INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

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FUTURE OF THE IPCC

Compiled comments from Governments, Authors, Organizations and Bureau members

(Submitted by the Secretariat)

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GOVERNMENTS COMMENTS

Argentina - Dirección de Cambio Climático, Secretaría de Ambiente y Desarrollo Sustentable, Jefatura de Gabinete de Ministros

We welcome the initiative of the IPCC Chairman to prepare a discussion paper about the future of the IPCC.

In general terms we fully agree with the IPCC Chairman that some adjustments should be made in the scope of the work and the outputs of the IPCC in view of the changes that have occurred in the past few years regarding public perceptions and knowledge as well as the better understanding of new issues such as the economics of climate change and the theoretical challenges that traditional market-based tools of the economic science confronts to deal with environmental issues.

In addition, the steady advances in the knowledge of climate change's environmental and social impacts make essential to providing increasingly accessible and manageable policy-relevant information to guide policymakers through the political processes required to successfully map scientific results onto social needs.

In the first place, we agree that in future IPCC reports there is a need to strengthen the connection between climate change adaptation and mitigation policies and measures and sustainable development requirements and opportunities mainly for developing but for developed countries as well. The outcome of this work should be first and foremost oriented to policymakers to raise their awareness on the existence of that connection and the social and economic opportunities it can bring on.

In this sense, we believe together with the IPCC Chairman, that there is a need for a stronger emphasis on the economics of climate change in the IPCC reports. This would greatly contribute to better understand the connection between climate change policies and measures and sustainable development and, eventually, realise the quantification of social needs and economic opportunities in terms of the resources (natural, human and financial ones) involved. We also concur in that a small group of experts, on the basis of a regional balanced representation may carry out this task as suggested by the IPCC Chairman.

With respect to the uneven distribution of research and data collection regarding the regional aspects of climate change, we strongly believe that it is imperative addressing this issue because countries most vulnerable to the impacts of climate change cannot devise sensible mitigation and adaptation policies without the help of regional models to guide those endeavours. We positively know that there are scientific and academic institutions in Latin America that can provide the necessary expertise through their scientists to fill the needs of research on impacts of climate change and other related issues in this part of the world. Efforts to reach all those institutions are needed and regional workshops could be a good start to this process, not only with the aim at exchanging knowledge and experiences but also to build academic partnerships to increase the regional critical mass and improve both the efficiency and the effectiveness of research and observation. Workshops could also contribute to establish standardized baselines, assumptions and procedures among scientific institutions for future research work.

With respect to the specific request to comment on the issue of a comprehensive assessment during each cycle vs. special reports on a regular basis and a comprehensive assessment every two cycles, we support the production of well-organized and interlinked special reports. This support is based on the idea that 2-3 year special reports can better keep pace with the evolution of knowledge on different subjects and the need for urgency to provide policymakers with timely, policy-relevant information. For these special reports to be indeed policy-relevant, an approach that contemplates specific regional needs and circumstances is greatly necessary. Under this scheme, perhaps a Synthesis Report that collects and organizes all relevant outcomes of the special reports in an effective, straightforward language useful for policymakers could be produced every 5-6 years.

Finally, regarding organizational issues and the structure of the bureau, we support the suggestion of the IPCC Chairman to adding two Vice Chairs and strengthening the Secretariat with a professional with scientific background.

Australia

1. Introduction

1.1. Australia welcomes the Chairman's paper on the future of the Intergovernmental Panel on Climate Change (IPCC). It provides an important catalyst for the way forward and a strong basis for discussions at the next meeting of the IPCC in Budapest in April 2008.

2. Future outputs

Comprehensive assessment reports

2.1. Comprehensive assessments should remain the principal output and strong focus of the IPCC.

2.2. Assessment reports should remain the cornerstone of the IPCC. International and national policy development depends on an up to date and integrated understanding of climate change spanning the physical science, impacts, adaptation and mitigation.

2.3. Australia supports the development of a comprehensive assessment every five or six years, including commencement of a Fifth Assessment Report in late 2008/early 2009. The comprehensive nature and currency of knowledge provided in assessment reports is critical for both ongoing national and international efforts to respond to climate change, especially when the wide-ranging and diverse fields of climate change science are advancing rapidly. Therefore delaying the production of assessment reports until every second five to six year period would reduce the IPCC's efficacy in providing information to the policy making community.

2.4. In preparing comprehensive assessments we should be mindful of two key questions:

i. what is the current state of knowledge of climate change; and

ii. what important new developments have occurred since the previous assessment?

2.5. As we design future assessments we should be mindful of the level of detail required, particularly regarding those aspects of climate change that have become established scientific knowledge from previous assessments. In producing future comprehensive assessments we need to utilise these past findings without full elaboration and with reference to previous assessments. This will allow greater attention to be focused on new developments and emerging issues.

2.6. We agree that the strength of the contribution by the world's leading economists to IPCC assessments needs to be further considered. From its roots the IPCC has had a particular focus on the natural sciences, with this strength broadening over time to encompass both atmospheric and biological/ecological sciences, and has successfully engaged many eminent scientists. However, there is a generally held view that the IPCC has not achieved the same engagement from the world's leading economists. This weakness needs to be carefully addressed in the planning of a Fifth Assessment Report to ensure it caters to the evolving needs of policy makers.

2.7. Australia also supports the development of a technical paper to consider how sustainable development can be better integrated into future assessments. This should be conducted with a view to sustainable development's more complete integration into the current working group structure of the IPCC, particularly in planning a Fifth Assessment Report.

Synthesis reports

2.8. Greater priority should be given to the planning and design of the Synthesis Reports (SYR) of future comprehensive assessments. As the science of climate change is exceptionally wide-ranging and diverse, SYRs are very valuable to policy makers. They present an integrated picture of the science, that could not be achieved simply by reading the summaries for policy makers of each of the working group reports.

2.9. Australia proposes that the development of future comprehensive assessments begin with the scoping of the SYR. We should plan the broad subjects/issues to be dealt with in the SYR in light of the science and then filter these requirements, including requirements for integration, into the planning for each working group.

Special reports

2.10. The production of special reports by the IPCC is also valuable to the policy making community.

2.11. However, there needs to be a clear focus on the criteria to be employed for special reports. We consider that the IPCC must place a premium on husbanding the demands upon the world's experts, so that they are used only to a necessary extent for IPCC assessment work. Australia believes the default position should be that all relevant topics should be covered in the regular comprehensive assessments produced by the IPCC. Special reports should be reserved only for areas where there is considerable potential to add value. For example, special reports could be considered where:

i. a significant new development in science or technology has not been addressed sufficiently in previous assessments and where scientific advice outside of a comprehensive assessment would be timely for policy makers; and

ii. where a request for specific advice from the Untied Nations Framework Convention on Climate Change was received.

2.12. Attention to planning of the SYR and working group reports (see 2.7 above) would go some way towards reducing the need for special reports and technical papers.

New emission scenarios

2.13. The new emission scenarios to be developed by the research community and catalysed by the IPCC are also of fundamental importance to the future outputs of the IPCC. Since the production of the 2000 Special Report on emissions scenarios, the IPCC has invested insufficient planning in developing new scenarios.

Austria

General comments
Austria welcomes the discussion paper prepared by the IPCC chairman and distributed by 4 January 2008. The paper addresses most of the relevant questions. Under the assumption that there should be some common understanding on the future on the IPCC before the election of the next bureau Austria notices that only little time is left to discuss and decide on the issues raised. Austria therefore suggests that enough time for the debate on this issue is reserved at the next (28th) session of the IPCC Plenary.

The comments of Austria are intended to further strengthen the IPCC and to make the IPCC even more robust, transparent and useful for the climate process.

Austria sees room for improvement with regard to products, organisation, including IPCC rules and procedures and structure of the IPCC. Austria would appreciate to receive an updated discussion paper about the future of the IPCC well before the next IPCC plenary meeting in order to allow for another careful consideration of this important matter.

Specific comments

Need for change
Austria agrees with the paper that despite the high profile of the IPCC further improvements are required in order to even better serve the climate process and meet the needs of the future. Austria expects that driven by an accelerated climate change in the coming decades more impacts will emerge with an even more urgent need for information from the IPCC to inform the policy level as well as the broader public. From the Austrian perspective improvements are needed in particular in the following areas:

- capacity of the IPCC,
- range of products,
- being up-to-date,
- linkage between assessment and research.
- linkage between the existing WGs

Improvements with regard to the capacity are needed because in the past it was not possible for the IPCC to meet all requests for assessments. This resulted in significant delays and long debates about the products to be realized.

The range of products has also been limited by the specific expertise of the TSUs – see the issue of the Stern report as mentioned in the paper from the chair.

The process within the IPCC is quite lengthy. Therefore, some key findings might be outdated at the time of publishing.

It seems that a more substantive assessment of future research needs might help to speed up the process to reduce uncertainties and provide requested policy relevant information within shorter time.

The issue of speed seems to be so significant because the AR4 shows that emissions are increasing with increasing speed and temperature increase as well as sea level rise is also accelerating. It seems to be only logic that also the assessment process by which the knowledge base is prepared and which should inform the policy level needs to speed up.

Future products
Austria agrees with the paper prepared by the chair that we should try to limit the changes – Austria would therefore keep the practice to prepare comprehensive assessments including a synthesis report, as well as the idea of having working groups, each with a Technical Support Unit and the practice to prepare special reports and technical papers, as appropriate.

We are of the opinion that comprehensive assessments every 5-6 years are to favour.

Special reports are of great value and they may be appropriate to meet the fast changing knowledge particularly in some areas of climate change). Still, they may fail to account for the entire complexity of (i) the potentially fast near future changes of the climate system, and (ii) the quickly developing knowledge about climate change and related impacts.

We also have concern that special reports, being published at irregular intervals on isolated topics, will not gain the attention that comprehensive assessments can obtain from both the broad public and the policymakers.

A 10 - 12 year gap between comprehensive assessments is definitely too long in view of both (i) and (ii).

Nevertheless, Special Reports may lead the way to link climate change issues with issues like sustainability, air pollution, biodiversity etc. An integrated view in the various topics should be intended.

However, improvements building on that well established pillars could include the following changes:

1. Increase the capacity to prepare more products in the future by increasing the number of TSUs and organisations engaged. Allow for e.g. two TSUs for broad working areas with high demand (e.g. impacts, vulnerabilities and adaptation) – one could remain in an Annex I Party, another TSU could be located in an emerging economy (e.g. WG Ia, Ib). This should allow preparing in parallel comprehensive assessment reports and special reports although some additional effort will be required for internal co-ordination.
   Besides there seems to be a great need to establish instruments that allow and force formal interaction between the existing WGs. Cross cutting meetings might be important in that regard, an official link should be provided to improve interaction.

2. Allow to integrate the most recent scientific literature, even if it has been published during the first and second stage of the review process in order to deliver more up-to-date information.

3. Make more use of integrated assessment models in order to integrate faster the recent scientific findings in e.g. impact and vulnerability studies, emissions scenarios. This should allow also for a simple update of some of the findings, taking into account the most recent figures on actual emissions or atmospheric concentrations of GHGs.

4. Develop additional internal rules and procedures to identify
   - Robust findings
   - Key uncertainties
   - Key vulnerabilities
   - Reasons of concern

   The establishment of such rules should follow a similar process as the rules on handling uncertainties and their status should therefore also be the same. Such additional rules and procedures would make the whole assessment process more robust and would help to have improved continuity and comparability between assessment reports. This should help to have more frequent routine updates of key findings.

5. Austria suggests that the next full assessment report does not build any more on the outdated SRES scenarios but build on the new emissions scenarios that are currently under development. Otherwise the added value of any AR5 might be too limited and the new findings compared to the AR4 might be too limited.

6. Another option to further speed up the process might be to reduce the number of reviews by limiting the review cycle to two reviews. This might be enough for focused reports that e.g. just update a report without changing its table of contents.

Organisational issues

Structure
It is suggested not to increase the size of the bureau when increasing the number of TSUs but to reduce the number of vice-chairs.

To allow for a smooth functioning of the IPCC, the secretariat of the IPCC should be further strengthened, especially if governments agree to increase the number of TSUs. This should facilitate better coordination among TSUs/working groups and in particular strengthen any Synthesis Report.

Process
- It seems necessary to better describe the tasks and responsibilities of the chairs of a Working Group as well as to establish their profile. This should provide guidance for the co-chairs but also for their selection process.
- A new process should be established to facilitate co-ordination between two and more TSUs. This should also facilitate the preparation of any synthesis report.
- Austria noted that the background document of Working Group III was amended at a very late stage – during the plenary session of Working Group III, after the full report has been made available to delegates. This is very unusual and it is suggested to address this issue in the procedures for the preparation, review, acceptance, adoption, approval and publication of IPCC reports.

Belgium

Thank you Chair for giving us the opportunity to make a submission as we requested during the last Plenary in Valencia. We are grateful to you for providing us with your views on the future of the IPCC.

We discussed this issue within the Belgian coordination committee for international cooperation in the area of environmental research and with scientists that actively participated in the IPCC processes.

We agree that the IPCC is unique and that it has been successful in reaching its main goals as awareness building and providing the objective scientific and technical information as sound scientific basis for the climate negotiations. The IPCC is without doubt of high policy relevance and will remain very important for the international climate agenda in the coming years.

Experiences with the recent assessment, as well as the need to reduce the time lag between the production of scientific outcome and the development of policy, requires a review of the present processes. The evolution of new science paradigms such as the 'systemic approach', the connectivity etc and the greater and urgent needs of policymakers require a more integrated and also regional approach. It is not science only that is driving the assessment but also vice versa: the assessment identifies clear research needs and gaps which stimulate funding agencies agencies to revise and adapt/update their research policy approaches.

Question 1: the assessment cycle

The question unfortunately polarises the discussion around two extreme options. Clearly 12 years between comprehensive assessments is far too long, with respect to the needs of the policy community, the application of new information and available talent, and continuity in our collective "memory" of how the process works and needs to be improved. Indeed, even six years may be too long, especially for assessment of short-term trends or important new developments in the scientific literature. The comprehensive nature of the three Working Group reports is also very important to preserve their function as the best "encyclopaedia" of current knowledge on climate change. While the scope of each WG may change, their comprehensive coverage should remain.

On the other hand, the current four-volume assessments are too big to digest in one year: it is very likely that very few people ever have time to read all three WG reports from cover to cover, consequently too much emphasis is put on the SPMs, undervaluing the resource of the underlying chapters. Moreover, although a purported aim of producing all the reports together is that they should form a consistent set of information, in practice this does not occur because there is insufficient time for the authors to build upon key conclusions of chapters from other WGs In particular, much of the assessment of impacts and adaptation (WG2) tends to be based on climate analyses (from WG1) created for the previous assessment report, which may in turn be based on socioeconomic scenarios from the report before that (WG 3)
So, internal consistency could be improved by a longer interval between different parts of the report. As well as the most obvious cause-effect steps (from WG3=>WG1=>WG2) there are other feedback processes which could also benefit from an interval between reports:
Here is a list of some key links / feedbacks that take time to consider

- Representative Scenarios => Emissions (3=>1)
- Emissions => Concentrations, including biogeochemical feedbacks from climate (1<=>1)
- GCM output => Physical Regional Impacts (1=>2)
- Physical Regional Impacts => Human / Economic Impacts and Adaptation (2=>2)
- Scenarios => Human / Economic Impacts and Adaptation (3=>2)
- Human / Economic Impacts => Socioeconomic Drivers and Mitigation Goals (2=>3)
- Socioeconomic Drivers and Mitigation Goals => Representative Scenarios (3=>3)

From this list, it is clear that this is not a linear but a circular, iterative process, which might best be served by a continuous cycle of reports WG3 > WG1 > WG2 > WG3 > WG1 > WG2 > WG3 etc. The feedback from WG2 back to WG3 is particularly important, as we need scenarios consistent with the ultimate aim of UNFCCC to avoid dangerous impacts. So, our proposal is, rather than one "complete" set of 3WG reports every six years, to have **a cycle of one comprehensive WG report every two years.**

This would also imply the need to have much **stronger interactions between the Coordinating Lead Authors (CLAs) and Lead Authors (LA) across the WGs.** This might be accomplished by inviting CLAs of key chapters of a WG report to LA meetings of the other WGs. In the present situation, such interactions are nearly non-existing, which is, a pity.

The Synthesis Report, should, more than the recent one, consider **cross-cutting issues** and policy-relevant summary **across** WGs. This could be solved by each WG report containing:

- about **ten detailed chapters** comprehensively covering all topics of that working group
- a **TS** and SPM derived from these chapters
- one chapter from each of the other two working groups containing "**key update / news / progress**", which would not aim to be comprehensive, but cover the most important new findings during the last two years, building on the previous report of that WG
- and a **synthesis chapter** focusing on how all the new information fits together and may alter the key messages to policymakers.
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Thus, synthesis would be a more frequent, iterative process, such that weaknesses /gaps in one report could be more easily fixed two years later. This **iterative process** should improve the feedback and consistency between the WGs, whilst also reducing the "peak intensity" of work for those who try to cover the full range of topics, making it easier for people to get involved when it is convenient for them, rather than adapting their lives to a six-year cycle.

A **more frequent synthesis** would also help policymakers particularly in the UNFCCC process, recognising the importance of IPCC input but accepting that it is unrealistic to assume that the needs of UNFCCC will always be "in phase" with a six-year IPCC cycle. Indeed, the projected AR5 would arrive too late for post-2012 negotiations. Moreover, the negotiations often focus on near-term trends and targets, especially socioeconomic drivers of emissions, for which frequently updated observations and analysis are important to maintain relevance and credibility.

In the transition from the AR4 to this new system the interval since the last report would have to be shorter for some WGs than for others. In this regard we should consider the parallel process for new scenarios, agreed after considerable consultation and several workshops. Starting from this summer, the big Global Climate or Earth-System Models will start running the four "Representative Concentration Pathways", while in parallel the Integrated Assessment Models will explore a broad range of new scenarios. Thus, both of these communities, corresponding approximately to WG1 and WG3, might have sufficient new results for a WG report from 2011-2012. Regarding WG2 work on impacts and adaptation, more time would be needed in order to build on these new scenario results, so a new WG2 report could not be anticipated before 2013-2014. Thereafter, the cycle could continue with another WG3 report about two years after the WG2 report, perhaps with some special emphasis on finding scenarios that avoid or diminish specific impacts.

In summary, this proposal, to have one complete WG report every two years, is a compromise between the extreme options proposed in the chair's text, retaining the comprehensive coverage of the reports, but changing the timing of their production. It is quite different from the proposal to make only "special reports". Individual WG reports are not without precedent – the "supplementary" report of 1992, mainly from WG1, was well received.

Process, Organizational issues and the structure of the Bureau

The review processes

The review process should be significantly improved.
In our experience, written comments from governments are useful, giving the authors the opportunity to respond to requests for clarification, additional information, and to highlight areas of key concern. But, at author meetings, the authors need most of their time to work on the chapter text. This leaves them very little opportunity for discussing reviewer comments. On the one hand, Problems arise in particular from the huge number of comments. Often countries use more intensively the last opportunity to make comments, so late in the development of the reports. On the other hand compilations suggest that this facility is insufficiently used by many countries, particularly developing countries. An analysis of the reasons for this imbalance in the origin of comments might help to reveal where procedures or capacity could be improved.

The current process of collecting comments may also not be the most efficient one: it guarantees large numbers of comments, but not necessarily the most relevant ones. Critical comments may be snowed under. Here we suggest the possibility for experts and member countries to indicate a priority to the comments made.

The role of the Review Editors (RE) has to be clarified and posted rules should be obeyed when selecting LA and RE and transparency for both "coverage" of all important schools and views must be pursued. When this role is clear, measures have to be taken so that the role can be realised conform the quality standards. RE should be supervised by the TSU /and/or the IPCC secretariat to guarantee that this role is implemented 'uniformly' over all chapters and all WGs We are aware that this problem is most significant and most difficult to solve for WGIII where social sciences are in charge, and social sciences are value-laden (also economics!).

RE's give their opinion on whether all comments have been properly taken into account only at the time the final version of chapters is delivered. At that time there is little room for action left if certain issues have not been resolved.

RE's could be given a more active role during the development of the chapters, e.g. they could be asked to indicate which comments they consider critical on both first and second order drafts. During authors meetings, sessions could be dedicated to discuss these. To allow the full involvement of RE's in the entire process, we suggest that RE's be invited to LA meetings from the beginning of the process.

Organisational issues and structure of the Bureau

We think it is essential to keep the three working groups (see above) and the composition/structure of the Bureau which allow a balanced regional distribution and the complementarities of expertises.

We agree to the chair's proposal of two vice chairs which would take on a series of tasks to underpin the chair's work (including in outreach) but also to guarantee a better streamlining between the working groups, to promote the crosscutting issues and to facilitate a stronger and integrated synthesis and update of it on a more frequent basis. A clarification and more elaborated mandate (ToR for the Vice chairs, including possibly support needs) would be most welcome.

Other

Developing Countries

A stronger involvement of scientists from developing countries is a must. It is in the most vulnerable regions where important observational data are missing. Her we suggest that scientists from developing countries use opportunities such as the START programme. The money from the Nobel Prize might also be used to improve developing country participation in the long term.

Task Groups

We agree that economic aspects of CC are very important. It is necessary to enlarge the scope of analysis to the study of more local external effects, which result from the same drivers that induce climate change. From a policy point of view, the choice of actions cannot be made without assessing their total economic and social impact. There is also a need to coordinate better quantitative assessment of cross-cutting issues with a particular focus on consistency of methodologies for comparing results from studies dealing with different time periods, regions, risk levels (probability), sectors, and mitigation versus adaptation. However economics is not the only discipline that should be involved in this process, so a broad participation is essential.

Scientific issues

Particularly apparent during the negotiation of sectoral and regional impacts tables in WG2 and SYR, was the insistence by some delegations to include only "high confidence**"** statements. Whilst the more accurate quantification of probability is a strong feature of AR4, a better quantification of risk (i.e. probability * magnitude of impact) is lagging behind. **Higher-impact lower-probability outcomes are just as important as lower-impact higher-probability outcomes**, and should not be left out of reports solely due to low confidence. However judgement of relative risk is partly a subjective question.

In the current report of WG I, the same weight has been assigned to each climate model for computing multi-model ensemble means, while we know for a fact that some models are better than others. In future assessments, one should define a metrics to which each model should be confronted. Only the best models should be kept or, at least, higher **weights should be assigned** to models that work best.

In general, higher resolution of regions are needed in projections from all three WGs. In particular, for WG2 reports on impacts and adaptation, the "Asia" region is too large and diverse, both climatically and socio economically, and consequently statements may become too generalised, with insufficient detail – thus it is proposed to subdivide this region when planning future report outlines.

In AR4 WG1, the assessment of future projections was compressed into too few chapters, compared to the space given to history, observations and methodology. A greater emphasis on comparison of lower mitigation scenarios is particularly needed, however we hope that the RCPs proposed in the new scenarios process (see report of Noordwijk meeting) will help to resolve this.

Outreach and communication

Communication
The Synthesis report seems to have received much less media attention than the WG reports. Maybe this is not critical since media attention was huge for the WG reports. Nevertheless, with the four successive reports being released in the

course of a year, the IPCC should be vigilant about "**media fatigue**". Policymakers may not read the Synthesis report anymore after the other reports, while it is specifically produced for them. Our proposal above for one WG report (including a synthesis chapter) every two years may help to resolve this problem.

The AR4 synthesis report also relied too much on cut-and-paste of "agreed text", becoming more a compilation of paragraphs copied from existing WG SPMs, than a really new synthesis of information. Consequently some paragraphs and graphics were repeated up to five times – in SYR SPM, SYR TS, a WG TS, a WG ES, and a WG chapter, in similar but not identical forms. This can be particularly confusing for new readers not accustomed to the structure of IPCC reports, who, on seeing such a paragraph or graphic for the second time, are likely to assume they have already read that section and skip the further detail that follows it.

The credibility of the IPCC reports is based on the fact that they summarize and integrate existing research, which itself has been scrutinized through publication in peer-review journals. While the principles of scientific publication are well known to scientists, this is not the case for the general public and the media. It is critical to communicate better how the statements in the reports are produced, because the thousands of supporting studies (and the work behind this) are not visible when these statements appear in newspapers and television.

