressed through a stream of annual reports, the following is an illustrative schedule.
    - 2016 Cities and climate change
    - 2017 Energy efficiency
    - 2018 Oceans in a changing climate
    - 2019 Regional climate impacts, adaptation, and mitigation
    - 2020 Climate change: The physical science basis

- 2021 Geoengineering
- 2022 Climate change: Impacts and vulnerability
- 2023 Climate change: Adaptation and mitigation

- The Panel should be empowered to craft a series of reports that addresses the need for information on new topics as well as the need for updates on established topics. For established topics, there might be value in rearranging (e.g. combining impacts with the physical climate changes or combining adaptation and mitigation.).

- Each of the reports should be scoped so that a comprehensive assessment is a manageable size. Ideally, printed reports should be no longer than 500 pages and might be substantially shorter.

- Each IPCC report should have a hierarchical structure. Summary products should be brief and accessible. The supporting products ("full reports") should be seamlessly linked to the summary products and to the underlying literature. IPCC should continue to capitalize on advancements in publishing and electronic communications, potentially utilizing features like embedded animations, options for replotting data, and models that can be run on demand.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

- With annual reports, each of comparable status, there could be substantial benefits from identifying separate developed and developing country co-chairs for each report.
  - This would make the co-chair term 3-4 years instead of the current 6-7, dramatically increasing the opportunity to engage leading scientists.
  - Shorter terms for co-chairs would allow more scientists to gain the experience and recognition that come from being an IPCC co-chair.
  - There should be a separate set of report-specific vice chairs for each report (replacing the current WG vice-chairs in the bureau)

- The most critical need for a successful role as co-chair is co-located, top-level science support, something that has not been consistently available for developing country co-chairs.
  - A top priority for the Trust Fund should be securing support for at least one IPCC scientist to be hired by and co-located with each developing country co-chair
  - Developed country co-chairs should continue to be supported by a science team funded from their country

- With shorter tenure for each co-chair, there would be real advantages to centralizing some of the operational and logistics aspects of TSUs in the secretariat.
    - This could cover meeting logistics, figure preparation, web sites, and publication production
    - This would require rethinking the relationship between the co-chair and the TSU. In particular, it might work well to think about assuring that each co-chair (developed or developing country) has outstanding science support, while centralizing some of the logistics and operations in the secretariat.
- All CLAs should be supported by a co-located, postdoc-level scientist working on the chapter.
    - Developed countries would support postdocs for their CLAs.
    - The Trust Fund would support postdocs for CLAs from developing countries or economies in transition.
- Greatly enhanced CLA training, especially a CLA "boot camp" early in the preparation of each report, could make a huge contribution to the structuring and managing of individual chapters.
    - A CLA boot camp should be scheduled prior to LAM 1 for each report

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

- The Trust Fund should support a scientific position (postdoc level or above) plus some admin assistance for the developing-country Co-chair.
- The Trust Fund should support a postdoc level position for each CLA from a developing country or economy in transition.
- The shorter 3-4 year tenure for co-chairs should improve the attractiveness of being a co-chair
- Author nominations should be considered by relevant scientific organizations.
    - In many countries, involvement of the national academy of sciences or a relevant regional academy can help assure familiarity with the top scientists across the full range of disciplines covered by the IPCC
- IPCC should capitalize on technology to assure that developing country scientists have all of the necessary resources
- IPCC should raise funds for a competitive fellowship program that would allow some developing country authors to arrange for up to a few months of salary, so that they can take time away from their regular jobs to focus on their contributions to the IPCC.

D. Other matters

- IPCC leadership: IPCC should consider shifting from a single chair to a model with more sharing of leadership. One possible model is two co-chairs, with co-chairs from developed and developing countries. Another attractive model is sequenced leadership, with a chair, past chair, and chair-elect.

- The term of the chair should be set to be a reasonable commitment. It need not be connected to the completion of a full cycle of reports, or to the completion of a Synthesis Report.

    - With co-chairs, the term of the chair (or co-chairs) of the IPCC should be in the range of 3-5 years.

    - With sequenced chairs, the term of active duty as chair should be in the range of 2-3 years.

    - Sequenced chairs provide a strong component of historical memory.

- With leadership vested in co-chairs or a chair, past-chair, and chair elect, it may or may not be appropriate to preserve the post of IPCC vice chair

- The Executive Committee should continue to be composed of the chair (or co-chairs or chair, past chair, and chair elect), plus the Working Group co-chairs, and (if maintained) the IPCC vice chairs.

    - With new co-chairs for each report, there will be a few new members of the Executive Committee every year. This will facilitate historical memory, but it will also assure the regular injection of new ideas.

- With a new set of report-specific vice-chairs for each report, there will automatically be some level of annual turnover in the Bureau.