Reports and assessment procedures should be also extended to include, where appropriate, **interactive** graphics, animations, extrapolation/downscaling tools, and simple models and formulae (all reviewed in a thorough way as for written reports). In the modern world, more people are searching for information on the internet than reading large printed books in the library, and this technological revolution since IPCC was created should be reflected in the balance of its products. Moreover on the internet there is no limit on space, so it is possible to cover a much greater depth of information and range of combinations of models and scenario projections than can ever be included in paper reports, while spending less time negotiating prioritisation of space.
The mandate and support for TGICA, DDC, and other task groups could be strengthened in this regard, or a special task group on interactive material could be created.

Logistics

In general, compared to UNFCCC-SBSTA (with which it shares some procedures and participation), the IPCC plenary process may seem **a remarkably efficient**, refreshing process, but compared to less formal scientific workshops it can still seem frustratingly **cumbersome.**
In particular, too much plenary time is spent "**wordsmithing**" texts. It is particularly inefficient for delegates to read out suggestions for minor changes to text orally, although such suggestions are still useful to resolve new problems. Such minor textual changes could be submitted by delegates electronically and displayed automatically, in a parallel screen to the agreed text. Delegates could then focus their oral interventions on their key points, questions and explanations. Viewing proposals on the screen could also help delegates who are not native English speakers. A similar electronic system could be used for simply expressing support for the proposal of another delegation, which might save considerable plenary time.

On the other hand, better capacity is needed for **adapting graphics "live**" during meetings. Graphics may be considered the most important component of reports, as they are reproduced more often than text, particularly in presentations, so proportionally more time should be dedicated to them.

Greater use of t**eleconferencing** could also aid efficiency. Currently small groups within IPCC make teleconferences by telephone, assuming that most participants can already recognise each others' voices. Nevertheless, without any visual signal it is difficult to know who else wants to speak, whether the understanding is clear, or when is a good moment to intervene. This may be particularly disadvantageous for non-native English speakers. For such small groups, it could be easy, and cheap, to set up teleconferencing including small video-images using voice-over-internet software. An "electronic whiteboard" system would also help especially for discussion of text or graphics. Governments and businesses have used such systems internally for many years – and most universities also have the necessary facilities. Greater investment in teleconferencing should quickly save money, considering the large expense on travel and hotels.

In selecting a meeting place, one should think about the most **optimal locations** of meetings given the country of residence the participants (e.g. LA's) to minimise average travel distance, and therefore pollution.

It may be worthwhile to monitor the ecological (GHG) footprint of the IPCC process, and take measures to reduce the emissions by optimizing procedures and events (as some of the suggestions above contribute to)

It would also be good to see the IPCC joining the increasing number of institutions aiming at "carbon-neutralising" their activities (by reducing its carbon footprint first, and compensating remaining emissions).

Benin

After a review of the discussion paper on this matter, are presented below:

- We appreciate the general points of view expressed in the Discussion Paper on the future of the IPCC, as well as the diagnostic analysis and proposals made.
- In a view of any change in the functioning of the IPCC, the ''Principles governing IPCC Work'' and its Procedures, appear to be (obviously) the main aspects to reconsider in the light of new prospects agreed by the Panel. So apart from the review aspect of these principles in respect of the due time, the reconsideration of the latter to meet any modifications and refinements in the functioning of the Panel is an urgent task that could not be seriously carried out soon. That's why we are in a favour of the idea to set up a Task group at the 28th Session the IPCC for a detailed evaluation of these principles as a starting point.
- We also share the view that, future assessments by the IPCC focus in more concrete ways on various aspects of sustainable development, with a special emphasis on economic dimension of climate change, since this issue has not been so far fully or adequately addressed.
- It's a real fact that the assessment of regional aspects particularly the regional impacts of climate change, has not made a significant progress, despite the decision of the IPCC to set up since the TAR, regional teams of Lead Authors to concentrate on this subject. The example of the AR4 for regions like Africa has clearly pointed out important gaps in the last assessments due to lack of data and research. A strategy towards the reinforcement of observational capacities and the promotion of research needs to be developed and implemented. Therefore, we find useful and most welcome the organization of a workshop or expert meeting, involving relevant organizations and entities.
- Wish regard to the cycle of Assessments we believe that the current period (5– 6 years time frame) seems more appropriate to capture some climate related stimuli and to take political decisions. That's why we do support the current system of a comprehension assessment every 5-6 years.
- In addition to the above mentioned issues, the following concerns are to be considered with special attention:
    - Outreach activities (mainly in Developing Countries)
    - Response to UNFCCC Requests (COP, subsidiary bodies).

Canada - Environment

First, I wish to take this opportunity to congratulate the Intergovernmental Panel on Climate Change (IPCC) on the completion of the Fourth Assessment Report.

As we move forward to discuss the future of the IPCC, I believe it is important to reflect on the AR4 process. In particular, I think it is necessary that the IPCC learns from the Working Group co-chairs on how the working group and technical support unit structures and processes can be strengthened in the future. Therefore I look forward to receiving your proposal on the future of the IPCC as soon as possible.

As part of this process, I would strongly encourage you to formally request the current Working Group co-chairs to provide, in writing, their input on the strengths and weaknesses of the current Working Group and Technical Support Unit structures. This would provide valuable insight into how the Working Group structure can be strengthened in the future.

Additionally, I believe that the scientific community would also be interested in the co-chairs' views on the areas of expertise that will be needed in the future to make scientific breakthroughs on current sources of uncertainty.
For example, within each Working Group's realm, I think it would be excellent for the co-chairs to identify which areas of expertise they believe are currently under represented, but that will be essential to reducing scientific uncertainties in the next assessment cycle.

I can assure you that Canada is taking the issue of the future of the IPCC seriously and we will actively hold consultations on this matter early in the new year.

Chile

General Comments

The Government of Chile strongly supports the results produced by IPCC. These results have been used by our country to generate public policy in the issue of climate change, proving to be very valuable material. However, it appears a healthy practice to perform periodic assessments of the work done and to produce views of the future, such as the one presented in the current document. This is particularly timing due to the higher level of relevance of Climate Change in the Public and Government agenda around the world.

In this respect, it is shared the view presented in the document with regards to the higher involvement of the public with the subject of Climate Change and its impacts. Therefore it appears to become necessary wider outreach activities to spread conclusions generated in the IPCC documents.

Specific comments:

With regards to organizational issues, it is shared the viewpoint that due to the relevant work done by IPCC, changes in its organizational structure and in the products that the IPCC will produce in the future, should not mean to move away from the procedures and quality of reports already produced by the Panel. It is expected that more and even better IPCC documents might be produced in the future, since they have become valuable contributions to researchers and policy makers.

If, as a consequence of the stated in the previous paragraph and development of wider outreach activities, a higher load of work is expected to IPCC in the future, it appears appropriate and necessary that the IPCC Secretariat should be strengthened to cope with this higher load.

With regards to section 3.1.2 matters, it is considered relevant that in the issue of sustainable development, the work and conclusions already produced by other International Conventions (RAMSAR, Biodiversity) can be taken into account. These Conventions are currently applied by signing countries allowing development of activities aimed to help in conservation of ecosystems.

With regards to section 4.1.4 matters, it is very relevant the work produced by IPCC in the issue of Climate Change and Water due to the multifarious impacts of water into our planet.

Regarding to the issue of the periods to perform comprehensive assessments, it seems appropriate to have 5 to 6 year cycles, with Special Reports to be developed mostly during the first 3 years of the cycle, delaying comprehensive evaluations until the end of the cycle, as proposed in the document.

With regards to IPCC Reports, it is proposed to work on a comprehensive Plan of IPCC Reports for the coming years, in order to identify synergies among them and organise all the work related to them well in advance, having into account past experiences.

Since reports produced by IPCC are an excellent basis for climate change research, it is suggested to produce a Report with regards to Economic Aspects of Climate Change, with a particular emphasis into Sustainable Development. After this, a Mitigation analysis based upon the conclusions of this previous Report could be produced. It would be also important to consider a special report on the current status of peats around the world, and their contribution as carbon sinks or carbon emitters.

Regarding adaptation to climate change, the Fifth IPCC Report should devote special attention to describe/analyze —in a comprehensive manner— practical adaptation examples around the world, including costs and benefits, as well as suggested adaptation options. These adaptation examples/options should explore a wide range of possibilities, i.e., from policy arrangements to technological improvements.

With regards to the same issue of new documents to be prepared by the IPCC, it is proposed that a series of assessments organised from a geographical viewpoint (Regional Assessments) are performed in the near future. This approach may help to present in a more integrated manner the different challenges and opportunities for the countries of the planet sharing regional vulnerable zones to climate change, and contribute to highlighting opportunities of common work on adaptation and mitigation. This approach may become very practical for the Governments of the countries members of IPCC.

With regards to the IPCC comprehensive assessments, it is proposed also that during the cycles, more efforts are concentrated into producing Special Reports, rather than into preparing comprehensive assessments. Special Reports

have proved to become tools that can particularly help to policy makers for specific subjects, especially when they present conclusions in a simple and concise format. (SHOA)

Efforts not only to produce but also to spread widely the results of the documents and conclusions produced by IPCC should be tackled in a more consistent manner. In this respect, it is expected that a thorough strategy devoted to this issue starts to be discussed as soon as possible.

In a similar subject than the previous one, IPCC activities should be more orientated that they currently are, to enhance capacity building inside the Governments, helping to the Governments to take more informed and science supported decisions.

With regards to the production of comprehensive assessments (Climate Change reports), it is recommended to evaluate current reviewing processes by the IPCC and come up with a new revision method that minimizes that conclusions obtained using methodologies agreed by the IPCC experts are put into question marks at the final stages of the process.

Finally, considering administrative and financial travel conditions aimed at keeping and reinforcing assistance from developing countries experts to IPCC following activities is welcomed.

China

The Chinese Government welcomes the effort made by the IPCC Chair in drafting the document "Some Issues Related to the Future of the IPCC" and appreciates the work accomplished by IPCC. The basic principles and positions of the Chinese Government on the issues covered in the document are as follows:

The Chinese Government believes that since its founding, IPCC has provided the international communities with useful information on effective measures in response to climate change through launching a series of assessment reports. Especially the Fourth Assessment Report (AR4), which was published recently, is a detailed scientific assessment report based on the current understanding on climate change by international communities. The Chinese Government highly appreciates the tremendous efforts made by the scientists and relevant staff who were involved in the preparation of IPCC assessment reports.

In order to address the concerns of national governments, substantial scientific research on climate change is going forward and will be continued globally. According to AR4, there are still gaps in such fields as the interactive mechanism of climate systems, extreme events, regional impact and its adaptation, and technology in connection with adaptation and mitigation, etc. Therefore, the Chinese Government deems it very necessary to make further assessments in the future.

The Chinese Government believes that the processes and practices where the three working groups prepared their individual reports, out of which a synthesis report was extracted, proved to be effective and efficient and hence should be maintained. The cycle of the comprehensive assessment could be extended by 1-2 years from the practice of AR4. However, a cycle of 10-12 years seems too long.

It is the opinion of the Chinese Government that in its future assessment activities, the IPCC should further enhance rather than weaken the assessment of the scientific facts about, impacts of and adaptation to climate change, particularly the regional climate change and its impacts, climate change with extreme weather and climate events, adaptation options and their effectiveness, which deserve further more attention, so as to meet the needs of all countries, especially the developing countries, for better knowledge in those respects.

As for the special reports and the technical reports, the Chinese Government maintains that the past experience shows that the issues elaborated in the special reports and the technical reports are consistent with those dealt with in the Assessment Reports to a larger extent, and are often a repetition of the content of the latter. Therefore, taking into account its limited human, material and financial resources, the IPCC should focus more on the assessment reports of the three working groups and the Synthesis Report.

It is the view of the Chinese Government that the existing IPCC structure (including the size and composition of the Bureau), relevant rules of procedure and review procedures are what have been agreed upon after careful elaborations and full discussions by various national governments and the performance of their actual operation has been widely recognized by all parties. Therefore, it is important to maintain the stability of the existing structure, relevant rules of procedure and review procedures.

中国政府对文件《关于IPCC未来若干问题》的反馈意见

中国政府对IPCC主席起草的关于IPCC未来的文件表示欢迎，并对IPCC所做的工作表示赞赏。现就文件中涉及的问题提出中国政府的原则立场如下：

中国政府认为，IPCC自成立以来做了大量的工作，所推出的一系列评估报告为国际社会采取有效措施应对气候变化提供了有用的科学信息。尤其是刚刚完成的第四次评估报告，是符合当前国际社会对气候变化认知水平的一份较为科学、翔实的评估报告。中国政府对IPCC所有参与历次评估报告工作的科学家和相关人员的努力表示赞赏。

由于各国政府的关注，全球在气候变化科学研究方面正在并将继续开展大量的工作，且AR4的评估认为，在气候系统相互作用机制、极端事件、区域影响及适应、适应和减缓技术等方面还存在知识上的空白（Gap），因此，中国政府认为继续开展评估工作是十分必要的。

中国政府认为，根据以往的经验，基于三个工作组提供工作组报告,并在此基础上形成综合报告的方式是十分有效的，应继续保持。全面评估（comprehensive assessment）的时间周期可以在AR4的基础上延长1-2年，但10-12年的时间显然过长。

中国政府认为，在未来的评估活动中，IPCC应进一步强化而不是忽视对气候变化科学事实、影响和适应方面的评估工作，尤其在区域气候变化及其影响、气候变化与极端天气气候事件、适应性措施选择和效果等方面，应给予更多的关注，以满足各国尤其是发展中国家对这些领域知识的需求。

关于特别报告和技术报告，中国政府认为，过去的经验表明，特别报告和技术报告所阐述的问题与评估报告所关注的问题在很大程度是一致的，往往是对评估报告内容的重复。因此，考虑到IPCC人力、物力、财力的有限性，IPCC应该将精力更多地放在三个工作组评估报告和综合报告上。

中国政府认为，现有的IPCC机构设置（包括主席团的规模和构成）和有关议事规则、评审程序是经过各国政府深思熟虑和充分讨论达成的共识，其实际运行得到了各方的认可。因此，保持现有机构设置和有关议事规则、评审程序的稳定性是十分重要的。

Dominican Republic - Secretaria de Estado de Medio Ambiente y Recusos Naturales

1. Una revisión de] pasado - No comentarios
2. Necesitamos nosotros alqún cambio?

2.1 La República Dominicana respalda y apoya la posición para que el IPCC se de un proceso de apertura a los cambios fundamentados en esos citados tres puntos de esta sección, especialmente la continuación y reforzamiento de brindar al publico los resultados de los estudios del lPICC.

2.2 & 2.3 Respalda y apoya la realización de la revisión, a fin de que se puedan revisar los nuevos puntos de vista sobre el problema que hayan ido surgiendo en los últimos años, además de probar la consistencia de los principios actuales y que integre en la 28va. Reunión en Budapest. En este sentido, la República Dominicana esta en disposición y le gustaría de continuar participando y ser parte de este Grupo de Trabajo.

2.4 Se respalda la posición de mantener los tres grupos de trabajo ya establecidos.

2.5 & 2.6 No comentarios

3. Motores de los cambios requeridos en el futuro

3.1 Estamos de acuerdo que existe una gran cantidad y nivel de concientización sobre los asuntos y base cientificos del cambio climático. Sin embargo, se percibe y entiende la necesidad de trabajar más sobre los asuntos económicos y de desarrollo sostenible debido a que no han sido tratados adecuadamente con la profundidad que ameritan.

3.2 Respaldamos y apoyamos la consecuencia que debemos abocarnos a trabajar sobre los aspectos económicos del cambio elimático. Se debe incluir en futuras evaluaciones la dimensión económica. Asi mismo, respaldamos la iniciativa de formar un grupo evaluador a ser decidido en la próxima IPCC 28va. Reunión. También apoyamos la celebración de talleres regionales para abordar los problemas particulares del cambio climático en cada una de Ias regíones del mundo.

4. Futuros Productos del IPCC

La República Dominicana favorece y apoya : que se mantengan los tres reportes de los grupos de trabajo, que se mantenga el sistema actual de un informe comprensivo para el periodo de 5-6 años con reportes especiales sobre los aspectos especificos señalados, para ser desarrollados en los primeros tres años del periodo de 5-6 años.

Así mismo, respaldamos y apoyamos las propuestas de informes sobre: Energías Renovables, Cambio Climático y Desastres, Impactos y Adaptación : Cambio Climático y Calidad de Suelos, Cambio Climático y Agua, Cambio Climático y Desarrollo Sostenible, entre otroso. De igual manera se debe favorecer la producción de un informe Sintético sobre politicas enfocado para los tomadores de decisiones con un máximo de 30 páginas.

5. Aspectos organizacionales relacionados con el funcionamiento del próximo Buró

La República Dominicana respalda y apoya los cambios propuestos por considerarlos razonables. Obviamente, la próxima reunión (28va.) será una oportunidad de discutir con más profundidad las propuestas de cambio en el funcionamiento del Buró.

6. Próximos Pasos - No comentarios

Ecuador

3.1 Drivers of required change in the future

Additionally to what it is indicated in the document, it is suggested to introduce as a relevant point the consideration of mechanisms to strengthen the participation of developing countries in the IPCC future activities. This suggestion responds to the findings identified in the IPCC reports.

3.1.1

The effort of the Small Group to analyze the economy of the climate change at global level could also consider, at a first stage, pilot analysis for representative regions and developed and developing countries

3.2

It is suggested to consider the possibility of preparing an updated version of the Special Report - The Regional Impacts of Climate Change: An Assessment of Vulnerability, issued in 1997.

4. Future outputs of the IPCC
4.1.2 We recommend comprehensive assessment every 5-6 years, but with special reports on specific points to be executed during the first 2-3 years of the terms of the Bureau.

Between the subjects to be boarded in the special reports it could be included the update of the Special Report - The Regional Impacts of Climate Change: An Assessment of Vulnerability.

5. Organizational issues related to the functioning of the next Bureau

The idea of new responsibilities for the Vice Chairs in the matter of the special reports is adequate. For this, it will be required that they have a suitable scientific background. The technical and administrative strengthen of the Secretariat will have to respond to the new activities that will be determined in the future work of the IPCC.

Egypt

Item 1. A review of the past

- There is lack of the number of representatives from developing countries either the authors or reviewers. There is a need to increase the number either as authors and/or reviewers to achieve balanced regional distribution.
- Scarcity of research funding for developing countries to address climate vulnerability and climate impacts in developing countries.
- Research funding should be dispersed for not less than 2 researchers per each developing country.

Item 2.Do we need any change?

- There is lack of information presents in AR4 relevant to developing countries.
- Regional studies should be considered, there is urgent need to take into consideration the results of published works and output of workshops relevant to climate change in international, regional and local journal.

Item 4.Future outputs of the IPCC
Agree and recommending for the current system of a comprehensive assessment every 5-6 years, but with special reports on specific subjects to be carried out early in the first three years of the term of Bureau.

Item 5.Organization issues related to the functioning of the next Bureau

- It is recommended to introduce in the procedures that the IPCC focal point should be involved in any activity in IPCC relevant to his country and the output of any activity should be endorsed by the IPCC focal point.
- It is recommended that current travel roles that often cause considerable difficulties should be changed.

Item 6.Next steps

- Technical paper on vulnerability in Nile Basin to climate change impacts is highly appreciated.
- Another technical paper on vulnerability adaptation of costal zones of Nile Delta to climate change could be of much benefit to Egypt is highly appreciated.
- We recommend that the IPCC extents its function modeling and scenarios to the regional level.

Finland – Ministry of Environment

Thank you for a very good and interesting discussion paper on the future of the IPCC and for opportunity to give our views on this matter. According to your wish, we comment the cycle of the comprehensive assessment and special reports and the organizational issues.

We are of the view that the comprehensive assessment is the most valuable product of the IPCC. It is important that the assessment is produced also in the future in each cycle. The scientific, technical and socio-economic information on climate change is progressing rapidly and it is important that an assessment is made in every cycle to provide the policy makers with comprehensive and reliable scientific basis for decision making.

There is an increasing demand for scientific information for addressing the challenges related to mitigation of and adaptation to the climate change. Therefore there should be in the future assessments by the IPCC increased emphasis on scientific information on the transition pathways to low carbon economy and socio-economic aspects of climate change, e.g. cost of inaction, cost-efficiency analyses of mitigation and adaptation policies and effectiveness of policies. The increased emphasis on these issues should not, however, compromise the provision of solid scientific basis for

understanding the climate change and its impacts. There is also a need to improve the interaction between the IPCC WG's in order to be able to provide information related to questions of the policy makers, which often require integrated input from all WG's.

The results of the UNFCCC climate conference in Bali and the increased urgency for action to address the challenge of climate change requires new ways to respond to policy questions more frequently. Special reports on specific topics within each cycle is one possibility. There could also be new types of products that provide most recent scientific information on key issues that are relevant to policy makers.

We don't see any major concerns and needs for change in the current structure of IPCC and IPCC Bureau. We are of course open to good suggestions by others especially on how to improve the interaction of the WG's and how to organize work to provide possible new types of products in a way that provides the much needed information faster than is now possible without compromising the quality and credibility of the results.

France - Ministère de l'écologie, du développement et de l'aménagement durables

1. A review of the past

La structure, les procédures et les méthodes de travail du GIEC ont comme vous l'indiquez montré leur efficacité. Nous souhaiterions souligner cependant le rôle essentiel du **bureau de chaque groupe de travail, entre les politiques qui les ont élus et les scientifiques dont ils font partie**. C'est lui qui choisit les auteurs coordinateurs (CLAs) et les auteurs principaux (LAs) et qui supervise la cohérence des divers chapitres et la prise en compte des commentaires, lors des relectures. Les présidents des groupes de travail président les séances plénières d'approbation des rapports et font appel aux coordinateurs pour commenter les propositions d'amendements issus des politiques. Les discussions les plus difficiles, lors des plénières, surviennent lorsque certaines délégations, pour des raisons politiques, s'opposent aux vues des scientifiques. De ce point de vue, la phrase "*It is relevant to observe that the requirements of consensus have been met to a surprising extent, even though there is provision in the principles for recording differences of views"* pourrait également s'écrire: "*It is relevant to observe that the requirements of consensus have been met to a surprising extent, **because** there is provision in the principles for recording differences of views".* **La règle que vous rappelez en note nous semble essentielle à l'obtention d'un consensus, car elle est dissuasive : un pays dont l'opposition à un résultat scientifique indiscutable serait dûment enregistrée dans un rapport du GIEC se décrédibiliserait. Il nous semble fondamental de conserver cette règle et ne pas hésiter à l'appliquer quand cela s'avère justifié, afin d'éviter une dérive que nous croyons déjà déceler vers un accroissement supplémentaire du poids de considérations politiques dans les arbitrages en plénière**.

En ce qui concerne les activités de faire savoir (outreach) du GIEC, nous ne sommes pas convaincus de la nécessité de faire un effort supplémentaire à ce qui est déjà entrepris. Le monde entier attend les rapports et l'action vraiment utile est de mettre à la disposition de tous des textes et des diapositives dans toutes les langues. L'effort à faire doit porter en priorité sur la rapidité et la qualité de ces traductions, et sur la large diffusion des résumés des rapports sous forme papier.

2. Do we need any changes ?

Il nous semble très utile que le GIEC rappelle les principaux domaines d'incertitudes particulièrement pertinents pour les décisions politiques sur lesquels il serait souhaitable qu'un effort particulier soit fait en matière de recherche. Une telle liste serait utile pour motiver les chercheurs et serait utile dans les décisions d'attribution de crédits prises par le gouvernements. Les sujets suivants notamment nous sembleraient pertinents :

Groupe 1 :
- Sensibilité du changement climatique à la composition de l'atmosphère (afin réduire le facteur 3 de l'incertitude actuelle)
- Dynamique des calottes glaciaires de haute latitude
- Influence du changement climatique sur la part du CO_2 qui reste dans l'atmosphère et boucle de réaction positive correspondante
- Régionalisation des simulations des climats futurs

Groupe 2 :
- Influence du développement sur les capacités d'adaptation
- Estimations économiques des coûts des dommages et de l'adaptation
- Analyse des impacts régionaux

Groupe 3 :

- Contraintes scientifiques et techniques sur les diverses solutions envisageables pour produire de l'électricité sans émission de gaz à effet de serre, pour stocker cette énergie ou pour faire des économies d'énergie.
- Influence de l'organisation des activités sur les émissions de gaz à effet de serre : dématérialisation de l'économie et développement des possibilités de télétravail, possibilités de mieux répartir dans le temps la consommation électrique par des délestages décidés en fonction de la demande instantanée

2.3 : Le site Internet du GIEC mentionne que les principes de travail ont été amendés en avril 2006 à Maurice. Il n'y a donc pas d'obligation statutaire à aborder avant 2011 ce point pour lequel la situation actuelle nous semble satisfaisante.

2.4 : Nous appuyons cette répartition entre les groupes, qu'il faut conserver. Dans la pratique, nous proposerions cependant de demander aux Bureaux correspondants, une fois élus, d'accroître leurs efforts sur les travaux économiques dans le groupe II et sur les travaux techniques dans le groupe III. Par ailleurs les scientifiques consultés par nos soins ont ressenti, au cours de l'écriture du rapport d'évaluation, un manque d'information sur l'avancement des travaux des autres Groupes de travail. Il pourrait être utile d'organiser, lors des réunions importantes des groupes d'écriture, des présentations d'information par les représentants des autres groupes de travail.

3. Drivers of required changes in the future

Nous sommes dans l'ensemble d'accord avec le contenu de ce chapitre. Cependant, le GIEC ne peut rendre compte que des travaux scientifiques publiés dans des revues à comité de lecture ; il serait donc utile, afin de susciter des travaux sur les sujets encore insuffisamment explorés, de dresser une liste de sujets particulièrement pertinents pour les décisions politiques sur lesquels il serait souhaitable qu'un effort particulier soit fait en matière de recherche comme nous le proposons plus haut.

4. Future outputs of the IPCC

4.1.2 Nous sommes convaincus que le poids du GIEC serait considérablement diminué s'il renonçait à la publication tous les 5 ou 6 ans de son rapport exhaustif. Nous soutenons donc très fermement le maintien de cette périodicité, qui constitue le meilleur compromis entre le besoin d'information du public, la disponibilité d'informations nouvelles et le cycle naturel des négociations sur le climat.
4.1.3 Il est nécessaire de mener à bien un nombre limité de rapports spéciaux, en fonction des demandes provenant des pays membres. Nous estimons toutefois que leur rédaction dans de bonnes conditions n'est possible que si leur coordination est confiée à un des groupes de travail. Nous ne pensons pas qu'un vice-président du GIEC, qui ne serait pas entouré d'une solide équipe scientifique, puisse faire face à une telle tâche (voir 5.1.2). Nous estimons également que la prochaine réunion plénière devrait examiner l'ensemble des demandes de rapports spéciaux qui seront effectuées d'ici-là, afin de planifier au mieux les travaux à venir.
4.1.4 L'utilité des rapports techniques est contestable, puisque leur mode de préparation et d'adoption en limite l'autorité, tout en demandant à la communauté scientifique un travail voisin de celui des rapports spéciaux.
4.1.5 Nous sommes entièrement d'accord sur la conception que vous proposez pour le rapport de synthèse.

5. Organizational issues related to the functioning of the next Bureau

5.1.1 L'idée d'inclure un spécialiste d'économie dans les bureaux des groupes II et III nous semble judicieuse. Cependant, c'est probablement déjà le cas pour le groupe III, pour lequel il serait nécessaire également d'exiger l'existence d'un spécialiste des technologies.
5.1.2 Nous ne sommes pas convaincus de la nécessité de réduire de 3 à 2 le nombre de vice-présidents, étant donné l'accroissement des demandes d'informations adressées au GIEC. Les responsabilités doivent cependant être clairement définies, afin d'éviter notamment que les nouvelles tâches qui leur seraient confiées viennent compliquer celle des co-présidents de des groupes de travail. Les vice-présidents du GIEC et des Groupes de travail doivent avant tout représenter le GIEC et garder la distance nécessaire vis à vis des positions propres à leur gouvernement. A cette fin, il serait préférable que lors des sessions plénières les vice-présidents du GIEC siègent à la tribune ou à des places qui leur seraient réservées au premier rang de l'assemblée.
5.3 Nous ne sommes pas favorables à un renforcement du secrétariat en personnel scientifique, qui risquerait de compliquer la tâche des unités de support technique des groupes de travail.
5.1.4 et 5.1.5 : ces deux points demanderaient à être davantage explicités; nous ne sommes pas en mesure d'appuyer ces propositions sans éléments supplémentaires et concrets.

6. Next steps

Le point essentiel de notre point de vue est la conservation de la périodicité actuelle pour les rapports d'évaluation.

Gambia

Below is my country's contribution to the above titled discussion:

We support the proposal put forward by the IPCC Chair and would like to underscore the need for the Panel to support the assessment of regional impacts, especially in the developing countries. We strongly believe that the AIACC project was a great success and given current problems facing most developing countries, particularly in the academic arena, external support is indispensable to overcome the knowledge gaps, particularly in sub-Saharan Africa. The proposed organisation of a forum to assist in the determination of a programme of action also receives our full support.

With regards to the frequency and scope of future assessments (6.2.1), we like to support the prevailing situation for the following reasons:

- the comprehensive report during every cycle ensures the full consideration of the non-static nature of the drivers and impacts of climate change, thus leading to a more holistic assessment of the situation;
- the comprehensive report also ensures balanced geographical considerations and allows multi-sectoral assessment, which for literature-starved communities/institutions is more informative.
- Special reports are useful but should not replace the comprehensive assessments. The prevailing arrangement on special reports and the comprehensive report is okay.

Germany – Ministry of Environment

Introduction

We thank the IPCC for the opportunity to comment on the discussion paper of January 2008 by the IPCC Chair and to submit our views on the future of the IPCC including its structure, work programme and main products. This submission by the German federal government is based on broad consultation with German scientists including AR4 authors, policy makers and other users of IPCC products.

The IPCC has been very successful in fulfilling its founding vision of an interaction between the science and policy communities, agreeing on common language and understanding. This success brings with it new demands from policy makers and public alike, especially following the Bali agreements in December 2007. We agree with the Chair that, after 20 years, it is time to reflect on the structure and functioning of the IPCC. Under the current circumstances, it is all the more important to identify the IPCC's "core business" and to resist the pressure or temptation to expand into areas better handled by other groups or organisations or to take on those which are better "out-sourced".

We find the Chair's paper a good starting point for discussion. The differentiated experiences of the three Working Group contributions to the AR4 and its Synthesis Report can provide guidance for the future However, we believe that the discussion should be guided by the following questions: What should be the IPCC contribution to understanding and solving the problem of climate change and its impacts in the time available to avoid dangerous climate change and how does this compare to the UNFCCC time scale? Which working structures and outputs would be most helpful to deliver these contributions in a timely and efficient way?

Recent experience

The strengths of the IPCC especially as it has matured with its fourth assessment cycle can be summarised as its high scientific standard, common language and relatively transparent process leading to a peer reviewed, policy relevant, reference document of great public interest. The Special Reports provide additional visibility and timely contributions for discussion but they must be scientifically as rigorous as the Assessment Reports.

The process of achieving consensus on the text of the SPMs and Synthesis Report is both the IPCC's greatest strength and at the same time a source of weakness. On the one hand, the text has the highest degree of acceptance imaginable; however in the process it often becomes much less readable and information that was carefully included by the authors in the underlying reports might be lost in the process leading to the approved SPMs. Some of the figures and tables in the AR4 SPMs could have been better designed for external use; perhaps the early involvement of professional illustrators could help to clarify the message to be conveyed.

The preparation of excellent, comprehensive reports with this degree of transparency and accountability means an increasing burden on the (coordinating) lead authors. It has long been recognised that the involvement of experts from developing countries should be enhanced. The inclusion of more peer-reviewed literature in languages other than English is desirable.

Aspects that need to be handled better in future assessments include assessment of risks at global, regional and local levels, evaluation and treatment of uncertainties and especially results with high impact but low probability as well as evaluation of the main findings from an economic point of view (economics of climate change); also regional information including that which may only be relevant to a few areas.

The assessment of only a few emission scenarios consistent with the 2 degree C limit above industrial level as proposed by the EU and other Parties to the UNFCCC and their socioeconomic, technological and climate system implications over relevant time scales (many decades to centuries) was a weakness in the literature available for assessment in the AR4 cycle. The need for scenarios that include the full range of plausible future radiative forcing levels has grown with the awareness of the increased risks of long term sea level rise and ice sheet disintegration, terrestrial carbon cycle and ecosystem risks. The risks, probabilities, economics and climate impacts of low forcing scenarios that meet the 2 degree C limit above pre-industrial levels with a higher probability need to be available in the literature and form part of the framing of the next Assessment Report. However, the IPCC cannot choose its own scenarios nor can it control the timeline because of the decision of the IPCC 25th plenary in Mauritius in 2006 that the IPCC is only to catalyse the development of scenarios by the scientific community. We fear that this has already led to a lack of transparency and may pose fundamental problems for a fifth Assessment Report.

The cooperation between the three WGs was not clearly formulated in the AR4 and cross cutting issues could have been handled better by inclusion in separate sections or even chapters. This also applies to the Synthesis Report. We agree with the IPCC Chair that the basic structure can mostly be kept with some changes and suggest a process of evolution, not revolution.

Evolving requirements and new challenges

The timing of the IPCC's work must be improved to serve the UNFCCC process. As well as considering the technical time requirements for producing an Assessment Report, one must also ask, when is it needed. A 5-6 year period for the next full assessment seems to be appropriate as this is already quite a long cycle from the point of view of policy and decision making. The next question is what can the IPCC provide to support the UNFCCC and the Kyoto Protocol in particular the working groups established in 2005 in Montreal and in 2007 in Bali and is the AR4 sufficient? If not, given the lack of low emission scenarios, is there any chance of a fast track update or interim report on this timescale?

As indicated in the Chair's discussion paper, the relationship between climate change and sustainable development is an important topic but the IPCC needs to ensure that the relationships are not assumed but are an outcome of the assessment process. Information is needed to help to identify options and side effects of climate policy.

Economics was also addressed by the IPCC Chair. It is important to attract the interest of the best economists to work with the IPCC and to ensure that WG II and WG III economists use the same type of assessment framework. These points to a need to reframe the WG III assessment in the next round in order to give more weight to the main economic themes and issues, perhaps building on some of the experience in the SAR in 1995. Emission scenarios that meet the 2 degree celsius limit with a higher probability need to be treated explicitly both from the standpoint of technologies and economics.

IPCC Products

Having considered various options, our tendency is to stay with the current 5-6 year assessment cycle. A shorter interval is not possible but 2012-2013 is realistic and, as noted above, fits with the political process. The full assessments are important and will, as always, impose high workloads on the authors. This can possibly be eased with more Special Reports and more focussing of content. Content and coordination should be agreed among the WGs right at the start of the process. The IPCC could also consider more formally requesting governments to support CLAs elected from their countries or regions with additional resources.

In order to have a stronger Synthesis Report, the process should be improved by starting earlier and revising procedures in order to streamline the process. It would be a big step if the Synthesis Report could be anchored right from the first scoping of the next Assessment Report with guiding questions that are clear from the start for each WG. By starting with the questions to be answered, the WG structure can be designed to deal with these coherently in one WG or across WGs. Time is also needed so that different disciplines can mutually learn their different perspectives.

Technical Papers consume a lot of resources but are not always used effectively so it should be considered if these are really needed. It would be better to concentrate resources on Special Reports, also across WG boundaries. These could follow important solution options in order to provide clear signals for the topics of future research.

Work programme and structure

It is essential that the distinction between being policy relevant and policy prescriptive is kept. The management of the process and the mandate of the chairs should be improved with enhanced coordination / cooperation / communication across WGs being strengthened and directed by the IPCC. Possible ways to do this include special treatment by the IPCC Bureau, a cross-WG task force, appointment of a managing (science) director.

The three pillars of a future IPCC assessment of climate change should be causes, impacts and solutions. For WG I, new model experiments with new feedbacks, e.g. extreme events, are expected and new observations will provide key messages. A sensible range of scenarios including low scenarios must be selected. This should not be identical to the AR4 and needs to handle more extremes. WG I has a longer cycle because its work is incremental so there may be scope for more updates. The IPCC might consider ways of breaking the cycle and having different timetables for different WGs. We suggest developing a data management structure which ensures that the modelling results are available simultaneously to all WGs just after the model calculations are finished, which was not the case in the AR4.

WGs II and III have a common basis of solution strategies and their implications with a considerable overlap in the field of adaptation. One cannot separate vulnerability, adaption and impacts, but equally cannot separate adaption and mitigation if solutions are to be explored by WG III. Thus we envisage some reorganisation of content compared to the AR4 with a stronger feed from adaptation and impacts into WG III in order to provide a more comprehensive picture of the options available for managing the climate problem. The consequences / causes of lack of mitigation and the limits of and even failure of adaptation should also be considered. More scientific results are needed on abrupt change as well as more detailed scenarios. Joint activities, e.g. joint chapters between WGs II and III to assess the impacts of adaptation and the synergies between adaption and mitigation, should be considered.

The content and output of WG III should be improved and the numbers of engineers as well as economists involved with WG III should be increased. Scenarios can be used to explore the impacts of extreme or controversial solutions on economies and societies. The scenarios must be consistent and scientifically reliable with respect to the consequences assessed. However, no scientific consensus is required for the underlying normative assumptions (e.g., different views on sustainability). In this way WG III could offer an assessment of relevant policy options without becoming policy prescriptive.

While WG I can mostly rely on published peer-reviewed literature, this is less applicable for WG II and especially for WG III. There is a need to agree on a process for dealing with relevant information for the IPCC reports where no peer-reviewed literature exists. Expert workshops with industry such as those for the AR4 should be continued and strengthened. Special Reports could also make more use of stakeholders.

To allow for a comprehensive, objective, open and transparent assessment of the scientific basis of the risk of human-induced climate change, its causes, its potential impacts and options for adaptation and mitigation, chapters in WG reports as well as in other products – in line with the IPCC principles – should also present differing views on scientific, technical or socio-economic information taking into account their relative weight as reflected in the literature. In order to make the process more transparent, all review comments and their treatment should be published by all the WGs on their respective web sites.

Work on cross-cutting issues was found to be useful by authors in the preparation of the AR4 but this did not appear in the end result. An additional placeholder chapter for such issues could be considered. It is recommended that the Synthesis Report be better focussed on questions of relevance to policy makers as was the case in the TAR. This can also help the fuller report.

Ways to cooperate better with other organisations, as in the GCOS, WCRP, IGBP workshop in Sydney in October 2007, should be examined. This may also provide a way to deal with regional assessments of climate change associated with the IPCC.

Public relations

IPCC results are being translated by the press and media as never before and a more professional public information strategy is needed. The degree of public outreach that is appropriate may not be the same for all WGs, depending on the maturity of the scientific answers. Moreover it is essential that the IPCC concentrates on its "core business" of communicating with governments. Most effort from the IPCC itself should therefore go into improving the quality of the SPMs and the Synthesis Report. Some ways in which this can be done include: improving the readability of the draft SPMs with the help of professional communicators, using professionals to improve the quality of the illustrations for getting messages across in the SPMs and applying a more methodological approach to structure the Synthesis Report. The IPCC should consider producing "Frequently Asked Questions" for all WGs as was done for the AR4 WG I. These were produced in parallel to the SPM and reviewed by a journalist, not governments.

One form of outreach that is very appropriate but would need funding is the outreach with data and information from the Data Distribution Centre, especially to developing countries. A simple e-newsletter which tells what new information is available on the IPCC web site, e.g. new data, overhead, might be worth considering.

Hungary - Ministry of Environment and Water

It is an exceptionally important theme and a good discussion paper. It is obviously on the right time and addressing many key issues based on past/recent experiences and by taking into account the basic „drivers" of the change.

I wish to comment only three issues, which I consider to be very important. Two of them are addressed in the paper, one of them is an additional point. Let me start with the latter one.

1. Assessment of climate change – assessment of the state if the global environment

The IPCC practice and success also *motivated others*, in particular in the environmental area. In general, it clearly demonstrated that the scientific and the policy-making communities can effectively cooperate, the scientific information on very complex problems can be compiled, presented and delivered to the policy-makers in such a way that it is taken into account to an increasing degree in the decision-making process. It also reinforces the necessity that scientific research and cooperation capacities should be supported in order to better understand the complicated processes, to lessen the remaining uncertainties, to find proper responses. At the same time, the representatives of so many diverse scientific disciplines strengthen their collaboration and receive more and more direct or indirect signals from the society and policy-makers on the increasing awareness of the problems and the necessary actions.

There is already a large multitude of programmes, which deal with various components and processes of the global environment. There are some similarities in the process and there are close interlinkages of the substance if we see the ICSU's Global Change" programme, UNEP's GEO process, the UNDP's "human development" analysis process, the preparation of the "MEA" (Mill. Ecosystem Assessment), World Water Assessment, the UNEP's recent initiative to launch the "International Resource Panel" etc. The subject areas of all these processes include topics on the global environmental system and the anthropogenic interferences, however, the working methodology within these mechanisms is also different from the IPCC's one in many respects. There is an increasing overlapping and "synergy potential" in the subject areas and the research/assessment efforts, and due to the very broad scope of the climate change related processes, the assessments, reports of the IPCC overlaps with and influence the work of other programmes, organizations. Moreover, *the comprehensive report on climate change is actually already a report on the Earth's environment and factors forcing its change in many respects*.

I think that the above mentioned two interrelated aspects could be positively taken into account if and when the work on the next AR is launched. Let me be clear, I am not proposing a change in the basic mandate and objectives of the IPCC, but a closer cooperation with the relevant organizations (assessment processes) and a broader approach to the climate change assessment – e.g. along the lines of your suggestion to see the connection with the broad concept of sustainable development.

2. Cycles of the comprehensive assessments

Concerning the *"periodicity" of the comprehensive assessments*. I share your preference, i.e. to keep the present system of the 5-6 years' cycle and to issue special reports on key topics in the early segment of the cycle, which at the same time will be "contributions" to the next AR. I wish to add *two more rather trivial arguments* to this approach: (i) there is a very rapid development in the scientific knowledge (observations, analyses, modeling) already for half a decade on these issues that can e.g. further refine the information on past and future changes and (ii) there is a sharply increased need of the societies and decision-makers for such refined scientific assessments on the climate change hazard, its impacts and the possible policy responses. You also acknowledge in your paper the "greater demand for a higher level of policy relevance in the work of the IPCC" and the "two cycles" might be too long to meet this greater demand.

3. Two other essential drivers
The importance of *the economic and the regional aspects* are rightly mentioned in the paper. As there is a much stronger awareness of this global hazard, the intention to take mitigation and adaptation actions has also significantly increased. To meet this intention, more concrete information is needed to answer the questions: "how the global climate change will manifest "here"? and how much the various possible actions (and the no actions) will costs? The economic (cost-benefit) aspects are also crucial in terms of the concrete economic sectors since critical decisions on concrete policies, measures, investments should be taken also by representatives of the particular sectors

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Iran - Meteorological Organization

Kindly herewith we would like to submit our comments on the discussion paper related to the future of the IPCC:

1- It would be very useful if in the next period of IPCC activity, more attention to be paid on regional issues such as preparing regional Synthesis Report, Regional technical papers, regional expert meetings and so on.

2- Even though in AR4, WGII has well done his job, but Working Group II could split in two groups or in two sub-groups (reference to paragraphs 2-4-2 and 3-1-3). The importance of social and economic of human dimension is the

reason of this recommendation. The number of the Bureau should be adjusted according to the new structure as well (reference to the paragraph 5-1-1). The topics could be as follow:
I- Assesses the scientific, technical, and environmental of the impacts of climate change, the vulnerability of various natural systems to these impacts.
II- Assesses the scientific, technical, economical and social aspects of the impacts of climate change, the vulnerability of various human systems to these impacts.

3- We faced with serious lack of information in Central Asia and Middle East. IPCC could arrange regional task force for tackle the issue. Regional meeting for considering Water & Climate Change in Middle East and Policy measure and capacity building could be considered as one of the IPCC' actions (reference to the paragraph 3-2).
4- Before preparation of AR5, in a 1-2 years period, assessment of Adaptation and Mitigation actions should be focused on regional and national bases (reference to the paragraph 4-1-2).
5- Surely further strengthening of the IPCC Secretariat is required. But it seems to be find synergetic mechanism for using available and already exist potential in UN organization such FAO, UNEP, UNDP, WMO, UNIDO, and UNFCCC and others for facilitating in using including technical assistance(reference to the paragraph 5-1-3).

6- We think it is better if Adaptation and mitigation to be as a single working Group (WGIII) since both of them are actions and responses to climate change effects.

Ireland

Introduction

Since its establishment in 1988 the Intergovernmental Panel on Climate Change (IPCC) has made vital contributions to the development of the UN Framework Convention on Climate Change (UNFCCC) and international actions to address climate change. As indicated in the document produced by the Chair of the IPCC it is timely to review its activities and operations. In particular this review should focus on how these may be developed to address new challenges, requirements and opportunities. Ireland welcomes this opportunity to provide initial comments on this process.

IPCC operational systems

The operational systems of the IPCC are relatively robust and have served the various stakeholders well. The basic structures as outlined in the paper circulated by the Chair are working well and have contributed to the success of the IPCC. Major changes to these are not required at this point. However, some refinement and development of these may be warranted in the context of new requirements being identified.

Outputs from the IPCC

The suggestion that the IPCC may consider production of shorter reports on a more frequent basis which address issues in a more immediate manner has been noted. This has some merits, but may detract from the important contributions of large-scale assessment reports. These have been crucial to development of international actions, informing the public and policy makers.

- It is therefore considered that the IPCC should continue to produce assessment reports on a 5-6 year cycle. This time period is probably optimum to make a reasonable assessment of scientific progress and its importance in relation to climate change.

The compilation, editing and review of the assessment reports places a considerable and additional burden on the scientific community. Ireland wishes to acknowledge the dedication of the scientists who have worked or contributed to the production of IPCC reports. It also welcomes the recognition given to these endeavours by the award of the Nobel Peace Prize to the IPCC in 2007.

- Approaches and options to reduce or re-distribute the work on production of future IPCC reports should be considered by the IPCC. However, these should not impact on the integrity of the IPCC processes.

The continued production of shorter reports is also warranted, as is exploration of opportunities to develop more frequent or regular reports from the IPCC on key aspects of climate change. Certain areas may be mature enough to allow for such a development e.g. for areas where global data sets and robust analyses protocols exist. Examples of this may exist for a number of essential climate variables identified by the Global Climate Observation System (GCOS).

Other points

In relation to a number of other issues identified in the communication from the Chair.

(1) It is noted that sustainable development issues are intrinsically related to the challenge of climate change. However, it is considered that the work of the IPCC should continue to focus primarily on climate issues as a means by which it adds most value to analyses of various sustainable development issues rather than shift its focus onto broader sustainable development issues.
(2) It is acknowledged that economic analysis is highly important in informing actions on climate change. The limitations of such analyses in their capacity to account for key aspects of climate change are also evident. It is also recognised that much of this analysis is published in "grey" literature may not be currently amenable to inclusion in IPCC reports. A further analysis of these issues by the IPCC is warranted.
(3) In relation to regional aspects of climate change and participation by developing countries in the work of the IPCC. This reflects issues, which exist in other fora. The steps taken by the IPCC to include developing country issues and include experts are welcome. An IPCC workshop may assist in development of actions but should be linked to activities under the UNFCCC.

Conclusions

In conclusion Ireland looks forward to the further consideration of these issues at the IPCC Session in April and to the outcomes from the review process. It is essential that the IPCC continues to develop in order to maintain its authoritative and valuable role in informing governments and other stakeholders about climate change issues and options to address these.

Japan -Ministry of Foreign Affairs

I. General Comments

1. We share the view of the Chairman's paper that there is greater demand for the IPCC to place more importance on policy relevance, sustainable development and economic and regional aspects.

2. Regarding policy relevance, it is important to describe scientific knowledge from a policy-making-perspective, and a discussion should be made on how the IPCC can contribute in this context. On the other hand, we should note that each government needs to decide its national policy not only on the basis of scientific knowledge, but also in consideration of political, economic and social aspects. In this context, the objectivity and neutrality of the IPCC should be maintained as the main premise.

3. The simultaneous pursuit of both economic growth and environmental protection is an important issue. An analysis based on the perspective of sustainable development is indispensable, especially when discussing the climate measures of developing countries. We agree with IPCC to carry out more detailed study in this field.