    - This will broaden participation, sustain historical memory, and inject new ideas.

- IPCC Secretary: The secretary of the IPCC should report to the Executive Committee, which will make recommendations concerning salary and retention.

- TGCIA: The Task Group on Scenarios for Climate and Impact Assessment has played a critical role in coordinating the impacts community and providing climate and impacts data to the impacts community and the public.

    - Given the increase in organizations providing climate data, it is not clear that there is a continuing need for TGCIA based in IPCC.

    - The panel should consider eliminating TGCIA or refocusing it on one or more areas where an IPCC role makes a real difference.

E. Managing the transition to a new operating mode.

- For the AR6, it may be practical to switch to a system of rolling working groups, with a new working group formed each year. Because this structure requires only one working group per year, the logistics are relatively simple. Alternatively, it may be most effective to preserve the traditional structure of three working groups, with each group leading one or two (formerly named) special report and one (formerly named) WG contribution to an AR.
    - There is no need to have all of the contributions to the AR appear in a single year, and there are many advantages to spreading them over several years.
- One of the key challenges for the IPCC is staying relevant over the next few years. The traditional schedule, with no new reports for 4 or more years after the end of an assessment cycle creates a very long delay with potentially serious consequences for the IPCC and for the broader agenda of policy-relevant science support for the development of policies related to climate change.
    - It will be very useful to have a new IPCC product prior to the 2015 COP. A technical paper on food is one attractive option. The topic is widely discussed throughout the AR5 but the material is not assimilated. The topic is absolutely central to Article 2 of the UNFCCC. A technical paper in the summer of 2015 will help remind the world community of the central role of the IPCC in scientific assessments, and it will provide an opportunity to speak at length about all of the elements of the AR5.
    - A (formerly named) special report in late 2016 or early 2017 can build effectively on the accomplishments of the AR5. Waiting longer than late 2016 or early 2017 will mean that IPCC needs to reestablish relevance.

NAME OF THE TECHNICAL SUPPORT UNIT: **TSU for the Task Force on National Greenhouse Gas Inventories (TFI TSU)**

A. What should be the future products of the IPCC?

As far as the TFI is concerned, periodical update/revision of the guidelines for national greenhouse gas inventories will continue to be necessary in order to meet the needs of the UNFCCC in a timely manner.

While Methodology Reports on national greenhouse gas inventories may continue to be the central products by the TFI, the scope of TFI work may be expanded (e.g., to cover methodologies on inventories at other scales than the national level), taking into account the views of governments and experts. Production of Special Reports with the other Working Groups may need to be considered to deal with some specific issues relating to, for example, quantification of greenhouse gas emission reduction by mitigation measures.

Considering that there can be various different types of products such as TFI's Emission Factor Database, the definition and classification of Supporting Materials may need to be reconsidered, and the rules on them may need to be amended/elaborated in the Appendix A to the Principles Governing IPCC Work.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

The current procedures for the preparation, review, acceptance, approval, adoption and publication of IPCC reports (as contained in Appendix A to the Principles Governing IPCC Work) worked well in production of TFI reports such as the *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*, and the *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*.

However, we feel there is some room for further improvement in these procedures with regard to production of Methodology Reports whose nature is different from that of Assessment Reports and Special Reports.

For example, in the case of Methodology Reports such as IPCC Guidelines for National Greenhouse Gas Inventories, there can be many practical issues that are not easily detected or recognized by experts/governments only through reading the drafts. Many practical issues are detected or recognized through the experience of compilation of their national GHG inventories using the methodological guidance in the drafts. It is difficult for the experts/governments to have such opportunities only through the current review processes defined in the Appendix A to the Principles Governing IPCC Work. Therefore it may be worth reconsidering review processes for TFI Methodology Reports.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

We would like to highlight that a relatively high level of participation and contribution of experts from developing countries has been already attained in some of TFI activities (e.g., the Editorial Board for the Emission Factor Database).

We sometimes experienced difficulties in quick and smooth communication with the IPCC Focal Points of developing countries, because of which we had to give up inviting experts from those countries to join in TFI's meetings/activities. To avoid this to the extent possible in the future, regular communication between IPCC Focal Points and the IPCC Secretariat will be necessary, particularly in order for the IPCC Secretariat/TSUs to have the list of IPCC Focal Points always updated. Also, it may be worth considering establishment and continuous update of a roster of experts who are potentially available for IPCC work.

D. Other matters

NAME OF THE TECHNICAL SUPPORT UNIT: **Synthesis Report TSU**

Leo Meyer, Head TSU Synthesis Report

A. What should be the future products of the IPCC?

1. *General climate change assessment*: observations, projections including impacts of Climate Change (Physical science basis plus impact projections part WG II), 2018

2. *Special report on Scenarios* with projections of risks, costs and trade-offs for different mitigation/stabilization pathways, and its avoided damages. This would need integrating the physical and socio-economic models (CMIP and IAM) projections. Some coordination by IPCC necessary for comparable baselines, regional divisions, gas basket , and for timely production

3. *A Synthesis report* combining the key messages from the General climate assessment and the Special Report on Scenarios, 2018/2019

4. *Short-cycle assessments* (approximately 1-2 year of work) on for instance: regional assessments; sectoral assessments; new and emerging technologies; climate and development; . These should be short docs; 25 pages with max 5 pages summaries,. Another idea:: Best /Good Practice Guidances on adaptation and mitigation policies and measures, tailored to needs of specific economies / regions (1-2 year).

Products should become increasingly web-based , made suitable for tablets and smartphones, using interactive infographics.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

1. A Working Group Natural Sciences assessment (combination of WG I plus impacts part of WG II), for the General Assessment under A1

2. A Working group Adaptation and Mitigation for products A 2 , 3 and 4.

Modus operandi:

- Procedures need to be adjusted:
    - Panel approval procedure for web-based products
    - For short cycle assessments , the procedures for 'Technical Papers' could be used by lifting the constraint that these could only be based on approved IPCC assessments.
- Rethink the organizational structure of TSUs/Secretariat with a view to increase cost-efficiency and increase the potential for more co-operation

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

- *Develop and implement summer schools (training programs, courses) for young scientists from developing countries*, aiming at increasing the number of lead

authors in IPCC products. These courses could entail: how to do a scientific assessment in the science / policy interface; how to deal with broad ranges of views and uncertainties; improving writing, communication and presentation skills. Courses should be hosted by existing universities/ scientific institutions. Funding to be raised

D. Other matters

Submitted by: IPCC SECRETARIAT

A. What should be the future products of the IPCC?

- **Comprehensive assessments (all volumes released within 12 months) vs. release of a range of topic/special reports at regular intervals**

In defining the set of future products the Panel will have to carefully weigh the value of regular comprehensive assessments (intervals 5-7 years) against potential benefits of releasing reports on specific topics in shorter intervals (every 2 to 3 years a report on a different topic). The user needs, in particular of the UNFCCC have to be reflected in taking such a decision. In this context recent decisions by the COP, including with respect to future reviews of the long terms goal, need to be considered (after the release of an IPCC assessment or at least every 7 years).

The benefits of comprehensive assessments are that the policymakers get information on all relevant aspects ranging from science to response measures. Regular topic reports may incorporate more up to date information but would only address one aspect at a time and no longer carry the authority of presenting the latest scientific information which constitutes the "IPCC brand" and distinguishes its reports from other scientific publications and reports.

- **Structure of comprehensive assessments**

Contributions to comprehensive assessment may be structured along the Working Group mandates as have been in the past 25 years. Regardless whether the WG structure remains unchanged or will be adjusted, measures will be required to enhance cross WG cooperation and consistency (see suggestions under section 2).

It is suggested that the Panel considers alternative approaches such as a set of topic/special reports covering all relevant areas (of interest for policymakers and where new scientific information is available or expected), planned at the beginning of the cycle. A Synthesis Report would integrate and summarize the findings of all topic/special reports and thus present a comprehensive picture. This option would require adjustments in the current working group structure, possibly with thematic sub-groups, or of the working arrangements between Working Groups, because such thematic reports would cut across the mandates of the current Working Groups. It may also require adjustments in the modus operandi and cooperation between the TSUs and role of Secretariat.

In order to ease the burden on authors, reviewers and users, focus of each report, regardless which option is chose, should be on new and emerging findings. Sophisticated

and up to date electronic means of presentation should be used to facilitate user access to information contained in previous reports which is not updated and still relevant.

- **Mix of Assessment Reports and Special Reports**

If the Panel decides to continue with the current mix, of comprehensive reports prepared by each Working Group, supplemented by Special Reports it is recommended to plan the full set of products, including Special Reports at the beginning of the cycle to allow for full integration and coherence. The "Decision Framework for Special Reports, Methodology Reports and Technical Papers" should only be applied in case there is a policy relevant request or emerging findings which could not have been anticipated at the beginning of the cycle (see also below - frequent updates). Special Reports may also be prepared immediately after the completion of an assessment cycle to assess new knowledge and prepare the ground for the next comprehensive assessment.

The production of Special Reports requires efficient co-ordination among WGs, and possibly adjustment in the modus operandi and cooperation between TSUs and role of the Secretariat. If the preparation of a Special Report cuts across the terms of office of IPCC Bureaus, clear hand over arrangements between the outgoing and incoming Co-chairs and TSU are required. Such arrangements were implemented successfully for several reports in the past (e.g. SRTT, SRES and TFI reports).