4. Analysis of economic aspects of climate measures will be useful for future policy making, so we agree to establish a task force in this field. In this regard, we should recognize that the IPCC's output can have significant influence, and the condition setting of the economic analysis should be as realistic as possible, and, at the same time, the uncertainty of the analysis should be clearly specified.

5. The impact and responses to climate change vary with regions; therefore, by focusing more on regional aspects, the IPCC can provide useful information regarding the consideration needed for regional responses. Nevertheless, we should be fully attentive of the efficient use of resources and handling of regional biases in the number of existing studies. We agree to hold a WS on this issue.

II. Future outputs of the IPCC

6. The objective of IPCC Assessment Reports is to provide scientific basis for the international discussion to address climate change. We think that international approach to deal with climate change issue should be developed in a comprehensive manner and revised depending on changing circumstances and conditions. From this viewpoint, the current system in which comprehensive assessment reports are released every five to six years is appropriate and should be maintained. In addition, taking into account that the implementation period of various projects and the interval for updating computer resources are about five years, the current interval of five to six years is appropriate.
If we release assessment reports with an interval of ten to twelve years (two cycles), trends of scientific research may change largely and the content of reports may become obsolete during that period, under the current development of

science and rapid change of social circumstances. In addition, while, even during one cycle, a great amount of scientific papers have to be assessed, 2 cycles system will require much more works to do for the assessment of documents accumulated during that period.

7. It is effective to release a special report in the first 3 years before the release of next 5th assessment report, because it give us an opportunity to deliver the latest findings of scientific researches on a specific theme, before the work on AR4. However, workload of researchers and the choice of theme should be carefully considered, to make the report effective in an efficient way.
We agree on the idea of using technical reports as a more practical tool than assessment reports and special reports.

8. Regarding a Synthesis Report (SYR), the Government of Japan supports the current framework for publishing a SYR in a brief and simple manner as introduced in the AR4, and it should be noted that the SYR provides comprehensive views on crosscutting matters between the WGs.

9. Biodiversity and desertification are important parts of climate change impacts. And they are closely related to sustainable development and economic aspects, as mentioned in the draft. Therefore, the relationship of the IPCC activities with “the Convention on Biological Diversity” and “United Nations Convention to Combat Desertification” should be fully taken into account.

10. IPCC released “the Regional Impacts of Climate Change: An Assessment of Vulnerabilities” in 1997. By revising it with additional new findings such as projections of climate change and vulnerabilities at a regional scale, it should become more highly valuable.

III. Organizational issues

11. We support the proposal to keep the current organization of IPCC consisting of three working groups and a task force. Especially the activities of National Greenhouse Gas Inventories Programme (NGGIP) can contribute to strategic planning on mitigation with quantitative assessment. It should be noted that the activities of NGGIP remain important as they are, in the future IPCC.

12. The Government of Japan supports Chair's proposal to further clarify the Terms of Reference of the Vice Chairs to include "outreach activities and coordination between the WGs."

13. Efficient management of the organization is appreciated to be in appropriate direction. However, in order to consider your proposal to reduce the number of Vice-chairs from current three to two, more sufficient explanation is required on the necessity of the reduction and its merit, and the decision should be made after making comprehensive comparison with various options as well as reduction of personnel. For this purpose, we demand that the detailed document on this subject be provided well in advance of the IPCC 28th Session and that the Secretariat make further consideration on other possible options and report the result to the plenary session.

14. The section 5.1.1 of the Chair's paper says "a Vice Chair each from both Working Groups II and III could be assigned this responsibility on the basis of expertise." It is not clear whether "a Vice Chair" refers to an IPCC Vice Chair or a WG Vice Chair of WG II or WG III. “A WG Vice Chair” would be more appropriate to clarify the meaning of “Vice Chair”.

15. For many of nations on Earth, adaptation is the most important instrument to fight against global warming. And the scale and intensity of impacts and their adaptive capacity are different depending on nations. Therefore, adaptation will have significant implications in international negotiations in the coming years. In addition, adaptation will cover a wide range of areas such as long and short-term projections of climate change and its impacts, planning of adaptation measures, and national development plans (It is often mentioned that adaptation should be mainstreamed into them.). Mutual relationship between adaptation and mitigation and economic efficiency of adaptation measures also need to be considered. Considering those aspects, a Task Group on Impacts and Adaptation may be proposed, just like the Task Group on Economics proposed in 5.1.3 of the draft.

Lesotho

Assessment Reports of the IPCC

1. Lesotho would like to extend appreciation and great applaud to the IPCC for the excellent work done so far, in particular the Nobel Prize Laureate Fourth Assessment Report. However, we believe that certain changes or

considerations could help improve the quality of work delivered by the IPCC, especially to developing countries and more specifically a greater part of Africa.

2. Lesotho therefore supports the need for more attention on *regional aspects of climate change*. A greater part of Africa is often left out while assessing local impacts of climate change due to lack of observational data. We believe that if more emphasis is put onto this area, a lot of alternatives could be worked out to derive results, which could even be there in some cases but just that have not been published.

3. Lesotho further proposes that the IPCC consider focused special reports together with the current comprehensive report. The focused special reports could dwell more on the discussion and presentation of information on a regional basis (as mentioned in (2) above). The reports can be finalised at half periods to the full assessment reports to give way for inclusion of their findings into the full assessment report.

Climate Change and Sustainable Development

4. As stated in the Johannesburg Plan of Implementation, sustainable development has remained elusive for many African countries, and there is need to assist the African countries in mobilising adequate resources for their adaptation needs relating to the adverse effects of climate change, extreme weather events, sea level rise and climate variability, and assist in developing national climate change strategies and mitigation programmes. In order to fulfil this need, we feel that a special report on sustainable development and climate change in Africa will be of immeasurable importance. This could well compose the mid term reports proposed in (2).

Economic Aspects of Climate

5. While Lesotho understands and shares the views with the rest of the world community that there is dire need for information related to the economic aspects of climate change, and that the benefits of strong and early action far outweigh the economic costs of not acting, the African continent and in fact the poorer nations should not be ignored for the "reasons" of lack of data. We feel that it is in these communities that such information is desperately needed especially for initiatives related to adaptation to climate change, including adaptation technologies. Climate change could have detrimental impacts to the already impoverished economies of some of these nations, and early and precise information could help such nations to avoid extinction of their economies. Even in this regard, more focused special reports would be necessary.

Madagascar - National Meteorological Office

Please find below some comments about the above mentioned subject.

Paragraph 3: Drivers of required change in future

We do agree with these 4 major change drivers. Beside the public awareness (from AR4), IPCC should come up to the public expectations in the field of climate change after the peace Nobel Price.
Sustainable development, economic aspects of climate change and regional aspects of climate change are relevant issues for developing countries especially the LDCs. IPCC should therefore focus on the needs of the developing word facing climate change.

Paragraph 4: Future output of the IPCC

4.1.2: We would prefer keeping the current system of a comprehensive assessment every 5-6 years. Two cycles is too long and may not fulfil the public expectations. Special reports and technical reports are important IPCC activities and valuable output and should be produced regularly. The topics should be relevant to the above mentioned change drivers. For example a special report on climate change and disasters/high impact weather, impacts and adaptation carried out well before the AR5 is one of the documents the policy makers and the public in the developing countries would like to be available.

Paragraph 5: Organizational Issues and the structure of the bureau

5.1.2 The reason for suggesting two Vice –Chairs instead of three is not very clear. We should start by arguing why three vice-chairs are no more necessary.
The most important from our point of view is not the number but the represented expertise. We think one of the Vice – Chair should be an expert in sustainable development and economic aspects of climate change issues.

5.1.3 Strengthening the IPCC secretariat is not really necessary. The bureau members can and should assist with the outreach activities.

Mauritius – Meteorological Services

I am pleased to refer to your mail of 5 January, 2008, related to the future of the IPCC and to submit my views in a concise way.

2. The lPCC has undeniably shown its importance, originality of methods and has helped trigger a revolution in the 20th Century. This revolution has enabled a multitude of opportunities in the field of science and technology.

It must be clearly spelled out that:

1. The entire world and decision-makers of all states speak about climate change and its impacts.
2. Prestigious Institution, shave recognised and value the work of IPCC and have discerned an equally prestigious decoration.

3. IPCC, therefore, must continue along its present path. However, we propose that the structure be adjusted to make it in line with present-day exigencies. Considering the fact that the intricate case about Climate Change has already been made and that the science is already clear, the 3 Working Groups should be recombined into two. The size of the bureau could then be adjusted accordingly. This should substantially reduce cost to members) and show that IPCC can adapt to changes.

4. Furthermore, it is strongly opined that we should, in order to keep the momentum, work towards a 5th Assessment report. This will provide steam to those who believe in the anthropogenic influence on climate.

5. Mauritius fully supports the establishment of a group to study, and report on the economic aspects of climate change. This may help forge appropriate mechanism for technology transfer and financial assistance to those most vulnerable to climate change and whose developmental capabilities may be at jeopardy.

Mexico - National Institute of Ecology

We appreciate very much the document put forward by the Chair of the IPCC for discussion and have several points of coincidence with it.

We agree on that so far the structure of the IPCC, the processes and practices that it has established, and its products have been very successful, and we also see that the level of scientific understanding and widespread knowledge and awareness of the issue of climate change have increased dramatically, thanks in great part to the IPCC, and that the needs of the policy community have also evolved.

We thus see that these facts impose the need for the IPCC to adapt to a new reality, being the nature of the changes to the functioning and structure of the IPCC, and to the various outputs produced by it, to our understanding, open to discussion by the Panel.

We think that it is early to know whether the changes proposed, if they take place, will be only in the nature of "refinements", or if we should be open to consider some deeper "departures" on certain functions, processes or products, consistent with the objectives and basic terms of reference of the Panel.

On the specific issues where comments are requested, first, in regards to the issue of producing comprehensive assessments on every cycle vs. putting more effort on special reports, or whether it would be better to work on a comprehensive assessments every two cycles, we see the great value of special reports, but consider that the continuation of the comprehensive assessments is crucial, especially for the global topics under Working Group I. For Working Groups II and III there could be greater efforts on special reports with a much deeper regional focus, more pertinent to each region and to be produced in shorter times than the comprehensive reports and a comprehensive assessment perhaps every one or two periods analyzing and compiling these regional reports.

We consider, consequently, that it would make sense to modify the division among working groups. We propose the continuation of Working Group I, basically with the same structure that it has, but see the need to create regional working groups that tackle all the issues currently covered by Working Groups II and III. In our view, there should be seven regional groups: Africa; Asia; Australia and New Zealand; Europe; Latin America; North America; and the Small Islands. Our proposal is that the issues related to the Poles be included in the work of the respective regions.

The topics for the work of these regional working groups should be: Impacts, Vulnerability, Adaptation, GHG Emissions, and Mitigation. That sums up to the combination of the topics currently under Working Groups II and III, plus Emissions, which we think should be explicitly included.

There are multiple reasons for proposing these changes in the structure and functioning of the working groups. We think that the regional division of work would help greatly in improving the coverage, selection and analysis of peer reviewed literature in languages other than English and the appropriate grey literature, as was partially done for AR4. It would also serve to improve a balanced representation across all regions, both in the assessments and reports produced, but also in the Bureau. The political relevance and the outreach to regional policymakers and society would also improve, since the regional groups would be working in closer connection with them, addressing their needs and concerns more directly and promptly. We could have regional reports being produced perhaps twice in a period (roughly every three years), in a process that would facilitate the inclusion of the most recent literature and would be more pertinent for the local requirements of information. After all, most of the associated decisions in climate change are taken by national and local stakeholders, in the areas of mitigation and adaptation.

The financial cost of having such regional division should be assessed, but we consider that it may imply shorter-distance travel than we currently have, and it would certainly produce a wider representation of Parties. The equivalent of the TSU for each of the regions could lie in one of the regional global change research programs, institutions or organizations already in place.

The size of the Bureau would not increase significantly under this division, since we could keep Working Group I with the current membership of two Co-Chairs and six Vice-Chairs, plus two Co-Chairs for the TFI, and the Chair and two Co-Chairs of the IPCC Bureau, and would have additionally, instead of the Bureau members for Working Groups II and III, one Chair and two Vice-Chairs per each of the seven regional working groups. The Bureau would then have 34 members instead of the current 29.

Dear IPCC Chairman, we thank you very much for your consideration to our thoughts, and would welcome the opportunity to work with you in constructing a renewed IPCC consequent to the evolution of the topic of climate change and to the urgency and pertinence of responses needed for an informed society and the process of policy making.

The Netherlands - KNMI

The Netherlands take the opportunity to submit their views on the future of the IPCC, which is being addressed under item 7 of the draft agenda of IPCC-27.

Background

The Netherlands is of the opinion that the organization and work of the IPCC in its fourth assessment cycle was generally satisfactory, as indeed it was in the earlier assessments. The products made by the IPCC contain a wealth of policy relevant knowledge in a format that is both understandable and accessible for policy makers. The AR4 played an important role in restaging climate change at the top of the international political agenda.

There is, however, room for improvement. Some critics continue to accuse IPCC of pushing a political agenda using intransparent procedures. The IPCC writing and review process takes a lot of effort and we have noted in some cases a certain fatigue and reluctance among scientists who have contributed to IPCC's products, which may make it a challenge to maintain the high scientific quality. We feel that the efforts of obtaining a complete synthesis of policy-relevant knowledge have been hampered partially because of gaps in the knowledge base, but also because of incomplete synthesis of the contributions of the three working groups in early stages of the writing process. Also, it is not clear to what extent available knowledge relevant to understanding and managing climate change, both from IPCC reports and from the underlying body of scientific and technical literature is actually reaching and helping policy makers.

Climate change is now widely recognized as a serious and urgent problem to the world as a whole, which can be tackled if all countries and sectors contribute to its solution in accordance with their respective responsibilities and capabilities. Policy makers are now ready to proceed from understanding the problem and building support for future policy implementation to taking effective and efficient measures. This implies a shift in needs of policy makers for scientific and technical knowledge, and requires IPCC to adjust to this new type of demand. A demand that is much more diverse than before, since the local context is more important in policy implementation than in the general problem analysis, particularly in relation to adaptation.

Proposal
A discussion on the future of the IPCC is therefore timely. For this, The Netherlands sees merit in a request to all Parties to submit their views on the future organization and work of the IPCC. We would like to suggest the following issues to be addressed in these submissions.

How could the transparency and objectivity in the working process of IPCC be improved?
Some elements that may be of relevance include:
- Making the criteria for the selection of authors explicit (e.g.: specific expertise in a certain areas, geographical balance, balance in views, balance between experienced and new people, and balance in gender).
- Improving the transparency and integrity of the review process (e.g.: anonymous expert review, making the response to comments public quickly after LA-meetings, providing on-line access for reviewers to the literature).
- Enhancing the role of review editors (e.g.: by extending their numbers).

How could the scientific quality of the work of IPCC be maintained or even further improved?
Top scientist may not be available due to competition of other work, but this may be cured.
Some elements that may be of relevance include:
- Reducing the working load for CLA or providing some compensation (e.g.: less frequent IPCC assessments, more focused assessments on special topics, mobilizing governments and research organizations to provide for support during IPCC assignments, expand chapter teams with 'chapter assistants' or 'chapter secretaries).
- Making the attendance of authors at meetings easier (e.g.: providing more comfortable traveling, having the secretariat itself making the travel arrangements, providing more active assistance in getting visa).
- Consulting with other international organizations on how capacity building in climate change research could be strengthened through their work (e.g. with: WMO, UNCED, UNESCO, UNDP).

How could the generation and dissemination of knowledge relevant to understanding and managing climate change be improved?
Some elements that may be of relevance include:
- Investigating the policy makers' needs for knowledge more systematically.
- Increasing efforts to involve actors outside the policy making and scientific worlds (e.g. Industries and large companies).
- Increasing the ability of IPCC itself to do their outreach (e.g. by: providing financial support to the TSUs for outreach)
- Consulting with other international organizations on how this role could be strengthened through their work (E.g. with: WMO, UNCED, UNESCO, UNDP).
- Intensification of the dialogue with the global change research programmes WCRP, IGBP and IHDP and the ESSP.
- Improving the process to synthesize the knowledge from the three working groups (e.g. proactively synthesizing in parallel with the assessment process and improved harmonizing of formats and approaches between working groups) .

How can the policy relevance of the products of IPCC be retained or improved in the future?
Some suggestions that may be of relevance include:
- Reorganizing the Working Groups so that integration can be achieved more easily (E.g.: by having a working group on the climate system and impacts of climate change and a working group on adaptation and mitigation, by having a special group responsible for synthesizing on cross-cutting issues with people that are no part of the working group contribution author teams).
- Consulting with international research programs and funding agencies how the programming and funding of observations and research could stimulate more relevant work.
- Increasing the role of user groups in the scoping of new reports (E.g.: having a government review of the report of the scoping meeting, including user groups in the scoping meeting).
- Producing more Special Reports (E.g. on: mainstreaming climate change into development, relations between adaptation and mitigation, integrated scenarios, transport, marine shipping, adaptation for small island states, diversification in economies highly dependent on fossil fuel production).
- More rapid procedures for some of the reports (E.g. using the procedure for Technical Papers for some of the Special Reports or by allowing Technical Papers to include new literature).

Part II - Future of IPCC, contribution of the Netherlands

The Netherlands welcomes the opportunity to present suggestions regarding future IPCC organisation, procedures and products. We believe IPCC has an excellent record thanks to many thousands of scientists that have devoted a substantial amount of effort to contribute to the assessments. We may present quite a list of suggestions in this response to the chair's discussion paper, but that does not imply we have a very high regard for the conduct of the IPCC. We support the chair's analysis that IPCC should stick to its mandate. Each assessment cycle has brought something new to

this historic institution. But progress for the sake of progress must be discouraged. Let us preserve what must be preserved and prune practices that ought to be prohibited.

Main suggestions of the Netherlands

1. Evaluate the IPCC secretariat, Bureau and TSUs

The IPCC Bureau, Secretariat and TSUs together drive the IPCC process. The fact that the Secretariat and TSUs are small in size is an important asset to IPCC (low cost, flexible, little bureaucracy), although the workload seems to keep increasing over the years. However, before deciding on the optimal size of these facilitative structures, we recommend an objective and independent evaluation of the work of the Secretariat, the Bureau and the TSUs during the last assessment cycle. Periodic evaluation is in our opinion crucial for learning from past experiences, and for improving the already outstanding quality of IPCC products.

2. Alternate assessment cycles for SRs and comprehensive assessments

The scientific community needs a fair amount of time to develop and apply a new generation of scenarios, global Earth System Modelling (ESM), and impacts, adaptation and vulnerability modelling (IAV), integrated assessment modelling (IAM) and modelling of the feedbacks between these three areas. This process, from the definitions of emission scenarios until the assessment of climate change projections, impacts, adaptation and mitigation by IPCC, took about 10 years. The duration of this process may be shortened to 7 or 8 years if the new approach that was suggested by the scientific community (see report of IPCC-26 Doc 8 on new scenarios) and at the Noordwijkerhout expert meeting on new scenarios in September 2008 (report will be available for IPCC-27) were followed. We believe that in order to give new insights, the next comprehensive assessment should make use of the results of research that is based on these new scenarios.

There is however also a need to expose public opinion to information about the seriousness of climate change more frequently. In addition, it is not feasible to expect Bureau members and TSUs to commit themselves personally for such a prolonged period.
Therefore, we suggest first having an assessment cycle for compilation of reports on selected topics, followed by an assessment cycle that includes a comprehensive assessment. Both cycles should be decided on simultaneously, but a new bureau should be elected in between the two cycles and decisions may be taken on additional products.
Since climate change has been accepted as a serious and urgent global threat, policy makers will increasingly need information about regional climate change and its impacts, as well as about implementation of mitigation and adaptation measures. More Special Reports could best meet this need. When new policy needs are identified the demand for scientific assessment may not allow for the full assessment procedure that applies to Special Reports and comprehensive assessments. We would like to discuss with other Parties how the production time for some IPCC reports could be shortened (e.g. within one year), for example by allowing Technical Papers to contain new material.

3. Intensify the involvement of stakeholders

Now that climate change policy is moving from the phase of agenda setting to that of implementation, the involvement of stakeholders such as the private sector and NGOs should be greatly intensified. It no longer suffices to make reports relevant only for governments. They should also be relevant for these stakeholders as the implementation of measures relies on them. Stakeholders also have a wealth of valuable practical experiences that is not well represented in peer-reviewed scientific literature but is essential for developing adequate policies. The panel may wish to consider inviting stakeholder representatives to scoping meetings.

4. Create the best conditions for the synthesis of knowledge early on in the assessment

The Netherlands stresses the importance of planning the Synthesis Report from the very beginning of the regular assessments process.

5. Improve the review process

The reviewing process is a key phase in the IPCC assessments. In order to further improve objectivity, transparency, and quality we suggest the following:

- Make the expert reviews (not the government reviews) anonymous, in order to guarantee a more objective judgement of the review comments. This practice was tested with the Special report on CCS and worked well.
- Make the responses to review comments public shortly after a Lead Author meeting (and not after completion of the report, as is the current practice). This will enhance the transparency of the process.
- Since in many cases chapter teams have to consider many thousands of comments at Lead Author meetings, we suggest increasing the number of review editors from 2 to 4. In addition, we suggest offering the review editors specific training for this specialized work. This would improve the quality of the review process.

6. **Plan and budget outreach activities in a timely fashion**

Outreach of IPCC reports is not only a task for the Secretariat but also for the WG co-chairs and TSUs. As this comes at the end of the assessment period, it is important to budget and plan these activities in a timely fashion. We believe that

IPCC should limit its outreach activities to its own reports and not develop derived products for specific user groups. This task should be undertaken by other UN-bodies (WMO, UNEP, UNESCO, UNDP,…).

7. Do not focus IPCC's efforts on capacity building

Specialised UN-bodies such as WMO, UNEP, UNESCO, UNDP and some of their activities (such as the research programmes) are much better positioned than the IPCC to build research capacity in developing countries. The IPCC should limit itself to inviting these bodies to fill the needs that are exposed as a result of IPCC's assessments.

Additional suggestions from the Netherlands

The Netherlands' delegation has some additional suggestions in response to Dr. Pachauri's discussion paper.

- In order to properly and timely address cross-cutting issues between the working groups, a process should be started directly after the formation of a new Bureau, with inclusion of the lessons learned from the less successful TAR and AR4 experiences. Early interaction and integration between the Working Groups is essential for achieving a real synthesis of the outcomes of the AR5. However, we do not agree with Dr Pachauri's criticism that for instance the issue of sustainable development, or the Stern Review has not been adequately dealt with in the AR4. We don't think that a specific task group on the economics of climate change is needed, or that specific responsibilities with regard to economics need to be assigned to vice chairs. The scoping of the new assessment reports and the selection of authors should ensure that the economic issues would be adequately dealt with in the 5th assessment report and the respective special reports.
- Make the author selection criteria more explicit (e.g.: specific expertise in a certain areas, geographical balance, balance in views, balance between experienced and new people, and balance in gender).
- Address the geographical imbalance of the author community. There is a clear 'western dominance', which should be reduced. (e.g. there should be ways to finance TSUs and CLAs independently).
- Reduce the working load for CLAs by, expanding chapter teams with 'chapter assistants' or 'chapter secretaries'. The Nobel Prize money could be used to finance young scientists from developing countries to join as chapter assistants, which would help them to get international experience.
- Improve on the attendance of authors at meetings by reducing travelling barriers e.g. by allowing the secretariat to arrange the travelling and visa documents.
- Intensify the dialogue with the global change research programmes WCRP, IGBP, IHDP, Diversitas and the ESSP, e.g. by giving them full observer status.

New Zealand - Ministry for the Environment

New Zealand thanks the Chair for the opportunity to comment on the future of the IPCC, including its structure, work programme and main products, as invited in the letter 5301-08/IPCC/Future. It is New Zealand's belief that this is an extremely important issue given the increasing need of governments for authoritative, unbiased and robust assessment of the information available on climate change.