- **More frequent updates**

Users repeatedly ask for more frequent updates. Such updates may be planned at the beginning of the cycle or initiated when need arises. They may be prepared according to the following procedures:

- Very focused and brief Special Reports which are prepared according to current procedures. In principle a Special Report can be done within 18-24 months. Support arrangements (TSU) may need to be adjusted to accomplish that.

- Review and revise the procedures for Technical Papers to allow for more rapid update while maintaining IPCC quality standards.

The use or expert meetings or workshops for updates are not considered appropriate because they do not provide for necessary IPCC quality standards and authority. They are intended as input to the assessment process but were never intended as alternative assessment.

- **Methodology Reports**

In addition to the work carried out by the TFI the Panel may consider to prepare other Methodology Reports (MR), as requested by members of the Panel. These MRs could either be prepared under guidance of a Task Force Bureau set up for this purpose or under the guidance of one or more Working Group co-chairs or the IPCC-Chair.

B. What would be the appropriate structure and modus operandi for the production of these IPCC products?

1. Structure and governance

- **Working Group structure and ways to enhance cooperation among WGs**

After 25 years it would be prudent to thoroughly review the current mandates of the working groups and to adjust scope and mandate with a view to enhance cooperation and coherence among the WGs and scientific disciplines. E.g. currently observations and projections in cryosphere and hydrology are dealt with in WG I and WG II. Having these matters addressed by one group of authors would allow for a more comprehensive assessment and avoid any inconsistencies and errors. Similarly e.g. addressing adaptation and mitigation in one group could lead to a more inclusive picture of response strategies. The Panel therefore may wish to consider an adjustment of the mandates of the three working groups or a restructuring by e.g. only having two working groups.

Depending on the range of products (see section 1) the establishment of sub groups (e.g. food, health, energy, cities) may be considered, which could be temporary e.g. for the period of preparing a thematic/special report or for the duration of the full cycle.

A recurring issue is the coordination between WGs and the coherent treatment of cross cutting matters. A range of measures have been applied such as guidance papers for cross cutting matters, “anchors” for certain subject matters and liaison authors, but is seems additional efforts and potential changes in governance and management are required to enhance coordination and coherence. Such coordination efforts should not be limited to the few cross cutting matters identified at the beginning of the cycle but is needed throughout the process and a range of issues.

The Panel may also with to consider further the role of IPCC in scenario development.

- **Role of the IPCC Bureau**

The terms of reference of Bureau members are rather general and the Panel may wish to add some emphasis e.g. with regards to reaching out to the scientific community in regions or to take care of cross-cutting matters.

- **Role of the Executive Committee (ExCom)**

The ExCom was established in the curse of the current cycle and addressed matters as listed in the TOR. However, in balance the ExCom largely dealt with administrative and general coordination matters. It is recommended to reduce the involvement of the ExCom in administrative and general coordination matters, which can be done by clear guidance and designation of responsibilities (see sections Secretariat and TSUs) and to focus more one scientific technical matters of cooperation and coordination.

- **Cooperation with UN organizations and other relevant assessment bodies**

The Panel shall identify appropriate ways to cooperate with relevant assessment bodies to allow for exchange of knowledge, identify potential cross cutting matters and how they can be addressed (e.g. through joint workshops) and to the extent feasible schedule

assessment processes to best serve user needs while limiting the burden on the scientific community. Joint synthesis reports may be a way to provide policymakers with a more comprehensive picture of current environmental and sustainable development challenges. IPBES has already taken a first step towards mutual cooperation by inviting the IPCC Chair to participate in its expert panel as observer.

Cooperation with other UN bodies through the IPCC Secretariat should be continued and enhanced as feasible and required.

- **Role of observer organizations**

The Panel may wish to consider how to enhance the involvement of IPCC observer organizations, including identification of experts and literature and dissemination of IPCC knowledge, in particular in developing countries.

- **Broadening the input to IPCC work**

The user community of IPCC reports has grown considerably in recent years and the Panel may wish to consider appropriate ways to get input and views from these groups without interfering with the scientific assessment work. An option could be to convene hearings or meetings with civil society groups and other user groups (possibly with the help of IPCC observer organizations) to discuss their information needs at the beginning of an assessment cycle, in the scoping phase. Appropriate UN platforms and partnership arrangements may also be identified and used for this purpose.

- **Revision of Principles Governing IPCC Work**

Any changes in structure and governance need to be reflected in amendments to the IPCC principles and procedures. In general it is suggested to aim in any revisions for enhancing openness and transparency. The IPCC Secretariat has also evaluated the current versions of the documents and identified a number of minor inconsistencies and made suggestions for improvements. The Panel is invited to consider these suggestions.

2. Modus operandi

- **General matters of administration and coordination**

The IPCC has grown considerably in recent years. This is reflected in a sizable increase of technical support units (TSU), increase of staff of the Secretariat, as well as the involvement or numerous other individuals including chapter scientists. However, the only permanent structure with institutional memory and legitimation as UN office is the IPCC Secretariat. TSUs and other help are of a temporary nature and are hosted by governments or research institutions. Description of role of the TSU is very general and some further clarification is required to enhance efficiency and avoid duplication of efforts.

In the current cycle TSUs had a number of staff members with dealt with administrative and operations activities which are normally carried out by the Secretariat. This lead often to a duplication of work, interventions by the Secretariat to ensure that IPCC and WMO rules are duly observed, and lengthy coordination.

There should be a clearer delineation of roles and responsibilities between the Secretariat and the TSU. To ensure smooth functioning of administrative matters and efficient coordination guidance and oversight provided by the IPCC Secretariat is essential. See also specific suggestions made below with respect to establishment and governance of TSUs.

As general principle it is suggested that the Secretariat be responsible for budget and finance; relations with governments, the UN and observer organizations; arrangements and documentation for sessions of the Panel, WGs and the Bureau; provides overall guidance on administrative; arranges a coherent IPCC information management and IT environment (see Annex 1); deals with all matters related to publications; maintains the IPCC archive and database of experts involved in IPCC work; manages and oversees communication, media relations and outreach; provides assistance and support to the IPCC Chair, including with respect to cross cutting matters and matters of coordination; and carried out any other tasks specified in procedures and governance documents. In the interest of efficiency it is also suggested that the organization of lead author meetings and other expert meetings and workshops should also be handled by the Secretariat, because experience with organizing meeting resides here and support from WMO conference services is available. It would require a modest increase in Secretariat resources but lead to considerable reduction in TSU resources for this purpose. Further specific suggestions with regards to communication and a coherent IPCC IT strategy are provided below and in ANNEX 1.

The prime function of the TSUs is to support the scientists in preparing the reports and provide scientific support to the Working Group bureaus and authors. They should also manage the reviews, finalize the reports, and perform the tasks specified in IPCC procedures and governance documents.

An “Operations Committee” chaired by the Secretary of the IPCC, to discuss administrative and other matters of coordination could facilitate cooperation. It could meet more frequently at the beginning of the cycle and later, when all TSUs are familiar with processes and guidance documents, only “as required” to avoid of unnecessary micromanagement.

Since TSUs are by temporary structure clear hand over procedures from the outgoing TSU to the IPCC Secretariat and to the incoming TSU need to be agreed.

- **Corporate identity, design, publications and IT strategy**

Production activities – design and publication of reports, design and implementation of websites, production of communications materials – should be managed by the Secretariat.

The Working Group co-chairs are responsible for the content of their reports, so the Secretariat needs to consult with them and the TSUs on production matters related to content. But the final responsibility should be with the Secretariat.

The IPCC Secretariat had prepared in the past common design templates, corporate identity guidelines and templates for the IPCC website, which however were only applied to a certain extent. A coherent application of templates and other elements of the IPCC cooperate identity e.g. design elements (report covers, slide decks) and a single clearly branded point of contact for websites instead of multiple competing sites would result in clearer communication internally and a more effective corporate identity for the outside world and avoid overlapping and duplicating activities.

For the coming assessment it is also recommended that the IPCC Secretariat prepares a core IT strategy which the members of secretariat and the TSU can refer to. It would provide guidelines with regards to infrastructure and conformity of websites, a common design and platform and guidelines with regards to social media. Such a strategy will foster coordination and collaboration between the secretariat and the TSU's. A detailed concept note for an IPCC IT strategy is provided in ANNEX I to the submission.

- **Establishment and governance of TSUs**

Currently TSUs are financed by the governments of the developed country co-chair, and the SYR TSU is financed by contributions from a few countries. This arrangement raises a number of general concerns. It limits the candidature of developed country co-chairs to countries which can afford to host a TSU. It puts also the developing country co-chairs in disadvantaged situation and their needs may not be given sufficient attention, among other reasons because their offices are not co-located with the TSU. With a few exceptions, the TSU staff is recruited by the developed country co-chair or the host institution. It is also not clear what constitutes a TSU. E.g. can the assistant of a member of the Bureau be considered an IPCC TSU? The Panel may consider ways how to improve support to all co-chairs and agree on specific guidance on how TSU should be established and managed. A few suggestions are offered:

  - *Hosting of TSUs*

    The hosting of a TSU by developing countries or a consortium of countries, possibly even involving developed and developing countries should be encouraged and facilitated.