General

New Zealand broadly supports the current structure and processes of the IPCC, which have served governments well. In particular:

- We see a rigorous and transparent review process as an essential component in the production of IPCC output. Only in this way can the IPCC maintain its high level of credibility and serve as the authoritative source of information that is sought by governments. We recognise that this rigorous review process places limits on the minimum timeframe for producing publications, and also limits the scope of other activities;
- A comprehensive Fifth Assessment Report, covering in a consistent manner the whole breadth of climate change science for which governments seek IPCC guidance, would be most useful. We believe such a comprehensive assessment should be completed in 2013 or 2014;
- We are open to discussion on whether the goals for the Fifth Assessment could be best met using the experience, cohesion, and focus of the existing three-working-group structure, or whether sharing the burden over a fourth Working Group would be more effective;
- Special Reports have contributed greatly to the advice the IPCC has been able to provide to governments. However we are concerned that any significant increase in the number of Special Reports would risk diluting the effort available to contribute to the comprehensive assessment. We note in addition that it is difficult for such reports to provide a response or update to particular issues very much faster than provided by a comprehensive report, given the rigorous and transparent review process we believe is essential. The framework for priorities agreed by the Panel in 2003 (IPCC-XX, Doc 4) remains appropriate in giving first priority to a comprehensive assessment while defining the criteria work that would justify work on Special Reports.

- Policymakers need from time to time specific, shorter and specialised reports without the delays inherent in the IPCC process. We would welcome consideration of how such reports on topics of international interest might be facilitated by the IPCC.

Guidance material

New Zealand believes there is a need for more, and more robust, social and economic analysis across many areas of the assessment, and that this extends to addressing regional issues as well. A strong signal from the IPCC that high-quality underlying research in these areas is needed, would be useful. We also note:

- Including a Synthesis Report in the comprehensive assessment enhances its value to policymakers. To be most effective in providing a synthesis, and not merely a summary, we believe the writing of the Synthesis Report must become a more integral part of the assessment process. To this end scoping and design of the Synthesis Report should be part of the initial scoping process for the comprehensive Working Group reports and its writing should be carefully synchronised with those reports;
- While physical science knowledge has progressed to the point where it is clear that there is an urgent need to reduce emissions, there are still many areas where more knowledge would be very valuable to governments. In particular we note the areas of regional changes, sea level rise, irreversible and abrupt climate changes, and multigas equivalence. We therefore support the continuation of the current Working Group I work;
- The current assessment of impacts, adaptation and vulnerability has insufficient quantitative information on the costs, both social and financial, of climate changes. Opportunities also need to be more clearly identified and quantified. In this regard an authoritative global perspective would assist international negotiations as well as national programmes. Clear exposition of these needs will also assist in ensuring that the relevant research necessary to underpin the assessments is undertaken. We therefore believe the scope of the current Working Group II work needs to be reviewed and expanded;
- There is incomplete quantitative information on the social and economic costs associated with mitigation efforts, to fully support current policy needs. We therefore believe the scope of the current Working Group III work also needs to be reviewed and expanded;
- In retrospect it is clear that in the Fourth Assessment, there are significant gaps and a lack of quantitative information on social and economic issues. In addition, the human dimension more broadly is relatively poorly characterised and certainly under-assessed. We look to the next assessment to expand this area, possibly by making it the focus of a Working Group. However, it will be particularly important to ensure the assessment in this area remains policy relevant but not policy prescriptive.

Bureau Structure

- Should a fourth Working Group be established we suggest the Bureau structure be altered by the inclusion of the two co-chairs and six members of a corresponding Working Group Bureau. In this case consideration could be given to limiting the increase in the size of the Bureau by the elimination of the Vice-Chair positions, so that the total number of Bureau members would go from the Chair plus 29 to the Chair plus 34.

Endnote

New Zealand remains committed to the IPCC process and looks forward to its future assessments of climate change science.

Pakistan - Ministry of Environment

The comments from GCISC are as follows:

We very much appreciate the extremely important and useful work done by IPCC in preparing its four Assessment Reports over the last 20 years, covering Scientific Basis of Climate Change, its Impacts and required Adaptation and Mitigation Measures. We also highly value the various Special Reports and Methodology Reports such as Regional Impacts of Climate Change, Emissions Scenarios, Guidelines for National Greenhouse Gas Inventories etc., prepared by IPCC in parallel with its comprehensive Assessment Reports. The award of Nobel Peace Prize 2007 to IPCC jointly with Al Gore is a well deserved recognition of IPCC's accomplishments.

Notwithstanding the above, we feel, a major shortcoming of the IPCC assessments to date has been the scarcity of information at its disposal about the past climate trends and impacts in the developing world regions as well as inadequate contributions by the scientists of developing countries in the future projections of climate change at global and regional levels, and in the assessments of the corresponding regional and local impacts and the needed adaptation measures. The main reason underlying this shortcoming has been the lack of expertise in most of the developing countries for conducting climate change related research. In our opinion this weakness must be addressed on top

priority basis if any substantial improvement in information is to be obtained in future over and above that already acquired through AR4. Since this aspect will have a strong bearing on the quality and credibility of any future work of IPCC, it is strongly recommended that IPCC itself should take the lead role in necessary capacity building of the developing countries rather than depending on other initiatives such as the AIAAC.

Although a lot has been accomplished by IPCC over the last 20 years, there is still a pressing need for this organization to stay on, make further improvement over its previous findings in the light of new information, and address some other important issues which could not receive adequate attention in the past. In our view, the most effective way for IPCC to contribute in future will be by continuing essentially along the same lines as before, viz. by launching its Fifth Assessment Report (AR5) to be completed within a matter of next 5-6 years (a 10-12 year period would be too long and may break the momentum) and, at the same time, by bringing out special reports and technical papers on specific topics as and when needed.

We fully support the suggestions made by the IPCC Chairman in his Discussion Paper that the economic aspects of climate change, the connection between climate change and sustainable development, and the higher level policy analysis to meet the needs of policymakers, should receive much greater attention in any future assessments by IPCC.

As for new Special Reports, we feel it would be worthwhile to update the 1998 report on Regional Impacts of Climate Change and include in it up-to-date information on appropriate Adaptation Measures.

We endorse IPCC Chairman's view that a 20-30 page Summary of the Synthesis Report in relatively non-technical language is a very useful document for policymakers and that this innovation introduced in AR4 should be pursued in AR5.

Portugal - Instituto de Meteorologia

We will discuss issues following the order of the IPCC chairman discussion paper.

2. Do we need any change?

After the important milestone that was the 4th Assessment Report, that consumed most of the IPCC efforts in the last couple of years, it is the right time to reflect on the needs to change. We do agree with the IPCC chairman discussion paper on the need for change, among other reasons because the IPCC should be swift in its reply to the increasingly diverse policy and society needs for robust information. We emphasize the need to proceed with caution in this change.

Specifically, we welcome the revision of the principles governing IPCC work, and the creation of a Task Group to that effect. In this respect, we call your attention to the following topics that we would like to be addressed:

- Information on the criteria of selection of lead authors and contributing authors, with a view to enhanced transparency of the process;
- Fine tuning of the review process, maintaining the robustness while, whenever possible, speeding the process and alleviating the load on the authors.
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3. Drivers of required change in the future

We would like to emphasize the following points:

- Increased understanding of user requirements, e.g. sustainable development and degradation and/or depletion of natural resources, should steer future IPCC output;
- Increased focus on user requirements leading to a better integration between disciplines in the IPCC output;
- Increased synergy with relevant WMO and other UN research and observations programmes.
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4. Future outputs of the IPCC

We support:

- Continuation of periodic (~5/6 years) Assessment Reports:
- Drafting of thematic Special Reports, as per 4.1.3 of the chairman's proposal. Nevertheless, we would like to see the theme *Climate change and soil quality* broadened to ***Climate change, desertification and land degradation***;

- Technology and technology transfer issues, have been so far relatively weak points in IPCC (WG3). Technology assessment should be considered in line with the TEAP (Technology & Economic Assessment Panel) of the Montreal Protocol;
- Regional reports (e.g. the Mediterranean) should be encouraged, as well as seminars on specific subjects.

5. Organizational issues related to the functioning of the next Bureau

In general, we agree with the chairman proposals on the Bureau composition and the Secretariat. Organizational changes on procedures and practices should be driven by the need to increase transparency and smoother functioning. A particularly important point to address is the need to avoid future occurrences of near stalemate, as occurred in 2007 for the approval of WG2 and SYR SPM reports.

In addition, we would like to discuss as part of the organizational issues the possibility of the Inventory Task Force becoming a Working Group.

Senegal

I agree with the suggestion of the IPCC President to maintain the current situation concerning the assessment reports. But I think the WG3 should focus more on the economic aspects. I suggest to work out a technical report on this subject before 2012. For the functioning of the Bureau, it is desirable that the role of the members is well defined and then they should present regularly a report on their activities.

Comments on the paper:

- the capacity development of the Panel should be increased; funding research thatcan feed into IPCC activities, mainly for Africa; physical science activity is limited their.

- proposal
3.2 is very important and have to be implemented; initiatives like AIACC would really help to fill the gap of capacities and initiate regional studies that will produce knowledge. In that respect the proposed workshop could be organised in Africa. An action plan and a task group for implementation of this action plan should be considered. We can duplicate examples;

- cross cuttings between WG need to be encouraged; interaction between WGS is very weak.

- We need to encourage special reports publications before the Assessment;

- language issue during meetings need to be discussed but also papers to review;

- it is important to encourage access of developing world scientist in scientific literature, mainly peer reviewed journals;

- weakness of WG2 and WG3 interactions with WG1 and also state of knowledge is very a limiting factor to addressing issues of development.

Seychelles

I have a few comments on the future of IPCC.

1. I think with the Nobel Prize our future looks even brighter. So I support the move to relook at the IPCC and it work. However, we should not go backwards but forwards.

2. The strict scientific peer review process should be maintained as this is what gives credibility to the report and work, although it is difficult sometimes.

3. Government reviewers to involve their local universities and research institutions a bit more.

4. Reduce the pressure on the authors, as we have very hard deadlines to follow, and often the lead authors have to spend considerable time to put the chapters together. One of the ways is to facilitate access to reports and publications. I

come from Seychelles and we do not have a University, and often access to publications on islands (globally) is not easily accessible and thus may not receive attention in the IPCC reports. Access to some of those documents is also costly and at present there is no budget to cover access to peer reviewed documents. There are also books that have been published but these are even more inaccessible unless you are located close to a big University library. A suggestion would be to fund appropriate non-university based experts a week's work in an appropriate University where they could access all appropriate materials. I raised this issue during the last report and I hope by the next report we would have worked out a mechanism.

5. Besides having their names published in the IPCC reports I think some form of recognition for such work is developed by the IPCC, I think some form of academic or professional recognition is given. Secondly I suggest that free recreational/educational activities are organized during our conferences, sort of a small thank you to authors.

6. We do not use the IPCC expert network enough. I think the IPCC network of authors is one of the planets most influential and knowledgeable network, and we do not have a framework to engage those authors into other work, such as combined research/lecturing between developing and developed, agreements between universities and so on. I think there is potential to turn the list of authors into a social/knowledge network which can then allow for the further exchange of know-how expertise around the world.

Sweden – Ministry of Environment

We welcome the communication of 4th January 2008 by the IPCC Chair, Dr. Pachauri. We have studied it with great interest and would like to make use of this opportunity to convey some comments and suggestions for the future work of the panel. Please find below the Swedish views on issues related to the future of the IPCC.

1. General comments
Sweden has always been a strong supporter of IPCC. We think that the work of IPCC must continue and that IPCC has a very important role to play for many years to come. In general, as global climate change progresses, we will face new and possibly unexpected problems and there will be wealth of new scientific research related to climate change that has to be assessed and presented in a well structured and reliable way. No one but the IPCC can play that role. It is also important that the IPCC maintains a capacity for flexibility to make it possible for the panel to respond effectively to new challenges and needs from the UNFCCC. The panel must also be able to closely monitor the global climate system and respond swiftly to unexpected developments and assess and report on such developments.

2. Review of basic principles
In general we agree that the structure of the IPCC and its processes and practices have proved successful for its mission. However it is useful to carry out the review as stipulated to make it possible for the panel to adjust to new requirements and at the same time building on previous experiences.

3. Future drivers and initiatives
Public awareness has increased and in Sweden we have worked in a very focused fashion on keeping the public as well as policy makers well informed about IPCC and its results through translations of the SPMs and the organizing of conferences after each report during 2007. We support continued outreach activities as an important part of the work of the IPCC.

A future focus on sustainable development and its relation to climate change would be very much welcomed. Climate change is a great threat to sustainable development but bringing mitigation and adaptation actions into the picture could actually be beneficial to general endeavours for sustainable development. Such actions will lay the ground for sustainable energy and transport systems in all countries and could in conjunction with adaptation actions contribute to poverty eradication and improvement of living conditions in developing countries. This has to be studied more carefully. A focus on sustainable development could also bring forward incentives for both developed and developing countries to take actions that has multiple benefits and implement measures that create positive synergies.

Similarly, a greater focus on the economic aspects of climate change would give spatial planners, financial investors, enterprises, governments and others a better basis when deciding on various actions. We support the idea of forming a small group to identify what subjects and economic dimensions should be dealt with more extensively.

A regional approach to climate change and its impacts as a basis for e.g. adaptation planning and actions is very important. The climate simulation models have so far not been very successful in providing the required detail and resolution on a regional (or local) scale. That might improve in the future with the next generation of high resolution earth system models and regional models. The idea of IPCC as a facilitator for setting up regional work programs addressing the needs for better information on climate change on regional levels and the necessary research by

organising a workshop or expert meeting to identify relevant actions would make a good contribution and be of importance for future IPCC assessments by feeding back on how to cover regional interest.

4. Future outputs of the IPCC

In his paper the chairman of the IPCC discusses the work of the working groups. We agree with the chair that the working group reports could be organised in a two step procedure, but some flexibility should be allowed given the different nature of the working groups.

The Chair also mentions the work of the Task Force on Inventories. As pointed out by Sweden at the last IPCC plenary in Valencia the Task Force should consider including also other climate change agents than the ones dealt with hitherto. We would very much like to see, along with other Arctic countries, that methodologies for reporting black carbon and some other compounds are considered by the Task Force. There is considerable evidence that that black carbon plays a very important role in enhancing the warming of the Arctic and contributing to the rapid melt of sea ice and the Greenland ice sheet. Accelerated warming in the Arctic could have severe repercussions worldwide. We also think that IPCC should pay more attention to work carried out regionally by means of regional assessments of climate change. For example assessments carried out in the Arctic region could provide valuable input to the IPCC.

When it comes to a next major assessment, an AR5, we would favour a slightly longer interval of 8-10 years until the next comprehensive assessment, instead of the usual five year cycle, depending on the outcome of the negotiations for a post-Kyoto agreement. If the post-Kyoto agreement will have a commitment period centred around 2020, which is very likely, a coming AR5 in 5 years time would imply a report published 2013, which is only one year after the Kyoto commitment period ends and completely out of phase with a future review of a post-Kyoto agreement. In such a case too little time would be available for a AR6 that could serve as an input to a post-2020 review of commitments. In our opinion a more appropriate time for the next comprehensive assessment would be 2016-2017, which would give time for a considerable amount of new scientific information to form the basis for decisions on actions after 2020.

Such a time table with a longer interval between AR4 and AR5 would create a need for updates in selected areas. This could be accomplished by means of special reports. A longer time interval between comprehensive assessments would also have positive implications for the possibilities to finance a larger number of Special Reports, SR. The multi-Working Group approach is also in line with our view of how Special Reports should be produced. In any case we think that the Synthesis Report in the form it has today is useful also in the future.

We agree that a more thorough discussion should take place about which Special Reports should be prepared before AR 5. We would like to see the work on renewable energy to continue and result in a SR on *Renewables*. We would also like to see a SR on the *economic aspects of climate change* and its linkages to sustainable development. This is an area of research that will expand considerably over the next years and has the potential to produce information and guidance of great value to the global community in implementing climate change mitigation and adaptation programs and measures.

It is very important, as pointed out above, to carry out *regional assessments* which could take the form of Special Reports in some cases. There is a strong need for example to produce such a Special Report focusing on Africa.

There are also some other areas that are important to consider to be the topics of a Special Report. We would very much like to draw the attention to *energy efficiency* in a similar fashion as renewable energy. We have also identified areas that could be discussed for either being focus areas in the next comprehensive assessment or the subject for a SR, e.g. *Synergies between air quality and climate change measures*, *lifestyle and consumption,* s*hipping* and a follow up on the *Aviation* report from 1999. All of this would of course have to be discussed thoroughly and prioritized.

Last but not the least it is also important to be aware of the risks for *abrupt changes in the climate system.* Some time during the next inter-AR period a special report on the risk for such abrupt changes should be considered

We are not very firm on the format of a particular report. If it is preferred due to the specific character of the subject or the delineation of the subject we could also consider producing technical reports. It would have to be discussed on a case by case basis.

5. Organisational issues

To extend the bureau with expertise in economy and sustainable development is a very good suggestion which we fully support.

To further improve the work we also suggest a strengthening of the coordination between the working groups. We have seen a certain lack of harmonization in some areas of recent reports, for example regarding the use of scenarios. A possible way of achieving better coordination could be to strengthen the capacity of the TSU:s or the secretariat in this respect. This could also enhance the capacity to make more frequent updates.

Switzerland - Federal Office for the Environment (FOEN)
Federal Department of Environment, Transport, Energy and Communications

We welcome the opportunity to provide inputs on the future of the IPCC. We would like to thank the Chairman of the IPCC for its document that presents the issues at stake in this context.

In our view, a number of practices and rules of the IPCC have proven very efficient in providing the framework for very relevant assessment and methodologies in the field of climate change. Some other elements need improvement.

This submission considers both aspects: practices and rules that should not change and elements that may be improved.

What has to be maintained

1. The review process
2. The adoption of decisions and works on the basis of consensus
3. The elaboration of Assessment Reports and methodologies. An overall Assessment Report has to be elaborated every 5-6 years. It has to be organised and built around the WG I report. WG II and WG III have to contribute to completing the overall picture on vulnerabilities, impacts, adaptation and mitigation options and their cost
4. Special Reports have to be elaborated in response to the needs of the UNFCCC and its Kyoto Protocol, but also if the Panel itself decides that there are necessary.
5. Use peer reviewed literature
6. Have a proactive outreach approach to inform the society on the IPCC findings
7. Being responsive to the invitations and requests of the UNFCCC and its Kyoto Protocol
8. Being "policy relevant" but not "policy prescriptive" and provide policymakers with the most robust scientific information currently available (NB: We have a number of questions about the statements in paragraph 3.1.1, in particular this one: " … … there is now a greater demand for a higher level of policy relevance in the work of the IPCC, which could provide policymakers a robust scientific basis for action.")
9. Not to order research work but provide recommendations for further research and research need
10. Act only as facilitator – and not organiser and coordinator – of activities that the scientific community may organise to fill gaps in research needs

What may be improved

11. The Principles governing the IPCC work before the entry in function of the new Bureau
12. Coordination between the Working Groups
13. The attribution of roles between the WG, particularly between WG II et WG III
14. The Synthesis Report: should it be a mere collection of existing statements of the SMP of the three WGs or a synthesis of the findings?
15. Consider specific questions about, inter alia, sustainable development, the cost of measures for mitigation and adaptation, etc. The Assessments Reports of the correspond WGs have then to answer in detail and specifically these questions
16. Mobilizing the appropriate scientific communities to produce the assessments
17. Improve and extend regionalization and downscaling
18. Reconsider producing Technical Papers which relevance is less prominent
19. Clarify who should make the list of the SPs and the TPs, if any?
20. The composition o the Bureau. We are not convinced by the arguments presented in paragraphs 5.1. and 5.1.2. Furthermore, we consider that the composition of the Bureau does not assure that some regions with many more countries that others, are so well represented

We support the idea of reinforcing

République du Togo - Direction de l'Environnement

Activités à intégrer dans le programme d'activité GIEC pour l'élaboration du 5ème Rapport d'évaluation

1 – Le quatrième rapport du GIEC a révélé que presque toute l'Amérique latine et l'Afrique à l'exception de l'Afrique du sud et du Maghreb, manquent cruellement de données d'observation de base pour faire des analyses soutenues des effets et impacts des changements climatiques en relation avec le développement durable et de pouvoir faire des projections avec plus de certitude sur la situation future des changements climatiques dans ces régions.

Cet état de situation est dû au manque d'observations météorologiques fiables du fait de l'état des instruments d'observation très obsolètes voire inexistants.

Il serait indiqué que le GIEC inscrive dans ses activités présentes et futures, le soutien technique voire financier à travers le FEM, pour améliorer la qualité des observations météorologiques et promouvoir la recherche qui permettront d'une part de préciser la situation climatique qui prévaut réellement dans ces régions et d'autre part aux populations de ces régions de mieux intégrer la lutte appropriée contre les changements climatiques dans leurs stratégies de développement.

2 – Le GIEC pourrait prévoir la traduction en d'autres langues des Nations Unies les divers rapports élaborés généralement en Anglais. Il est à noter que la grande faiblesse de l'exploitation des documents très riches en informations de ces rapports est liée à la non maitrise de l'Anglais, ce qui ne favorise pas la mise en œuvre plus efficiente de la convention-cadre des Nations Unies sur les changements climatiques.

3 - Le GIEC a mené des analyses scientifiques basées sur des données d'observation sur le climat pour convaincre la communauté internationale sur les causes, les effets et les impacts présents et futurs des changements climatiques. Même si encore aujourd'hui, certains pays, pour des intérêts personnels mais illusoires, feignent de ne pas saisir et comprendre ces démonstrations si convaincantes du GIEC, il est clair que les changements climatiques constituent une menace à l'humanité et que des actions urgentes doivent être menées par toute la communauté internationale en vue d'une limitation des atrocités climatiques projetées à divers horizons par le GIEC.

A cet effet, il serait indiqué que le GIEC s'engage à élaborer des stratégies et des méthodologies d'adaptation et d'atténuation concernant tous les secteurs de développement qui seront exploitées par les différentes populations selon qu'elles s'adaptent aux situations de leur milieu.

Ukraine -State Hydrometeorological Service

We would support your proposals on the IPCC bureau size.

We think that the further effective work of IPCC is necessary, taking into account importance and a demand of its researches with the purpose of realization UNFCCC and KP.

We agree with necessity to develop new approaches to implementation of different IPCC tasks and products which it makes, strengthening of the IPCC activity on policy and timely response to the requests by policy makers providing a reliable scientific basis for their decisions.

Economical aspects of climate change are directly retaliated to implementation of a different kinds of country obligations under both the Convention and the Protocol, and therefore, any information on this matter would be extremely useful. Establishing a small working group for further analysis of this kind of activity would be greatly welcome.

Concerning the IPCC activity on preparation of the AR5we suppose reasonable to recommend that the comprehensive assessment be prepared every assessment cycle (5-6 years) following the format established in the AR 4. The regular production of the comprehensive assessment is used for rapid increase of awareness and expansion of scientific knowledge on the matter; great interest of policy makers, scientists and the general public; formation of understanding of climate change cause-and-effect relations by the general public and formation of public opinion, which usually determines country's policy.

We would support the production of focused special reports for instance the globally-significance problem as " Impact and Adaptation " might be addressed by series of reports and papers, such as:

1. "Climate change and Disasters": papers and articles should be describe approaches to risk, assessment, cause-and-effect relations, economical aspects, practice on adaptation increasing assessment of cost and benefits.
2. "Climate change and Water Supply": economical aspects of adaptation and working over the legal aspects. The technical papers and reports would facilitate the formation of regional solidarity in joint utilization of resources.
3. "Climate change and Land Degradation": papers need an assessment by climate change impact on land degradation process and the rate of current changes.
4. "Climate change in Synergy with other Conventions": Combat with Desertification, Biological Diversity, Transboundary Water Use, ect.

5. "Climate change and Sustainable Development". On this matter we would back up the necessity to research and assess economical aspects of climate change and sustainable development.

6. New ways and technologies of mitigation and adaptation that would be directly and indirectly harmless to sustainable development, including examples of world practice.

United Kingdom

1.Summary

We broadly agree with many aspects of the IPCC Chairman's paper. We generally support the 5-6 year assessment cycle, with more targeted special and technical reports. We propose putting in place fast-track assessment reports to deal with specific issues and respond to the needs of the UNFCCC. We also propose setting up annual reporting of key indicator variables, using assessed and agreed methodologies.

We propose a slightly revised structure, which envisages splitting WG2 into two groups to cover impacts and adaptation separately, creating small task groups to facilitate cross-cutting issues (e.g. technology, sustainable development, economics, regional dialogue) and give definite responsibilities to the three vice-chairs. Greater integration between working groups is required.