  - *International recruitment of TSU staff , reporting and performance appraisal*

    The vacancy for post of the TSU head and professional staff should be announced internationally, including on the IPCC website. The TSU head should be selected jointly by the WG/TFB co-chairs, the IPCC Chair and the Secretary. All other TSU staff should be selected jointly by the co-chairs. UN core competencies and values, such as respect for diversity, should be included in the selection criteria. All TSU staff should formally report to and the performance be appraised by both co-chairs and any extension or promotion be decided jointly. In case of the TSU head the views of the IPCC Chair and Secretary should be sought and reflected.

– *Staffing, roles and titles of TSU members*

Currently the size of TSUs differs widely and certain minimum requirements may be defined. Clear guidelines about IPCC administrative procedures and respective roles and responsibilities (as outlined above) as well as delegation of certain activities to the Secretariat would help to reduce administrative staff and in balance increase scientific staff.

Currently TSUs use very different job descriptions and a range of titles such as executive director, director of operations, director of science, director of administration or director of communication. It is suggested to align the job description, classification and titles of TSU staff with those used in the UN system.

– *Memorandum of understanding*

A memorandum of understanding between the TSUs or their host organizations and the IPCC Secretariat should clarify respective roles and responsibilities and facilitate operations throughout the cycle.

– *Chapter scientists*

Chapter scientists played an important role in the recent assessment and the continuation is encouraged in a way that ensures that they really serve all CLAs and LAs. Ways to engage more young developing country scientists in this role should be sought and encouraged, either through the IPCC Trust Fund support, a dedicated fund or other arrangements.

C. Ways to ensure enhancement of the participation and contribution of developing countries in the future work of the IPCC

A number on important measures to enhance and facilitate the work of developing country Co-chairs and authors have been suggested under section 2 above, in particular with regards to TSUs and chapter assistants.

A few additional suggestions are offered below:

- **Regional Representatives in the IPCC Bureau**

In the early years of IPCC some members of the IPCC Bureau, called at that time "regional representatives", had the explicit role to reach out to their region and identify authors and reviewers, relevant literature and institutions, and to organize outreach and communications events. Some members of the current Bureau have been quite active in this respect but there is certainly room to further enhance this role. The TORs of the Bureau may be amended to highlight and strengthen this role and adequate support for these activities could be arranged either through the IPCC Secretariat or TSUs.

- **Regional workshops and expert meetings**

One of the objectives of IPCC expert meetings and workshops is to gather information in areas and regions, including where there is not sufficient information in the peer

reviewed literature. According to IPCC procedures expert meetings may also be convened to support the review process.

If planned well in advance so that the outcomes can the reflected in the assessment by authors, such meetings can offer an efficient way to allow experts from developing countries to present their knowledge and contribute to the IPCC process. Local and indigenous knowledge could also be considered. Conducting such workshops in languages other than English could enhance the effectiveness in gathering regional information.

In addition to expert meetings/workshops described above capacity building meetings may also be used to enhance developing country participation. Such capacity building meetings could be carried out by or in cooperation with partner organizations, from within the UN family or IPCC observer organizations.

- **IPCC scholarship programme**

The IPCC scholarship programme, including an alumni network involving current and past scholars and IPCC authors may become an efficient instrument to encourage young scientists from developing countries to get involved in IPCC work.

ANNEX 1

IT Strategy – The Way Forward

I. Background

The purpose of this document is to outline an IT strategy for the next assessment cycle (AR6). It is in line with the recommendation by governments with regards to the increased collaboration between Technical Support Units (TSU) and the secretariat, as referred to in IPCC-XXXIX/INF 1.

Though the inner working of each TSU and secretariat will remain independent and entirely up to the respective offices, this document provides an overarching guideline on consistency and collaboration efforts.

II. Objective

1. Prepare a core IT strategy which the members of secretariat and the TSU can refer to during future assessment cycles.
2. Provide guidelines with regards to infrastructure and conformity of the websites.
3. Foster IT coordination and collaboration between the secretariat and the TSU's.
4. Provide common design and platform which can be used and shared without having to re-invent the wheel each time.
5. Provide guidelines with regards to social media.

III. Infrastructure

The IPCC web infrastructure has always been a decentralized environment with the secretariat and the TSU's managing their respective presence in the internet. This allows the TSU and the secretariat to manage their websites without having to rely solely on the resources available at the secretariat. It is recommended to continue with this practice in the future. But, despite the autonomy of the sites, there is a need to standardize and agree on baseline infrastructure and design to ensure a common look and feel and compatibility between the sites to promote IPCC identity.

a. Architecture

Traditionally, the secretariat and the TSU's have leveraged the LAMP stack (Linux, Apache, MySQL and PHP) for delivering services to users. As a well-tested and proved platform, it is recommended to use at least Apache, MySQL and PHP for the upcoming assessment report cycle by all the TSU's and the secretariat. The standardization of the platform will ensure that the tools and utilities designed and developed by one TSU can be easily ported to the other TSUs with minimum changes.

b. CMS

In the past, the secretariat had embarked on the use of a content management system (CMS) using a product known as GoldenNet. Unfortunately, as the vendor was unable to deliver the product that met the outlined objectives, the secretariat was forced to scrap the product and revert back to using conventional html. With the initiation of a recent project, Drupal (an open source CMS) has been selected and is in the process of being implemented at the secretariat together a new search engine. In the past, the TSU's have selected their own CMS which not only lead to inconsistencies between the websites but also posed a

major challenge when it came to migration. With this in mind, it is recommended all the TSU's and secretariat use Drupal, using the same templates and style sheets for consistency. The secretariat will initiate a new project before the start of the new cycle to redesign the website. One of the major objectives of this project is to create templates, which could be easily ported to the new websites for the future working groups ensuring consistency and compatibility.

c. Micro-sites

The micro-sites were widely used during the Fifth Assessment (AR5) cycle. At the end of the cycle, there were 5 such sites, excluding the sites of the 4 TSU's and the secretariat:

- www.srren.org
- www.srex.org
- www.climatechange2013.org
- www.climatechange2014.org
- www.mitigation2014.org

Though these micro sites provide a convenient means of encapsulating the product and related information, ongoing support and maintenance becomes an issue with the limited resource available in the secretariat. The problem is magnified when different TSU's use different CMS. Buying the domain and freezing the website is only tip of the iceberg. There are many questions which needs careful consideration:

- who will continue to host the server?
- who update the CMS?
- who updates the operating system with patches?
- how to ensure connectivity to internet?
- how long do we keep buying the domain?
- how do we handle errata's and outreach events if the website is static?
- where should the master document reside (to avoid duplication)?
- how to configure search, with the possibility of documents being duplicated across domains?
- how to achieve cross domain functionality – i.e. search for authors?
- etc.

Without careful consideration and a long term strategy in place, TSU's should not pursue separate domain for each report because the number can easily multiply to an unmanageable number. In the future, the focus should be more on consolidation rather than creating independent websites for each and every report.

d. Use of Social Media

Though the social media channels of IPCC have not been widely advertised, it does exist. The goal for the future is two-fold:

a. propose and adopt new methods and technology for social media

b. use of common account and repository to establish presence via social media

Currently, some TSU use their own accounts to store videos in the cloud leading to videos being scattered in different places resulting in difficulty for the end-user to find relevant content. The proposed goal is to have a single portal to host the content generated by the secretariat and TSU. This makes the content more manageable and provides a one stop shop for the users.

For Facebook and Twitter, the IPCC communication office will be the sole authority to add new content to the feeds. It is the responsibility of the secretariat communication office to collaborate and consult with the various working groups to develop and post the relevant content.

IV. Future IT Structure

There are two possible options for the IT structure for AR6.

A. Central IT

The central IT will be formed in the secretariat, with additional resources, whose role is to:

a. Provide initial setup for the TSU, while maintaining consistency across the working groups' websites

b. Provide consistent web sites and tools (some are mentioned in Appendix I)

c. Manage and support lead author meetings, bureau meetings and plenaries

d. Migrate contents back to the secretariat after the closure of the TSU

The major benefits of having a central IT include:

i. IT team will be able to help the TSU get up to speed right from the start using existing knowledge and expertise

ii. There will not be a need to re-invent the wheel by each TSU for the same tasks that are carried out independently by each TSU. This was a frequently occurring issue during the Fifth Assessment cycle.

iii. Help the TSU's manage meetings in a consistent manner.

iv. Less resource requirement for the TSU – though it might be useful to have a content editor with basic IT skills to assist on day to day matters

B. Distributed IT

The status quo will be maintained and each TSU will continue to employ an IT specialist.

As this approach leads to multiple IT teams, for co-ordination purposes, a proposal is to establish a Web Team (similar to CAT) composed of IT focal points from the secretariat, TFI and each TSU (with regular participation by the head of Communication and Media Relations). The web team will report directly to the Chair and the Secretary of the IPCC.