In our view, strengthening the IPCC's will need stronger central resources to meet the challenges ahead. This includes more staff but also a review of existing and setting of new procedures. We therefore agree that a Task group should be set up at the 28th Session of the IPCC to carry out a review of the principles governing the functioning of the IPCC.

We believe that the Nobel Prize could play an important role in the IPCC future development, through the creation of a Fund to support the engagement of junior scientists, especially from developing countries, in IPCC activities.

We put forward a few subject-areas, which we believed should be assessed in relation to climate change. They include oceans, transport, emissions trading, R&D: engineering and technology, near-term impacts/disasters, air pollution, biodiversity/wetland/desertification, health, security and geo-engineering.

2. Introduction

In general, the IPCC continues to do an excellent job, most recently in delivering a satisfactory and authoritative AR4.

The AR4 has played an important role in keeping climate change at the top of the international political agenda and in the public eye. The AR4 has had a large impact on the climate change debate and the need for action on climate change, underpinning the recent agreement of the Parties to the UNFCCC to proceed with the Bali Action Plan. It is clear that the authority and comprehensiveness of the reports are widely recognised and are due to the careful procedures of the IPCC. Such strengths need to be retained and built on as the IPCC considers its future development. At the same time the IPCC will face new requirements as the policy debate shifts from defining the problem to finding and implementing solutions. The IPCC will need to adjust to new demand, and to adjust its products, procedures and structures accordingly without undermining the reasons for its success.

The UK greatly appreciates the work of so many scientists over the years who have contributed so much to making the IPCC what it is today. We also would like to thank the chairman for his paper on the future of the IPCC, which provides a very useful starting point for further discussions on the way IPCC should develop.

In anticipation of these deliberations the UK has undertaken an informal consultation with those who have been involved in the IPCC as lead authors and those who are users of the IPCC's outputs from within Government. Their views are reflected in the proposal made below.

3. IPCC products

The IPCC products have stood the test of time and we would not wish to radically change these. At the same time we see that new products are likely to be required and we make some suggestions accordingly.

a) Full 5-6 year assessments

- We agree with the chair's recommendation for retaining the current system for a comprehensive assessment every 5-6 years, with more targeted special reports on specific subjects to be carried out within the 5-6 year period.

- Opportunities for Governments to comment on the structure of the assessment reports should be given early enough to be addressed by lead authors.

b) Synthesis Reports

- The AR4 experience underlines the need to continue to produce a Synthesis Report which is short and crisp as a key policy relevant output.
- Summaries for Policy Makers have proven to be extremely useful/effective and are in our view essential.
- However, more effort needs to be made to ensure its synergistic and integrated nature is enhanced. In this respect, early discussions between authors and users about the direction and objectives of the synthesis report is essential. Consideration needs to be given to building the process of synthesis into the structures of the IPCC.

c) Special Reports and Technical Papers

- Special reports and technical papers have been very successful in informing the policy debate on specific issues. We support their continuation and agree that early in the life of the new Bureau, a prioritised list of subjects for such reports should be developed.
- It is likely that IPCC will be faced with the need to prepare some reports on a tighter timescale. We suggest that the procedures should be reviewed to allow for more rapid procedures be put in place, without jeopardizing quality.
- Consideration should be given to allowing for some updating of material in Technical papers.

d) Methodological/Inventory guidelines

We are content to maintain the Task Force on National Greenhouse Gas Inventories Programme (NGGIP) in its current form as an important component of the IPCC's mandate. IPCC should respond positively to requests from the UNFCCC for help with any methodological work related to the IPCC guidelines. We would also encourage greater integration with the whole of the working groups.

e) Suggested new products

- *"Accelerated Report for Urgent Review"*
  Need for a special fast-track assessment procedure to ensure a rapid response to key sensitive issues by producing an "accelerated report for urgent review".

- *Update Report for the UNFCCC COP in late 2009*
  Given the important role that the publication of the IPCC reports have played over the years in informing the negotiations on climate change, it will be crucial to provide a means to produce an update on climate change risks and responses before the Conference of the Parties complete their negotiations on a post 2012 agreement, to the UNFCCC in late 2009.

- *Development of an on-line data base on key indicator variables* (e.g. Global temperature, sea-level rise)
  These would be updated regularly using agreed IPCC methodological guidelines.

- *More frequent routine updates of key findings*
  In order to inform governments and stakeholders of significant changes in scientific understanding, consideration should be given to the preparation of update reports, which address key findings

- *Outreach*
  We agree that the forthcoming years are likely to require a substantial amount of outreach by the IPCC, particularly in the nature of participation in various events and presentations and talks in seminars and conferences etc. This aspect of the IPCC's work has improved but still needs further strengthening.

- *Educational material*
  We would suggest further exploration of the use of approved materials in catalysing educational activities (e.g. UNEP education programme).

4. The Organisation of the IPCC

a) Composition of Bureau

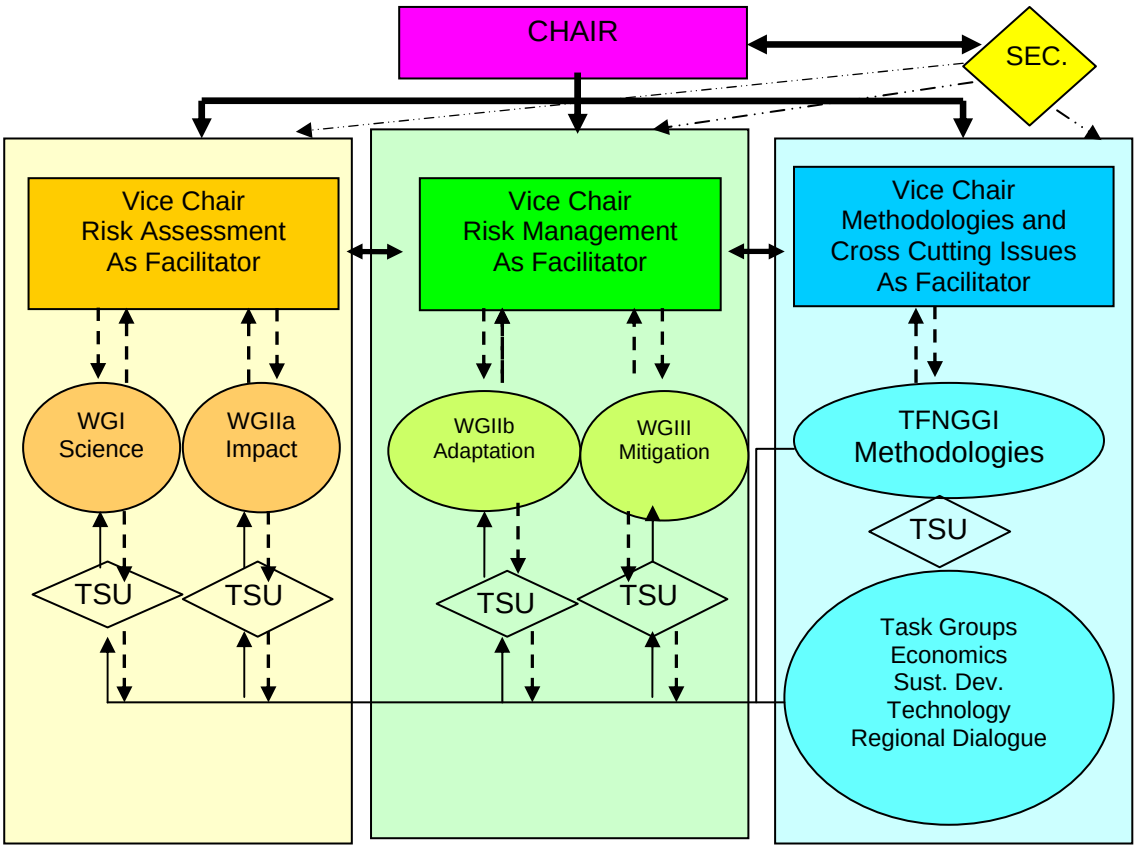
We agree that the bureau needs to be strengthened further with an appropriate coordinating arrangement, although we would not wish to see it increase in size by more than a few people. There are three issues that need to be addressed:

i. The role of the Vice Chairs need to be strengthened and their role clearer. We do not see a need to increase the number however.
ii. We suggest that the task for WG2 has become too large and that it should be split into impacts assessment and adaptation. Thus we will need to add two new co-chairs and relevant bureau and TSU.
iii. Formal recognition should be given to key cross-cutting issues which should be supported by small task forces each with a chair. These would cover: economic issues, sustainable development, technology and regional aspects.

We suggest that it may be helpful to organise the work of the IPCC under three broad headings: (i) Climate Change Risk Assessment, (ii) Climate Change Risk Management and (iii) Methodologies and Cross-cutting Issues. The latter would facilitate the work of all working groups. The Vice –chairs would support the Chair under these three broad headings in which Risk Assessment would include the working groups on science and impacts and Risk Management the working groups on adaptation and mitigation. They would also facilitate coordination between the working groups.

Special reports would be prepared by a single working group or combinations of groups depending on the subject.

The diagram below summarises this above structure.



b) The IPCC Secretariat

- We agree that the Secretariat currently lacks adequate capacity and needs strengthening and an increase in staff levels. However, we do not think that only one more professional with a scientific background apart from the Secretary and Deputy Secretary will be sufficient to meet the challenges ahead.
- We believe that the Secretariat should be further strengthened by having a Chief Executive and/or Science Coordinator, who would ultimately be responsible for the effective running of the IPCC. The Secretariat should include a delivery unit providing the appropriate level of support to the chair, vice-chairs, deal with cross-cutting issues, outreach and communications, ensure integration of all IPCC activities, support the production of synthesis reports and interact with other organizations, including the UNFCCC, WMO and UNEP, and resource management.
- The Secretariat should continue to support the attendance of developing country authors at meetings.

c) Working Groups

- The Working Groups are expected to remain the basic strength of the IPCC and will need to be financed and supported largely as now. The addition of an extra working group should help spread the load.
- There is also a need for a lot more integration across the working groups and the different communities engaged in each. This integration was not fully achieved in the AR4 synthesis report. The additional roles for the vice-chairs and the strengthening of the secretariat should be used to support this.

d) Task Forces and Groups

- We note the success of the Task Force for National Greenhouse Gas Inventories in providing practical advice that is very extensively used by countries in reporting emissions and removals to the UNFCCC and under the KP. It is essential that such work continues to be fully supported by the IPCC.
- We agree that with the growing awareness about climate changes there is a need to place much greater importance on the economic aspects of climate change and the fundamentals of sustainable development. The IPCC should therefore help policy makers understand the parameters that could support decision making, the costed options available to them, and the potential costs of different emission trajectories that might, for example, deliver a 50% reduction by 2050.
- Similarly, we also suggest that more emphasis is given to the assessment of technological options, including evidence on technological development and implementation.
- We believe that having these cross-cutting issues dealt by Task Groups, which could facilitate the work of all working groups, could ensure a more consistent approach across the working groups and lead to greater integration.

We welcome the IPCC Secretariat proposal to facilitate a workshop or expert meeting on how to deal with the regional aspects of climate change. In our view, regional dialogue should also be dealt seriously by a Task Group

e) Technical Support Units

The TSU model has proved essential and very effective in the preparation of the assessments of the IPCC. The role of the TSUs in delivery of special targeted reports and updates, as well as implications for staff levels will need to be considered.
It is essential that TSUs should be fully supported and that both co-chairs have access to the work of the TSUs.

f) Lead Authors and Review Editors

- We have had feedback that the working load for Convening Lead Authors can be too onerous if they are not given financial support for their time. It is also suggested that CLAs would benefit from having a junior scientist as a full time assistant. This would provide support for technical/editorial/co-coordinating work and would enable the CLAs to concentrate or the scientific issues. The engagement of junior scientists would provide valuable experience and help build capacity and train the LAs of the future. There are clearly resource implications here both for governments and the IPCC. This could be an option for the use of the Nobel Prize fund.
- There appears to be a need for more review editors
- We suggest a greater use of practitioners (including experts from public and private sectors) especially in the assessment of adaptation and mitigation options. It is important to recognise and ensure that special and technical reports are likely to require engagement from a different set of stakeholders than the usual working group reports.
- This also means that the IPCC needs to consider how to make fuller use of the "grey" literature. LAs noted there were currently no guidelines or processes available to define, assess, review with sufficient objectivity, robustness and integrity such literature.
- We agree that there should be a review of practices and administrative procedures in respect of travel rules applicable to participants in IPCC activities from developing countries and economies in transition. Where current procedures have caused considerable difficulties and hardships these need to be changed. However it does need to be recognised that there may be considerable financial implications with any changes.
- Criteria for the selection of authors (e.g.: specific expertise in certain areas, ability to synthesize information for a wide target audience, geographical balance, balance in views, balance between experienced and new people, and balance in gender) need to be made more specific. Publication on website to enhance transparency and integrity Implementation of clear procedure regarding the selection, nomination process. Ensure the website conveys the transparency of the process.
- Clearer "Register of Interest" Procedure should be put in place.
- General desire for a geographical balance. This might include providing some funding for developing country scientists to devote time to writing the report and attend all relevant meetings.

g) Governance and Procedures

- The IPCC Plenary/Bureau to agree a set of key questions to be addressed at the beginning of the process, so that key policy questions stimulate new research or publications.
- The IPCC needs a "Best Practice/Guidelines to authors/chairs" to ensure more professionalism and pave the way for institutional learning (and make sure lessons are not lost).
- The IPCC also needs to put in place a procedure and criteria enabling to assess and deal with "grey" literature.
- IPCC should consider how best to deal with important emerging topics, for which evidence or data are limited.
- The IPCC and those participating should offset emissions related to travel. The IPCC should consider and implement practices which reduce travel.
- We agree that a Task group should be set up at the 28th session of the IPCC to carry out the review of principles governing the functioning of the IPCC.

5. Use of the Nobel Prize fund

We received some calls for acknowledgement (as a certificate) of past/current contributors for their involvement re. the Nobel Prize. Whist recognition of the work of individuals is a laudable idea we do not believe this is best use of such funds.
However, we suggest that the prize presents a major opportunity to help address a long standing issue in the IPCC and that is to increase the representation of developing country scientists in its work. We suggest that the prize fund could be used as an investment for the future, by creating an "IPCC Nobel Prize" Fund, which could support the training of junior scientists particularly from the developing world, by providing scholarships, secondments and intern opportunities and direct involvement in some IPCC activities. Other organisations and governments would be encouraged to contribute to the fund so that its value would extend considerably beyond the initial investment provided by the Nobel Prize. The IPCC would need to develop agreed procedures and institutional arrangements for the handling of such a fund.

6. Suggested work programme for next 5 years

Special and Technical Report:
In the UK's view, special reports or technical papers could be prepared on the relationship between climate change and the following:

1. Oceans
2. Transport
3. Emissions Trading – and monitoring and verification
4. R&D: Engineering and Technology.
5. Near-term impacts (i.e. next 30 years or up to 2050). This would be an opportunity to look at disaster prevention and control
6. Air Pollution
7. Biodiversity, wetland, desertification
8. Health
9. Geo engineering
10. Security

While addressing these issues, we should ensure that clear indications are given on where there's greatest scope to reduce the uncertainties in assessing and managing future climate risks.

National Greenhouse Gas Inventories Programme (NGGIP):
The main objective should be to ensure the 2006 IPCC guidelines are adopted and implemented. The UK also foresees the need for methodological guidance from the NGGIP in the areas identified above and invites the Task Force to produce a work programme to correspond. In addition, the Task force should also consider the need for advice in the following areas:

- Gases and sources of emissions not currently covered by the IPCC 2006 Guidelines
- the identification of management effects in the LULUCF/AFOLU sectors.
- Work relevant to specific aspects of climate change agreements, eg use of IPCC inventory guidance in estimating emissions from deforestation and forest degradation.
- Review of data available to ensure that forest management practices can be adequately captured in greenhouse gas inventories, bearing in mind the major role of forest management identified in AR4.
- ensuring that inventories capture a) the effect of policy actions at the national level, b) the effect of actions by entities, including emissions trading. In the UK's view, higher Tier methods will generally suffice for a) and b) but there may need for generic guidance so that countries have confidence that this is the case
- ensuring consistency between inventories and projections
- the relationship between atmospheric measurements and inventory data.
- The implications for national greenhouse gas inventories of different structures for future climate change agreements

United States of America

We appreciate the ideas that Dr. Pachauri put forward to stimulate thinking on future assessments under the Intergovernmental Panel on Climate Change (IPCC), and appreciate the opportunity to comment on the paper "the Future of the IPCC." We remain strongly committed to the assessment process and to the important role that assessments play in underpinning good public policy decisions.

We are currently consulting with interested members of the expert community and the public in the United States on their views on future assessment needs. As you know, there is a range of views in our own expert community, and we will be reviewing these in coming weeks with a view to having more considered positions by the time of the next IPCC plenary in Budapest. In the meantime, we offer a few preliminary thoughts on some of the items you have identified in your paper.

We agree with the assessment that the principles and procedures have stood the test of time, and that the procedures provide generally for an appropriate process and level of review by experts and governments, reflecting the unique nature of the IPCC assessments.
At this point, we are inclined to believe that the current Working Group structure serves the process as well as any other we have yet envisioned. We believe that comprehensive assessments are important and that their periodicity should be commensurate with the rate of progress in the respective domains covered by the Working Groups. As your paper suggests, we think the existing arrangements for assessment cycles have generally served the purpose both of providing comprehensive assessments as well as attention to specific subjects in a timely manner. We agree that decisions regarding Special Reports should be made very early in the next assessment cycle. We will need to ensure that the development of Special Reports does not overwhelm the capacity of any of the Working Groups in the context of future comprehensive assessments.

We generally agree with the view that the next assessment could be strengthened with respect to the assessment of relevant economics literature, recognizing that the focus of the IPCC is and should remain on assessments of existing literature pertaining to climate change. In the previous assessment cycle, the Working Groups helped ensure that adequate focus was given to new issues through workshops early in the assessment cycle. We think that this is likely to remain the most efficient means of ensuring adequate attention to economics issues, rather than altering existing Working Group structures or creating new bodies within the IPCC.

With respect to the discussion on sustainable development in paragraph 4.1.4 of the paper, we note that the literature relating to specific impacts of climate change generally is considerably more extensive than any literature that relates any impacts to sustainable development *per se*. Given that assessments should focus on existing literature, we would think that the most appropriate way of handling this issue would be to ensure that assessment of relevant sustainable development literature be included in relevant chapters of a future Working Group II report, where the literature on impacts can be addressed comprehensively. In this area as in others, the IPCC should not be involved in the development of new scientific or technical literature that it is ultimately charged with assessing.

We will continue to consider other proposals, including those relating to outreach and capacity building, in light of the degree to which they support and are not in conflict with the IPCC's core assessment function.

Again, thank you for the opportunity to share our thoughts on the paper. We look forward to discussion on these issues in April.

Uzbekistan - Center of Hydrometeorological Services

I would like to submit some comments of the Center of Hydrometeorological Services (UZHYDROMET) on the discussion paper on future of the IPCC that has clearly displayed important conclusions and lessons learnt from the IPCC 20-year functioning.

There is no doubt in the necessity to develop new approaches to implementation of different IPCC tasks and products. An important point is the need in further strengthening of the IPCC activity on policy and timely response to the requests by policy makers providing a reliable scientific basis for their decisions.

Indeed, the further IPCC assessments must specifically address different aspects of sustainable development taking into account revealed gaps and needs. This is an issue continually encountering all levels of society in
different countries.

Economical aspects of climate change are directly related to implementation of differed kinds of country obligations under both the Convention and the Protocol, and therefore, any information on this matter would be extremely useful. Establishing a small working group for further analysis of this kind of activity would be greatly welcome.

Concerning the IPCC activity on preparation of the AR5 we suppose reasonable to recommend that the comprehensive assessment be prepared every assessment cycle (5-6 years) following the format established in the AR4. The regular production of comprehensive assessment is useful for:

* rapid increase of awareness and expansion of scientific knowledge on the matter;

* great interest of policy makers, scientists and general public;

* Contribution to formation of understanding of climate change cause-and-effect relations by the general public and formation of public opinion, which eventually determines country's policy.

We fully agree that the Synthesis Report is worth be included in the AR5 as well, being a good and useful practice.

We would support the production of focused special reports and technical papers. For instance, the globally-significant problem "Impact and Adaptation" might be addressed by a series of reports and papers, such as:

* 'Climate Change and Disasters' papers and articles should describe approaches to risk assessment, cause-and-effect relations, economical aspects, good practice on adaptation including assessment of costs and benefits;

* 'Climate Change and Water Supply in Arid Zones within the Framework of Transboundary Water Use' papers require studying economical aspects of adaptation and working over the legal aspects. The technical papers and reports would facilitate the formation of regional solidarity in joint utilization of resources.
* 'Climate Change and Land Degradation' papers need an assessment of climate change impact on land degradation process and the rate of current changes.
* 'Climate Change in Synergy with other Conventions (Combat to Desertification, Biological Diversity, Transboundary Water Use)' papers would make clear mainstreaming of adaptation issues in the national planning process with least costs.
* 'Climate Change and Sustainable Development'. On this matter Uzbekistan would back up the necessity to research and assess economical aspects of climate change and sustainable development, namely:
    i. impact of changed natural conditions on food production;
    ii. mitigation measures and their relations to food prices; mitigation measures and conservation of sustainable land use (some mitigation measures can increase the load on land and water resources). Good practice and distribution of information about establishing "common markets" and other types of regional coordination would stimulate countries to integral management of land and water resources within regional scope.
    iii. general indicators and criteria in assessment of climate change and sustainable development.

* New ways and technologies of mitigation and adaptation that would be directly and indirectly harmless to sustainable development, including examples of good practice.

As for the IPCC Bureau, we would support your proposals on its size and composition.

These are, in general, our comments.

Zambia

Comments on the Proposed Changes for Future Operations

INTRODUCTION
The Intergovernmental Panel on Climate Change (IPCC) has undoubtedly performed remarkably well in unveiling the complex phenomenon of the climate change science. In this context, we join others in congratulating and supporting the IPCC as they endeavor to continue with this noble task. However, it is our belief that for every organisation to excel to greater heights, there is need for constant review of its operations in order to make amends where necessary, and ultimately to improve its delivery. Therefore, after a review of the discussion paper as circulated by the IPCC Chairman, we wish to make the following comments on the following agenda items:

1. Do we need Change?

As stated earlier, we wish to support the notion that change with a purpose is always inevitable if an organisation is to improve and cope with the rapidly changing world. It is in this vein that we commend the IPCC for embarking on this process of examining its operations and seeking external views in order to make its operations more effective.

In the same light, we also wish to support the reviewing of the principles that govern the work of IPCC every five years before a new Bureau takes office, as this would help to improve efficiency.

2. Activities of the next Bureau and elements of the 5th Assessment Report

One of the critical issues of the moment is the question of whether the IPCC should produce a comprehensive assessment each cycle or produce special reports on a regular basis and a comprehensive assessment every two cycles.

Taking into consideration the nature of climate change which in itself is unpredictable, there is need for special reports that can be prepared from time to time as and when need arises, in order to respond to the challenges at every particular moment. The comprehensive report of every 5 – 6 years may not be ideal to respond to unforeseen, sudden and devastating eventualities that may need urgent attention in the short term. Further, the special reports would also provide a useful input for the concurrent comprehensive assessments. In this context, we wish to join the many others who are advocating for a set of focused special reports and a comprehensive assessment every two cycles. However, to avoid a long lapse between one comprehensive report and another, we wish to suggest that the cycles be reduced to a 4 year period so that two cycles could constitute 8 years and not 10 – 12 years as the case might be.

3. Research in Developing Countries

It is gratifying that the discussion paper has identified inadequate research in developing countries as one of the key issues of concern for the IPCC. Indeed, the developing countries, Zambia included have not embarked on much research, and as a result, the real picture of the climate change situation in terms of impacts and scenarios cannot be drawn. This had made it difficult for one to relate the global climate change scenario to those at the local level and ultimately, people cannot appreciate the extent of the climate change problem in figurative terms.

Therefore, we support calls for capacity development that would culminate into meaningful research for the developing countries. In this line, therefore, we support the IPCC's calls for a workshop that would help to fill the needs of research on impacts of climate change especially in the developing countries. The workshop should among other things come up with a programme of action that should aim at promoting research activities in developing countries.