Role of the Web Team

- Planning activity prior to site design
- Ensure common look and feel and visual identity amongst the distributed sites
- Co-ordination on applications to be used by the TSU and how it can be shared with the other TSU's
- Implementation of a single/shared credential repository
- Peer-review of application and database design to ensure the design meets interface as well as security requirements
- Planning for plenary and lead author meetings (LAM) : including reviewing the technical requirement checklist, IT infrastructure and specific requirement for the meeting
- Provide technical support to another TSU, as and when needed in an emergency situation
- Provide guidance on the use and adoption of social media to enable Communication Office to meet organizational objective
- Plan and facilitate transfer and archival of materials
- Make use of new technology, beneficial to the organization
- Explore and promote additional ways of reducing carbon footprint and conducting paper less meetings
- Daily operational issues are internal matter to each TSU but sharing of best practices can be beneficial to all involved

Despite the IT structure, all systems and tools created during the lifetime of the TSU are to be considered intellectual property of IPCC. As owners of the application, IPCC reserves the possibility to re-use the application in any way deemed appropriate during future assessment cycle.

Frequency of Meeting

The Web Team meets (virtually) every 3 months to consider requests for web development and website integration. It is proposed to have a broader meeting of the Web Team with the IPCC Secretary, Chair and the Head of Communications and Media

once a year so that guidance could be given to the Web Team regarding work plan, budget and the future direction.

There should also be bilateral meeting/s between the secretariat and the TSU prior to the approval plenary to coordinate IT action items with regards to the arrangements for the meeting venue.

Additional meetings can be scheduled on demand, for peer-review, launch of IT application systems, etc.

V. Document Flow and Storage

During the report preparation process, all the intermediate products and draft reports as well as government comments will continue to reside in the TSU website. The secretariat will link to the documents available in the TSU website. However, once the report is approved and finalized, the ownership should be transferred to the secretariat to be hosted in the secretariat website. For the approved materials, the TSU should alter the link to point to the secretariat URL.

During the transition phase, when the documents are getting updated, it is the responsibility of the TSU to communicate the changes to the secretariat, if there are changes in the URL of the document. The same holds true when various errata's are posted by the secretariat.

During the migration and before the closure, the TSU should provide the secretariat with all the relevant documents in PDF (if one was created) as well as the original format. IT migration and check-out process for the current TSUs is outlined in Appendix II.

Appendix I

Use of Tools and Applications

In line with code sharing and re-use, the following is an inventory of applications created by the secretariat which can be used by the TSU in the future. The TSU is free to customize the tools as deemed appropriate. During archival phase, all tools and utilities developed should be transferred to the secretariat and will from then on be considered the property of IPCC. Sharing of code and applications should also be encouraged during the report cycle between the TSU to achieve a common objective.

Error Protocol The IPCC decided in May 2011 to adopt an IPCC Protocol for Addressing Possible Errors in IPCC Assessment Reports, Synthesis Reports, Special Reports or Methodology Reports. The system was designed according to the approved protocol using a simple workflow as a comprehensive repository for all information/documents related to the reported error.
Document Management System During the AR5 cycle, some TSU's used Knowledge Tree for managing documents. However, from early 2013 the product is no longer available as open source. To mitigate this, a simple document management system was developed by the secretariat to be used internally as well as for the AR5 Synthesis report. The tool allows basic document management facility such as permissions, check-in, check-out, finalization, versioning etc.
Event Registration Event registration system allows participants to pre-register for an upcoming IPCC event. Based on the pre-registration, the registration can take place in the meeting venue and badge printed. This system can be used on the secretariat server to avoid duplication of effort or can be hosted on the TSU site.
Paper Smart The paper smart system is for hosting paper less meetings. The paper smart system, closely integrated with the Event Registration system, allows the hosts to publish documents, broadcast messages and details regarding agenda to the delegates who are attending the meeting. Similar to the Event Registration system, the system can be hosted on the secretariat server or on the TSU site.
Contact Management System The contact management system is a basic CRM utility to manage contacts and relevant documents associated with the contact.
Calendar Calendar database provides a list of activities undertaken by the secretariat and various TSU in the course of the year during the report cycle. Though the application resides in the IPCC server, the information can be updated by the TSU's and displayed on their respective websites. It provides a single repository for all the events.

Appendix II

Check-out Template

The check-out template is for existing TSU's who have currently bought and used a separate domain for hosting IPCC reports. This document should be completed and sent to the secretariat to facilitate the migration process.

1. Report the domain/server is used for?
2. Server configuration used to host the server?
3. Are you using CMS? If so:
    a. The name of the CMS?
    b. If it open source or proprietary?
    c. In case the CMS is proprietary,
        i. cost involved
        ii. expiry date of license
        iii.
4. Domains have been purchased and the recurring cost (optional)?
5. When do the purchased domains expire?
6. Where is the server hosted? If there is a service provider, contact details.
7. Will the TSU:
    a. continue to host the server for the report?
    b. continue to patch the operating system and upgrade the CMS used?
    c. provide support in case of server crash or hacking and there is a need to rebuild?
8. If the content still needs updating (for instance errata), who will do it? Provide contact details.
9. Who should the secretariat contact for support?