4. Organisational issues of the next Bureau

4.1 Composition of the Bureau

Currently, the bureau is comprised of 30 members and one of the principles governing its operations is that of adequate geographical balance. Africa currently has five members (Kenya, Sierra Leone, Gambia, Morocco and Sudan) and none of these members is from Southern and Central Africa. We therefore recommend that the next Bureau should have representation of other African regions including the Southern and Central Africa in line with the "adequate geographical principle".

Further, there have been calls to reduce the number of members from 30 to 29 by way of removing the position of one Vice Chair, so that the structure can then be left with only two Vice Chairs. The two remaining Vice Chairs would then be provided with specific tasks and responsibilities that would enhance the effectiveness of the Bureau. Taking into account the factors raised therefore, we wish to support this proposal with an understanding that it is going to contribute to the effectiveness of the Bureau and in any case, it will result in reduced costs of operation.

4.2 Secretariat of the Bureau

We support the expansion of the secretariat as it is our belief that the move will result in improved and timely delivery of outputs.

4.3 Practices and Administrative Procedures

We welcome the revision of some practices and administrative procedures particularly in respect of travel rules applicable to participants in IPCC activities from developing countries and economies in transition, as this would ensure that participants are well taken care of.

***** End Governments Comments *****

LEAD AUTHORS AND COORDINATING LEAD AUTHORS COMMENTS

Alicia Villamizar - LA WG II, Chapter 13

Lead Author in the 3rd (2001) and 4th (2007) Assessment Reports and Lead Author in the **V** Technical Paper: Climate Change and Biodiversity (2002).

I truly appreciate your requesting our suggestions to the future of IPCC. To me it is a very important opportunity to share with you my own point of view in this matter which is the maturation of an extraordinary experience that has lasted for over 10 years and all along of which I have grown not only professionally but personally as well.

This initiative of consulting our opinion is a fundamental step towards the "adaptation" of the IPCC to the challenges that climate change imposes on us to each citizen of this planet as well as institutions and governments. A greater participation from all those involved in the handling of the challenge of the 21st century, climate change, will contribute to a better understanding of its complexity and a greater willingness to take on the sacrifice and structural changes that this demands.

My comments and suggestions follow the structure proposed in the communication relating to "Some issues related with the future of IPCC" and will present it in item form.

Do we need any change?

1.

a. To incorporate personnel to the technical support staff that could design major and more effective information spreading campaign on work done by IPCC. The staff should be able to cover the most diverse geographic regions to ensure a greater presence of IPCC without causing it to become over exposed to the media, which would affect its credibility. The aim of this proposal is to keep a more steady presence in the media as to the progress made by IPCC, so that when concluding Special Reports, Technical Reports and its own Assessment Reports, as well as the different kinds of information activities in which IPCC may participate or organize, the proper coverage will be available and at more precise timing.

b. The previous point would be a great contribution in those countries whose language is not official UN languages. In this way more countries can be covered and mainly the poorer ones, which are the ones that need to have more and better information on Climate Change.

c. The indigenous communities in particular are by far the most affected by the lack of information on Climate Change and it either does not exist or it is very scarce in their dialects. An effort would have to be made in identifying which dialects represent more accessible indigenous populations and translate to these the IPCC material. This effort would be in correspondence with reinforcing the subject of sustainable development within the scope of future IPCC reports. The later will be a contribution to putting information in the hands of those human populations less protected and most vulnerable to climate change.

d. To make an effort to broaden the representation among Lead Authors of the Latin American chapter, including countries that still do not have it, which are the majority: Colombia, Chile, Paraguay, Guyana, Suriname, Ecuador, El Salvador, Guatemala, French Guyana, British Guyana, Honduras, Nicaragua, Panama and Peru.

On the region

e. Taking into account the linguistic, ethnic, economic, social, political, and climatic diversity of Latin America, it is possible to think in terms of structuring the Latin American chapter into 2 sub regions: South and Central America. Under this sub division which would remain reinforced by the presence of representing lead authors from all countries, would redound in greater accuracy in terms of coverage and access to information on the region as a whole.

2. Drivers of required change in the future

a) In reference to providing greater emphasis on the theme of Sustainable Development and in order to visualize the economic effects of Climatic Change on the compliment of the Millennium goals (assuming that it is probable that many developing countries will not develop enough economic data to facilitate deeper assumptions in the short or medium term) I suggest making a chart similar to the one shown here where we can compare the specific or overall effects over IDH values, before and after the occurrence of extreme events such as floods, extreme rain, high or low temperatures, etc.. It will be very likely that IDH values reflect the effects on variables like human poverty and ppopulation with no access to sources of water, etc. Likewise it could be proposed for natural resources and sectors. Most of the data is based on already existing information (basically from the PNUMA Human Development Report 2007-2008, plus what could be obtained as the IPCC delivery cycle of the 5th evaluation report is in progress.

Anton C. Imeson, WG II Chapter 1

With reference to point 3.1 2 and 3.1.2
In the last assessment larger cross cutting issues did not always emerge because of the way the assessment was made according to systems and sectors. Climate change is in most countries itself a cross cutting issue so that the IPCC assessments is naturally allying itself to the other cross cutting issues (e.g. sustainable development). Progress might be made in raising climate change from a cross cutting issue to a horizontal theme that is strongly connected to sustainable development, global hydrology and global land use policy, as well as energy policy and forestry which now dominates.
As climate change and its impact are regulated , buffered or magnified by the rocks soil, vegetation and buildings, this could be given more weight by considering the land (with soil and vegetation) as a cross cutting theme. The Earth Sciences are not over represented.
The current emphasis is on regulating emissions and in attributing climate change to the impacts of fossil fuels. It could be that if too much of the energy, water and surface area and even oxygen are appropriated by humans that this is the main common driver of climate change, land degradation and biodiversity loss. Emphasis on carbon as an indicator could be improved by considering the oxygen cycles along side them.
So my opinion the mandate of the IPCC could be broadened to include more specifically the sustainable development and the economy that focuses on the land and soil itself as a key critical area or compartment in which the climate is being changed. The hydrological system and ecosystems could be components within this. Perhaps land use policy, including agriculture and forestry could be made very effective adaptation policies with respect to 3.2. The workshops are a good idea but they might involve developing the capacity of young scientists and making sure that international programmes respond to the needs. However, the emphasis could also involve partnerships between organisations and countries such as the EU in FP7. Are scientists in poor countries able to access and make use of modern data and remote sensing information? Training young scientists who can analyse and understand the needs and issues is important and organisations such as the IPCC could help in many possible ways.
6.2.1.
The comprehensive assessments should be the main IPCC effort, for which it has brand recognition. The contents and organisation of the main reports could be organised to incorporate special studies. The special studies have an outreach and dialogue and policy development functions. They are excellent but not an alternative to a main report.

Antonina Ivanova – WG III

Climate Change Policies as "Sustainable Security"

I would recommend including in the future plans of the IPCC the analysis of the climate change as a security issue.

Since 9/11 and the development of the 'war on terror', international terrorism has been promoted in Washington, London and other Western capitals as the greatest threat facing the world at the current juncture. However, a number of researchers, in first place Abbot *et al.* (2006)[1] show that international terrorism is actually a relatively minor threat when compared to other more serious global trends, and that current responses to those trends are likely to increase, rather than decrease, the risks of further terrorist attacks.

[1] Abbott, Chris, paul Rogers and John Sloboda (2006) *Global Responses to Global Threats,* Oxford Research Group, London

In examining these issues, their report offers an overview of four groups of factors that the authors have identified as the root causes of conflict and insecurity in today's world and the likely determinants of future conflict, appointing the climate change on first place:
1 Climate change
2 Competition over resources
3 Marginalisation of the majority world
4 Global militarisation

The climate change is directly related with the determinants 2 and 3. These factors are the trends that are likely to lead to substantial global and regional instability, and large-scale loss of life, of a magnitude unmatched by other potential threats.
Current responses to these threats can be characterised as a 'control paradigm' – an attempt to maintain the status quo through military means and control insecurity without addressing the root causes. The authors argue that current security policies are self-defeating in the long-term, and so a new approach is needed.

This new approach to global security can be characterised as a '*sustainable security paradigm'*, and that is closely linked to the *sustainable development* scenarios. The main difference between this and the 'control paradigm' is that this approach does not attempt to unilaterally control threats through the use of force ('attack the symptoms'), but rather it aims to cooperatively resolve the root causes of those threats using the most effective means available ('cure the disease'). For example, a sustainable security approach prioritises renewable energy as the key solution to climate change; energy efficiency as a response to resource competition; poverty reduction as a means to address marginalisation; and the halting and reversal of WMD development and proliferation as a main component of checking global militarisation. These approaches provide the best chance of averting global disaster, as well as addressing some of the root causes of terrorism.

Governments will be unwilling to embrace these ideas without pressure from below. The NGOs and the wider civil society have a unique chance to coordinate their efforts to convince government that this new approach is practical and effective. This will mean a closer linking of peace, development and environmental issues than has so far been attempted. New political leadership in the USA in the coming year may well present the ideal opportunity for progress, but unless urgent action is taken in the next five to ten years, it will be extremely difficult, if not impossible, to avoid a highly unstable global system by the middle years of the century.
Summary of main points on climate change and security:
• The effects of climate change are likely to lead to the displacement of peoples from coastline and river delta areas, severe natural disasters and increasing food shortages. This would lead to increased human suffering, greater social unrest, revised patterns of living and the pressure of greatly increased levels of migration across the world.
• This has long-term security implications for all countries which are far more serious, lasting and destructive than those of international terrorism.
• However, the response to climate change should not be the increased use of nuclear power, which would only encourage the spread across an unstable world of technology and materials that can also be used in the development of nuclear weapons and their use by 'rogue states' or terrorist networks.
• Instead, a more secure and reliable response is the development of local renewable energy sources and radical energy conservation practices.

The Pentagon's Office of Net Assessment (ONA) identifies climate change as a threat which vastly eclipses that of terrorism. A report commissioned by the head of the ONA, Pentagon insider Andrew Marshall, and published in late-2003, concluded that climate change over the next 20 years could result in a global catastrophe costing millions of lives in wars and natural disasters. The report's authors argue that the risk of abrupt climate change should be "elevated beyond a scientific debate to a US national security concern".

Anyone doubting the serious security implications of environmental disasters, even for rich and powerful countries such as the United States, should simply look at the large-scale loss of life and breakdown of society that occurred in New Orleans and other Gulf Coast cities (as well as rising petrol prices across the world) in a matter of days following Hurricane Katrina in August and September 2005. This is especially worrying because there has been a near doubling in the number of category 4 and 5 storms such as Katrina in the last 35 years, most likely as a result of rises in the temperature of the surface levels of the sea.6

In January 2004, the UK Government's Chief Scientific Adviser, Sir David King, wrote a guest editorial for the journal *Science*, warning that "climate change is the most severe problem that we are facing today, more serious even than the threat of terrorism". He argues that as a result of global warming "millions more people around the world may in future be exposed to the risk of hunger, drought, flooding, and debilitating diseases such as malaria".7

Though there is still some disagreement, most scientists now believe there has been a considerable increase in atmospheric carbon dioxide levels, mainly as a result of human activity such as burning fossil fuels and the cutting down of the world's forests, which has led to a large-scale loss of biodiversity and a global average temperature

increase. Studies differ, but models are predicting a future temperature rise of 1.5 to 5 degrees Centigrade by the year 2100. This could cause thermal expansion of the sea and global ice melting, resulting in an alarming rise in sea levels and a significant redrawing of the world map.

Among the many consequences of this rise in sea levels are the effects on metropolitan areas. As most of the world's large cities are positioned on coasts it could mean a large proportion of them would be lost to the sea. The gradual displacement of peoples from coastline and river delta areas could number in the hundreds of millions and the economic and social consequences would be disastrous.

Furthermore, there are persuasive arguments that climate change is likely to involve elements of 'positive feedback' in that it will encourage further environmental changes that lead to a marked acceleration of carbon emissions. One possibility is that the melting of Arctic sea ice will result in more open water during Arctic summers which will absorb more solar radiation, speeding up the process of ice melting. A second possibility is that the progressive melting of Arctic and near-Arctic permafrost will release large volumes of methane from rotting vegetation which is, itself, an even more potent cause of climate change than carbon dioxide. Losing the sea ice of the Arctic is likely to cause dramatic changes in the climate of the northern region and will have a very big impact on other climate parameters.

There are also now indications that over the next fifty years there will be considerable shifts in the distribution of rainfall, with more rain tending to fall on the oceans and polar regions and progressively less falling on the tropical land masses. The tropics support a substantial part of the human population, much of it surviving by subsistence agriculture. A shift in rainfall distribution is likely to cause a partial drying-out of some of the most fertile regions of the tropics, resulting in a significant reduction in the ecological carrying-capacity of the land and decreases in food production. China and India, in particular, could be hugely affected, with profound national and regional implications. Many of the countries in this region would have very little capacity to respond to such changes, and the resulting persistent food shortages and even famines would lead to increased suffering, greater social unrest and the pressure of greatly increased migration. Governments should not underestimate the importance of this.

While Africa will be most affected by drought and desertification due to climate change, researchers are also reporting a general drying out of the land and spread of desertification in the Mediterranean region. One of the worst droughts on record hit Spain and Portugal in 2005 and halved some crop yields, causing both countries to apply to the EU for food assistance. Droughts have also badly affected crops in Australia, and one in six countries in the world face food shortages because of severe droughts that could become semi-permanent as a result of climate change. In fact, new climate prediction research by the UK Met Office indicates that expected shifts in rain patterns and temperatures over the next 50 years threaten to put far more people at risk of hunger than previously thought.

Future Security Priorities

Of all threats, climate change is one of the most important problems facing the world community, and the effects of climate change on international security and human well-being will be profound.

In particular, it now seems probable that climate change will have a massive effect on the world's tropical regions, primarily by decreasing rainfall over the land masses and thereby reducing the carrying-capacity of most of the world's existing major croplands, resulting in persistent food shortages and even famines that would lead to increased human suffering, greater social unrest, revised patterns of living and greatly increased pressure on migration. For this reason alone, a fundamental transition from fossil fuels to renewables, along with a more rigorous approach to energy conservation, must be a core long-term focus of governments and NGOs alike. One of the key fossil fuel resources – oil – is also already a focus for major conflict and it is almost certain that, on present trends, instability and conflict will persist in the Persian Gulf region.

In essence, there are therefore two distinct reasons why rapid movement away from reliance on fossil fuels in general, and oil in particular, should be at the core of future energy policies. While climate change is widely recognised as one of these, conflict in the Persian Gulf over oil security is far less readily acknowledged. Why, then, should organisations take this on board in their advocacy and policy work? The main reason is one of timescales. While climate change is becoming steadily more recognised by non-activists as a key issue, its actual impact is still in its early stages of development.

Oil insecurity, on the other hand, is already here, and is evidenced by the ongoing conflict in the Gulf. If the two are put together, it is much easier to advocate a move to renewables (including hydrogen fuel cells for transport) as essential for short-term as well as longer-term reasons. The addiction to oil can be presented in an immediate and recognisable manner, and the need for rapid action can therefore be argued much more effectively. This does not mean a major re-orientation of campaigning on climate change towards the issues of oil security in the Middle East, but it represents a clear recognition that this immediate issue can be of real assistance in emphasising the wider need to move away from fossil fuel-based economic development. 9/11 presented a serious shock to the international system and American perceptions of invulnerability. In situations of shock, the key impulse of any leadership is to take the initiative to regain

the appearance of control as soon as possible. It is remarkable how quickly and effectively the US government was able to project international terrorism as the greatest security threat facing the world, and gain adherents for this view, not only among American citizens, but in capitals and board rooms around the world.

This approach of attempting to maintain the status quo through military means and 'keep the lid on' insecurity without addressing the root causes ("liddism"), will not work in the long-term and, in fact, is already failing in the face of increased paramilitary action and asymmetric warfare.The analysis presented in this report suggests that the current security orthodoxy is deeply flawed, and is distracting the world's political elites from developing realistic and sustainable solutions to the non-traditional threats facing the world, among which terrorism is by no means the greatest or most serious. The future IPCC analisys and research on this topic would enable governments and NGOs to make a real difference and improve the chances for sustainable security over the coming decades.

Avelino G. Suarez - WG II LA C-19

Comments on the Future IPCC.

- I support keeping comprehensive assessments in every cycle.
- My own preference and experience would be to elaborate Special an Technical Report on specific subject in the first three years of the Bureau term.
- I agree with point 3.2 mentioned the role of the IPCC as a facilitator in order to help to fill the needs of research on impacts of climate change in different parts of the world.
- I like a short and policy relevant document for the Synthesis Report in the future assessments, maybe the number 30 pages should not be so strict. Future Special and Technical Reports should address thematic like: renewable energy technologies; connections between climate change and sustainable development; the economic of the climate change; impacts and vulnerability and adaptation for some sensible regions, more assessed information on the impacts and vulnerability of the sea level rise, including the current deglaciation process, is necessary.
- Point 5.1.1 I disagree with the proposition ¨ that at least one Vice Chair in these two Working Groups (II and III) should have substantial expertise on economic issues. ¨ For WG III should be good a Vice Chair with economic expertise but for WG II is not so clear, maybe to have one or more economic expertise as member of the Working Group should be good. The six members each for the three Working Groups should have expertise relevant to the thematic of the Working Group.

Axel Michaelowa, LA Ch. 13, AR4, WG III

1. The issue of sustainable development

AR4 put a strong emphasis on sustainable development, particularly in WG III. As long as there is no consensus definition on sustainable development, an emphasis on this concept may take attention away from key issues, as space in assessment reports is limited.

2. The role of economics

Economics is a key discipline in WG III, and increasingly in WG II. It may be more appropriate to strengthen its role within these WGd instead of setting up a group assessing the shortfalls of AR4 with regards to economics. A simple remedy might be to increase the number of economists participating as authors in WG II and III

3. The time interval between Assessment Reports

Special reports have been much less taken into account by policymakers than the Assessment Reports. Having an Assessment Report every 5 years is absolutely key for mobilizing the political attention to tackle climate change.

4. Topics of Special Reports

A good topic of a Special Report would be an assessment of the performance of market mechanisms in mitigation of climate change.

5. Selection of authors

While not mentioned in the discussion paper, the current procedure of governments nominating authors has some shortcomings. For example, productive but outspoken authors may face difficulties in getting nominated by their government. Other authors may be doing research abroad and thus not be taken into account in the nomination procedure. The IPCC might consider taking nominations through research organizations. A possible candidate for this would be the UNFCCC-accredited constituency of Research and Independent Organizations (RINGOs). Other candidates could be the large climate research programmes under the auspices of the WMO and related programmes such as PAGES and IHDP.

Balgis Osman-Elasha - LA Chapter 9 WG2

Bullet 3.2, page 4 – I strongly support the suggestion that a similar initiative to AIACC be proposed. This is because AIACC regional projects have largely contributed to achieving the objective of building scientific capacities of researchers from developing countries, in relation to assessing the impacts and vulnerability to CC using different assessment tools and methodologies. However, there are still gaps of knowledge regarding climate change impacts particularly in Africa- These gaps have been highlighted in the AR4 Ch 9 which identified research gaps relevant to key economic sectors. The report highlighted the need for a detailed, regional-scale research on the impact of, and vulnerability to, climate change and variability with reference to water, agriculture, energy systems, ecosystems, tourism, health and adaptation (WG2-Ch 9, section 9.8.2).
The idea of organizing an expert meeting to discuss this important issue is great – the meeting should involve representatives from the research communities as well as potential donors to discuss the idea and the practical steps to put it into action.

Regarding future assessments I suggest the following:
Continue producing the assessment reports but in a longer term cycles (8-10 years)
More interactions between the three working groups is important to produce more integrated assessment reports.
In between the assessment reports the IPCC should focus on producing special reports tackling one or more linked/ interrelated issues.

Bernard Seguin - LA in chapter 1 of WG II, also member of TGICA

It is evidently healthy not to rely on the past success and to look at useful changes, but I should be in favour of keeping as far as possible the lines which have created this success, which are the focus on the climate and the exclusive use of reviewed scientific literature. For the first point, I am not in favour of going further than recently on sustainable development, because there are so many organizations dealing with it!! One chapter, yes, but maybe no more. For the second, the AR4 was a little more open to national sources, possibly not-english, and it was for me a good idea, as far as it stays as a small fraction of the information. There are so many important studies in our field, with such rapid evolutions, that it will not be realistic to consider a two-cycle rythm. But more emphasis would have to be given now to 'what to do?' and not only 'what we know'
The importance of observed changes (both in terms of climate and of its impacts) will also surely increase. An other point could also be that, now that scientific truth is more established, it seems easier to separate a short term perspective, which asks mainly questions of adaptation, from the long-term perspective (after 2050) which is more asking mitigation questions and GHG pathways. That could be translated (just an idea to illustrate these changes).
I - the scientific basis could be less detailed, but include the analyses of impacts, and (why not) the economical aspects (which are not only dealing with mitigation): what we now about CC by itself
II - the short and medium term actions for adaptation.
III - the long term future, and resulting choices for mitigation.

A last detail: if it is evident that AR4 reports have contributed substantially to the explosion of awareness, as said in the paper p3 (311), it is rather indirectly. Very few persons, even in our scientific community, have read them. It was the direct success of the high quality of the Synthesis report, which however only exists because of the scientific guarantee given by the detailed reports.

Bettina Menne

Introduction

I thank the IPCC Chair for the opportunity to comment on the discussion paper of January 2008 and to submit my views on the future of IPCC including its structure, work programme and main products. This submission is thoroughly my own view and not the view of the organization I represent.

The IPCC has been a success in fulfilling its founding vision in which the scientific community interacts with the environment policy community to agree on a common language and understanding. However climate change is not anymore thoroughly a problem of the environment community – as has been strongly highlighted in Bali (e.g external aid, ministries of external affairs, financial ministries, health ministries, agriculture, etc). This brings with it pressures and responsibilities, as well as new demands from policy makers, scientists and the public alike, which need to be carefully handled.

The Chair's paper is a good starting point for discussion. However, in order to discuss the future of the IPCC today it is to be understood what are the policy questions, what needs to be efficiently collectively done to reduce climatic changes, to anticipate and prevent dangerous changes, to reduce the ongoing changes and its impacts, as well as understanding what works and what not in reducing greenhouse gases and adapting to climate change. A focus purely on economics might dismiss an opportunity of the science community of giving collective evidence based answers on the numerous problems posed by climate change.

The process of achieving consensus on the text of the SPMs and Synthesis Report is both IPCC's greatest strength and greatest weakness. Some thoughts on how to improve SPMs and SYRs in its readability and accuracy might be taken. An interesting approach is presented by the question and answers, provided by the WGI.

The preparation of excellent, comprehensive reports with this degree of transparency and accountability means that the burden on the (coordinating) lead authors is growing and becoming extreme, and hardly to be managed as additional to the day by day work. Some thoughts on how to better handle this should be done.

There is no doubt that there is a recognised need to increase the role of experts from developing countries, but also a much more active attitude by the bureau of attracting peer review in particular from African countries. The inclusion of more peer-reviewed literature in other languages is a must – how this can be better achieved than today should be thoroughly discussed, e.g. PHD thesis in each of the LDC countries etc.

Please let me add here – that it has been a big learning process for me; however let me also add here that those that participated to the SYR – have done of cause a massive extra work in combing science from different disciplines into policy relevant language – as a result it has been very disappointing that we were not involved in the combined messages and construction of policy relevant messages in the overall outreach activities.

More consensus in what is communicated to the public – would have been very important to not give even misleading messages, just to mention one: health effects will be biggest in poor countries – "the chapter on health says: health effects will be biggest in populations with low adaptive capacity" – this is a big difference, as we do include a whole range of components that contribute to vulnerability such as non functioning health systems education etc etc.

In the following detailed comments, I try to make overall proposals of improvement

1. Highlights of the review of the past

"The focus of the Panel and the comprehensive assessment that it carries out by relying on peer reviewed literature is one of the major strengths of the IPCC, and over a period of time this has certainly motivated researchers both at the individual and institutional levels to undertake research activities that advance the frontiers of knowledge. It is not unusual for researchers to seek and receive research funding on the grounds that their work would feed the requirements of the IPCC. Hence, the work of the Panel has had a major capacity building dimension that should not be minimized."

- Comment: this mechanism needs further thought and extension. My proposal here is: a. to get together with the world science foundations in an exploratory meeting and explore which mechanisms of getting more young scientists from LDC and other countries could be used – or even incorporated into grant schemes;
- Specialized agencies: more use could be done by more intensified cooperation with specialized agencies – e.g. FAO, WHO, etc. It is not enough to have one lead author from agencies that have thousands of co-workers in more than 200 countries. This needs of cause to be handled carefully; on the one end the current structure of the IPCC should no be dismantled – or outsourced to others – on the other end the benefits deriving from a more extended cooperation should be thought of, e.g. through commissioning special discussion papers to the agencies – as a contribution to the IPCC.

"An important element of IPCC's effectiveness has been its ability to convey its findings to the public through the media and other means. Needless to say media interest in the IPCC's work is a function of the credibility of the organization, but it is clearly the result also of an increasingly proactive outreach strategy to enhance the value, acceptance and effectiveness of the outputs produced by the IPCC"

- I do agree that this work is a must and has been part of the success of the IPCC – however as expressed above, a. more thorough thought much earlier in the process should be done on a. key messages, b. differentiated messages over different time scales, c. thematic focus by months, d. involvement of the CLAs or LAs in the development of power point presentations and other material for review and scientific adjustment.

Do we need any change?

"Hence, it would be essential for a detailed evaluation of the principles to be carried out by a Task Group that could be set up at the 28th Session of the IPCC to be held at Budapest"

- This document does not propose such changes

"With the growing awareness about climate change has also come much greater interest in the fundamentals of sustainable development, and larger issues which focus on the depletion and degradation of natural resources and ecosystems across the globe. Future assessments by the IPCC will be required to focus in more concrete ways on various aspects of sustainable development. A shift in the framework to be developed and used at least for the work of Working Groups II and III towards various aspects of sustainable development will, therefore, be warranted, while maintaining the comprehensive nature of IPCC assessments"

- I cannot agree more; however the chair leaves out substantial elements of human and sustainable development, which to my view need to be fundamentally addressed: namely HEALTH and EQUITY.
- A more intrinsic cooperation of wg II and III are needed in this regard, first to address the policy questions, such as what does it mean for development to stabilize greenhousgases, what are the co-benefits for different areas in society, what are the collateral damages; how can developments contribute to lower poverty and increase development; what is most effective etc.

"As a consequence of these changes there would be need to place much greater importance on the economic aspects of climate change. The universal interest in the Stern Review related to the economics of climate change is as much a clear pointer to the demand for information on this subject as it is a clear indicator that the IPCC has not addressed fully this aspect in its assessments. Future assessments would need to focus much more adequately on the economic aspects of climate change, derived largely from the scientific work of Working Groups II and III. It would, therefore, be useful for a small group to carry out an assessment of the Working Group Reports which form part of the Fourth Assessment to identify wherein the economic dimensions of the assessments should have been stronger. A decision on the establishment of such a group could be taken in IPCC-XXVIII"

- I do agree that the economic aspects need to be particularly dealt with and this proposal is a good starting point, however it is not enough; I would call for three working groups, namely economics, health and equity.

"Another area where substantial work needs to be done by the research community to provide adequate inputs for the IPCC is in respect of the regional aspects of climate change. Unfortunately, there are several parts of the world where research is almost non-existent when it comes to assessment of local impacts of climate change and where lack of observational data hampers assessment and research."

- The proposal of regional mini IPCC s could be a way of addressing this as preparatory input to the 5th assessment.

Future outputs of the IPCC

Content and structural changes:

- I do agree with the chairs suggestion of the continuation of a 5 years comprehensive assessment, with special reports.
- However, a few issues need to be solved to make this more efficient:
    - Aspects that need to be handled better in future assessments include risk assessment, treatment of uncertainties and especially results with high impact but low probability; also regional information including that which may only be relevant to a few areas; impacts on sustainable development and development overall (including health, equity, etc);
    - Timelines and scenarios: this has been a big problem in the 4th assessment report and will be an even bigger problem in the 5th report – it deserves a special task force that agrees on this beforehand;
- A special report on disasters including low probability high impact events, could be of help;
- Technical papers on specific subjects:
    - I think in particular a paper on co-benefits of different mitigation measures on sectors and systems would be important

Organizational issues related to the functioning of the next Bureau

Because of the problems that occurred in the management of the 4th assessment report, I suggest as follows:

1. Timing of the reports. Best would be to have the WG1 starting at least 1 year earlier – in order to have at least the 0 order draft for WG2 and 3, when starting.
2. Significant questions, e.g. scenario timelines, sustainable development etc could be handled by cross cutting liaison groups – the lack of those, or the establishment much too late in the process, has caused significant delay as well as some scientific disappointment;
3. Time should be dedicated to crosscutting scientific debate; either through a science platform on line – or through other mechanisms – the integration between working groups has been unsatisfactory in the 4th assessment; this would at the end also allow a better SYR as well as would allow that a few more key persons could help with the outreach activities.
4. I would suggest for a proper functioning – the establishment of a Triade – as used in many management practices – e.g. general director – science director – technical director – this for all the working groups; the science directors of the working groups should be constantly working together; each of these triades – could then be facilitated by a science advisory – composd by selected CLAs.
5. I further would propose the revisions of the TORs of the chairs, in particular with regard to science – policy interface and science – outreach interface.

RJ (Bob) Scholes

1. It is good for the IPCC to stand back and consider its function, structure and procedures periodically, even if it decides to change little, and especially if it is seems to be doing well.

2. I find the current WG structure, which has been in place for essentially the whole history of the IPCC, to have outlived its usefulness, and now simply serves to entrench disciplinary tendencies. I have served in WG 1, 2 and 3 in past assessments. It is unforturnate that WG 1 styles itself as the 'science' of climate change (implying that the other two are something else), and that it is dominated by physicists; while WG 2 is dominated by biologists and WG 3 has most of the economists (I exaggerate to make the point). It doesn't, in the end, really matter much how you slice up the cake in a complex, interrelated field such as climate change, but doing it a different way every now and then is a big benefit, because it shuffles the pack. The proposed idea of increasing the emphasis on special reports and making comprehensive assessments bi-cyclic could really help with this.

3. The necessity for CLAs and LAs to be vetted by their governments has the unintended consequence of increasing the mean age of the authors and reinforcing the bias against women, which is a great pity. Governments tend to nominate older, established scientists, who as a result of history, are overwhelmingly white and male as well. Contrast with the Millennium Ecosystem Assessment, which because it was not intergovernmental, did not have this restriction. As a result, much of the heavy lifting in that assessment was done by early-career scientists (doctoral students and post docs), many of whom were female, and from all parts of the world. Apart from making the process much more fun, it does the assessment a lot of good - new ideas, less dogma, and lots of energy. The greybeards and silverbacks still have an important role to play, based on their experience and clout, but it does not need to be so overwhelming. The MEA Fellow programme might be a good model to look at in introducing this diversity.

4. Assessments are emerging as a discipline in their own right. A more formal training package for new LAs would be a good idea.

Carol Turley

IPCC has sought comments in particular on:

6.2.1 The issue of a comprehensive assessment during each cycle vs. special reports on a regular basis and a comprehensive assessment every two cycles.

1. Funders around the world are prioritising climate in their research strategies, so it could be fair to assume that there will be a rapid increase in research papers and evidence provision, perception on CC issues and mitigation possibilities, perhaps greater than previously, as researchers respond to the challenges of CC. That and the urgency of mitigation/adaptation issues around CC means that in my opinion another 5 yrs may be too long to wait for IPCC 5th AR and an interim review/special report on CC is appropriate.

2. I also think that the IPCC special reports, methodology reports etc are important and hugely valuable and with a move towards mitigation and adaptation options, including for example geo-engineering solutions, IPCC could play an invaluable role in the independent multidisciplinary assessment of such solutions (e.g. renewables, ocean fertilization, rebound effects in adaptation strategies).

3. Bringing sustainable development and CC together in WGII and WG III is an excellent idea. Also need to bring in other global change (resource reduction, biodiversity decline, exploitation, pollution, population increase etc) issues as part of the evidence on the sustainability of a future planet.

4. Economic and socio- aspects of CC important to develop in the next AR – the Stern Report was an eye opener for many and had a big impact. Don't forget to include marine aspects in this.

5. Human Health and CC aspect important to develop too, lots of scope there.

6. I agree that the research community need to develop understanding of regional climate change and that it would be excellent if IPCC helped facilitate this, including that in developing nations, especially those most vulnerable to CC.

6.2.2 Organizational issues and the structure of the Bureau as well as any changes in procedures and practices in the functioning of the Panel.

a. From my experience as a LA in the IPCC 4th Assessment Report I am able to give my view that the structure of the IPCC and the processes and practices that it has established, while frustrating at times, have proved extremely successful not only in attracting some of the best international scientists for carrying out assessments of the peer review literature of an incredibly large range of disciplines of climate change but also in being able to address the needs of policymakers for appropriate information, comprehensive scientific assessments and scientific analysis. The feedback and scrutiny between scientists and policymakers during the process has been invaluable in making the IPCC reports credible and therefore valuable.

b. The structure of the WGs, Chapters, Chapter summaries, TS, SPMs and SYN Report result in the successful transfer and précis of sound science to policy makers. While individual chapters make excellent state of the art summaries of particular areas of climate change useful for academics.

c. In addition it has played a major role in facilitating the dialogue between scientists and policy makers in a language understood by all. This has been an important education for both.

d. IPCC's interaction with the media in my view has played a major role in bring the science of climate change to the public and other stakeholders so is also important to retain. It is worth mentioning the quality of dialogue between the scientists representing the IPCC findings and media has been excellent – with continued improvements. This whole aspect is important to getting the message across and key to really taking advantage of the whole work effort that has gone into the IPCC report. I presume that there is some training for those representing the science output?

e. I support the expansion of IPCC secretariat as suggested

f. I support the election of two vice chairs to assist the chair - a sensible idea.

Charles D. Kolstad - WG III

As an LA on WGIII, AR4 (Ch 13), I appreciate the opportunity to comment on the future structure of the IPCC, embodied in your memo circulated to LAs and CLAs. It is very interesting and timely.

The two concerns I have regarding the effectiveness of the IPCC process have to do with (1) the subject matter as the report is currently organized and (2) the heterogeneity of the chapter LA's and CLA's. These are not unrelated issues and the heterogeneity problem may be unique to my chapter, which concerned policies. The problem with a highly heterogeneous set of chapter members (and I mean disciplinary heterogeneity, not background or country of origin) is that an inordinate amount of time is spent in communicating with others on the chapter, leaving less time to make progress in identifying the state of the literature.

A more fundamental concern is how the WGII and WGIII chapters are organized, particularly with regard to the economics of climate change (my interest). In my view, AR2 was the best in terms of actually reviewing the state of relevant knowledge on the economics of climate change. That is because the chapters were organized along the lines of questions or issues that reflected how the literature in the discipline organizes itself. In contrast, in AR3 and AR4, economics is scattered in a number of chapters but mostly as a non-central aspect of the chapters. This makes it difficult to make progress in identifying the state-of-the-art.

I am very pleased to see section 3.1.3 in your memo, identifying the need to increase the coverage of economics and even convening a small group to flesh out details. I strongly support such a move and urge you to involve the most prominent economists worldwide in such a group, particularly those with experience with IPCC.

Chris Hope - WG II

The paper looks sensible. In particular the need for stronger economic analysis, identified in 3.1.3, is critical. The existing working group structure has made it difficult to compare the costs and benefits of actions. This needs to be tackled in the structure of AR5, or via a special report.

As a user of the reports as well as an author (in WGII), I find the five or six year gap between comprehensive assessments to be ideal; I would be sad to see it change to ten to twelve years.

Chris Magadza - WG II

I have been hesitant to make comments on the paper on the Future of the IPCC. The paper is of course written with a global perspective with no particular regional emphasis.

Yes I do agree that the IPCC should evaluate the literature on the impact of climate change on sustainable development. Both the Third and Fourth Assessments give clear indications of the impact of climate change to sustainable development, and clear and timely policies on adaptation and mitigation are now germane and many nations are rising to the challenge.

My predicament is this

* The IPCC, being intergovernmental organisation, and working under the UN protocol, must observe the code of conduct pertinent to the circumstances and thus craft its language in a manner that does not violate diplomatic etiquette.
* Adaptation to climate change is a function of the level of development.
* Sustainable development, now under threat from climate change, is also a function of governance.
* The issue of governance is clearly outside the mandate of the IPCC.

One of the observations that has struck me during the IPCC process is the very limited response in form of government reviews to our report drafts from Africa. Indeed I recall that when we did Chapter Ten in TAR there were perhaps only two African Governments who commented on the Chapter. In that Chapter I tested the African alertness to issues raised in the report by quoting a scenario I constructed in the book Beyond Hunger in Africa; (Achebe et al 1990, Heinemann (Kenya) and James Curry
(London)).in which I projected the emergence of some semblance of governance in Africa not earlier than 2020-2030. I inserted this sentence: "We challenge the African political leadership to belie the Achebe et al (1990) prognosis.". I had expected some spirited comments from Government reviewers. There was none.

In assessing the impacts of climate change on ecosystems, for example, we try to partition the total observed impact between that attributable to CC and that due human factors such as land use. When the IPCC moves, as indeed it must, to the social issues of CC and sustainable development will the IPCC be bold enough to apply the same methodology so as to partition impacts on sustainable development between CC and governance. The level of conflict in Africa, largely due to defective governance, means that leaders are preoccupied with political rather than development issues. In some African countries military expenditure on internal conflicts is a substantial part of the national budget, leaving coping with CC related disasters to international relief agencies.

The conundrum is that it is all very well for developed countries to proffer their governance status for emulation by developing countries. But it took decades, if not centuries for them to be where they are. Is there a method of fast

tracking this process in developing countries, especially Africa? I attach a slide I use with my students to illustrate this dilemma.

If you think these comments are not outrageous, please pass them on, but I thought I should seek your advice first.

Christoph Heinze - LA of AR4 WGI chapter 7

Denman, K.L., G. Brasseur, A. Chidthaisong, P. Ciais, P.M. Cox, R.E. Dickinson, D. Hauglustaine, C. Heinze, E. Holland, D. Jacob, U. Lohmann, S. Ramachandran, P.L. da Silva Dias, S.C. Wofsy and X. Zhang, 2007, Couplings Between Changes in the Climate System and Biogeochemistry. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

To 3, particularly 3.1.2:
IPCC may address the issue of **"governance" of the Earth system**. An internationally binding agreement may have to be found to regulate attempts to mitigate climate change. There is, in particular, the danger for **dubious mitigation attempts** such as large scale geoengineering projects. These attempts can cause more damage than good. It must be clarified, who is allowed to mitigate and in which way, and which actions must be forbidden. Examples for potentially dangerous climate change mitigation attempts are the purposeful fertilization of the surface ocean with additional nutrients or the reduction of incoming solar radiation through artificial aerosols or particle deliberately spread in outer space. There is an increasing danger for making potentially unethical profits from useless or even harmful geo-engineering projects under the disguise of reducing risks and amplitude of human induced climate change. IPCC may want to extend its scope to **political and psychological issues**. There are big obstacles in realising efficient and feasible emission reductions of greenhouse gases because of, e.g.:
Psychological reasons – long time scale of climatic change does not show direct cause/effect links to individuals, false trust in technical solutions (such as carbon capture and storage) may lead to a diminished focus on energy savings.
Political reasons – how can democratic political systems enable "unpopular decisions" on mitigation (such as CO2 taxes) in view of the priorities of political leaders ("winning elections")? How can necessary but "unpopular decisions" be enabled without disrupting democratic culture?
To 4.1.1 and 4.1.3:
A chapter (or special report) on **predictability of climate change** may be added to the natural science report (WG I) This section should include a realistic evaluation of the error margins in global and regional climate models and review the state of the art of climate predictability including emission scenarios, physical limitations of forecasts, uncertainties in feedbacks etc.

To 4.1.2:
One report covering many aspects is better than scattered and unrelated special reports. Special reports are needed for urgent topics, where a quicker reaction is needed than for the "heavy machinery" of the large comprehensive reports. To be honest, the reports are still not easy to read. One may think of extracting pedagogically well written text books out of the reports to cover the basic findings and principles underlying climate change without being confused by too many details. I am not sure whether such a task would be the responsibility of the IPCC, but it may be a good idea to have "readable" reference text books available, which are a joy to read.
To 4.1.4:
Sustainable development: Economic growth and a healthy climate may not be fully compatible. One may have to readdress the term of "sustainable development". The sustainable development strategy is potentially disrupting the **"pre-cautionary principle"** in favour of **"adaptive strategies"**. In terms of climatic change, adaptive strategies may come too late. It must be reviewed, what the real goals of sustainable development are and whether the mechanisms invoked for making it possible need to be revised. This includes the issue of
"governance" of the Earth system and its natural resources.

To 5.1.3:
Outreach is important. I fully support the idea of strengthening respective efforts.
To 5.1.4:
Yes, a broader participation from financially less well supported countries is badly needed. One may think of further issues of **capacity building**. Next to extended travel possibilities, **secondments** (exchanges of scientists) would be a good idea so that IPCC authors from all communities and countries can be integrated into the process. Secondments at selected host institutions could be used to prepare author meetings, so that these meetings run efficiently and the authors can collect the necessary information from their home institutions in good time before meetings.

To 6.2.1:
One comprehensive report each cycle has priority. Special reports should be made in case of really urgent need. Otherwise, the message of IPCC gets scattered and uncoordinated. The landmark of the IPCC reports is to **make the impossible possible** – namely to attempt an overall synopsis and synthesis of climate change research.
To 6.2.2:
My experience with the **organisation of AR4 WGI was excellent**. Open minded, friendly, and skilled staff throughout. In view of the interdisciplinarity of the IPCC reports, I think an even more **careful choice of authors with the appropriate expertise** needs to be carried out. Maybe a revision of the callfor- authors procedure could achieve this. One may think of a somewhat more broadly spread "bottom up approach" in parallel to a "top down approach" for the choice of authors.

David G. Vaughan, LA WGII TAR, Co-ordinating LA WGII 4AR

Point 1 – It is indeed a good time to offer some re-jigging of the IPCC framework. It is not quite a case of quit-while-you're-winning, but the IPCC has achieved so much in its present format that we cannot hope to add more value without some change of emphasis.

Point 2 – I believe that the periodic delivery of a major IPCC report every 5-6 years has been extremely important in securing publicity for IPCC, and the climate change issue. I would have some considerable fears that moving towards a scheme where reports come irregularly, and after a while appear to be coming out every few months, would cause a global media/public fatigue, and could mean that media coverage of our work becomes much less.

Point 3 – To maintain the global relevance of the IPCC, prevent regional-compartmentalisation, I would advise against going to individual regional assessments.

Point 4 – Despite the IPCC efforts to give the WGII and WGIII reports equal weight, we have always seen the greatest excitement generated by WGI, because this is the area that is most easily graspable.

Point 5 – I believe that having achieved the current position, in which the "science of climate change" is generally accepted by governments etc, we should move on. We should certainly not present another major report that appears to argue that climate change is happening (with a human-cause) as this would appear to suggest that this is a more open debate than it really is. Future efforts should find a way to move things forward, without reprising that which has gone before.

My suggestion would be to maintain the 5-6 year cycle, but significantly alter the working group structure to a more sector/issue-based structure. This should recognise that the science of climate change is now more mature and should not throw up too many surprises on a five-year timescale.

- Updated climate projections
- Food and agriculture
- Sea-level rise
- Economic factors
- Mitigation options

The value of splitting out the sea-level rise issue is to prevent a general tendency for the media to focus on sea-level rise (which they find easy to understand) from the real and direct impacts of climate change (which they actually find hard to explain or visualise).

Diana Urge-Vorsatz - CLA, AR4 WGIII, Chapter 6

I would like to congratulate IPCC for the tremendous achievements for bringing the frontier of science to the policy- and decision-makers and such effectively contributing to the transformation of the world in being able to address climate change.

I have the following three comments regarding the future of the IPCC, as solicited by the document sent to us:

1. **Assessment Reports.** I cannot comment on whether all four volumes of the Assessment Reports are necessary in each cycle, but I would like to **strongly argue that at least the volume on Mitigation is presently highly needed in 6-year intervals rather than in 12-year ones**. With the AR4 having demonstrated the size and the urgency of the challenge, it is clear, and increasingly being recognized by governments as well, that the magnitude of the change needed in GHG emissions warrants fundamental changes in energy and other GHG intensive systems – perhaps societies, corporations, and potentially even cultures. While we have shown in AR4 that it is feasible to meet this challenge, it was also made clear that this requires profound developments and innovation in technologies and policies. **Because the *dynamics* of climate change action is expected to *accelerate* rapidly in the near future, developments in climate change mitigation warrant, and require, their assessment in 5-6 years rather than 12**. There are substantial gaps in our knowledge, as shown in AR4, and lack of adequate experience with new policies, which all ask for these advances to be regularly analysed and reported. This may also be the case for adaptation and vulnerability, but this is not my field of expertise. **In summary, I do not believe that assessment reports should be less frequent, and that they should be replaced by special reports, at least not in the field of mitigation.**

2. **More facilitation for integration among the working groups.** While the present organizational structure of IPCC have served its needs very well, I believe there is a need for slight innovation in one area: the cross-working group relations. The present operation of IPCC results in the fact that experts working on the three areas of CC work in a very separated manner (never meet each other and do not even see each other's work). This results in even capacities being spurred, encouraged and built by IPCC in a very segregated manner. Since some tasks in CC action require the understanding and integration of issues and tasks crossing the boundaries of these three domains, I believe organizational structures that encourage better collaboration between the working groups, and a better awareness of each other's work would facilitate knowledge building that is better rooted in all three domains. While an attempt has been made in the past assessment report to create cross-cutting themes and groups, I am not sure if these have really catalised the integration needed between the working groups. I would also ensure that each LA has access to other working group's drafts, and perhaps make these available for them to comment (could they be invited to officially review each other's drafts?). Perhaps regular physical meetings of subgroups from working groups (perhaps one from each chapter?) could be considered to germinate such integration.

3. **Elaborating guidelines for climate friendly(er) operations.** In the limelight of the Nobel Prize, IPCC, along with all other institutions working on CC, become increasingly scrutinized by the public and media regarding their own climate impact. And while by the very nature of IPCC we are not able to minimise our climate footprint from many perspectives (such as long-distance travel), I am positive there are areas where we can make an attempt to reduce it. It is also clear that such aspirations cannot increase costs, but there are many measures IPCC could recommend that IPCC-related events take that do not have significant cost implications. These include, but are not limited to, encouraging low-climate impact catering (do not serve fruits that traveled continents, etc).

Dominique Blain - LA

I was lead author in two IPCC methodological reports, the 2003 Good Practice Guidance for LULUCF, and the 2006 Inventory Guidelines. Over the last year, I became more involved in adaptation issues on the domestic scene. May I respectfully submit the following comments on the paper:

Section 1: The policy relevance of methodological work undertaken by the IPCC is understated in the paper. An important outcome of this work was to establish methodological standards, which facilitated and promoted GHG emissions/removals assessment in countries around the world. This assessment capacity is fundamental to the monitoring of policy outcome and effectiveness. The role of methodological work in linking science to policy needs can not be overstated.

Section 3: As stated in the paper, the heightened awareness of, and knowledge improvements on climate change alter what is considered "policy relevant". Notably, the interest of policy-makers turn to greater regional focus, as opposed to global assessments. This change in focus may require some rethinking of products, procedures and practices of the Panel.

Section 3.1.2: one fact of climate change is the pervasive nature of its impact on all kinds of human activities. Indeed, the connection of CC with Sustainable Development can be better understood with analyses of how manifestations of CC highlight "unsustainable patterns of development combined with socioeconomic inequity" (Pielke et al., 2007).

My humble opinion is that the exploration of this connection is at the crux of the policy relevance of future IPCC adaptation work.

Section 3.1.3: The connection between CC adaptation and sustainable development goes beyond macroeconomics; sustainable development hinges deeply on issues of governance, culture, and... time! The Panel may want to carefully consider appropriate ways of contributing its expertise to policy-relevant research on the connection between climate change and sustainable development. There are organizations with considerable experience in policy-relevant research on sustainable development, whose perspective may be valuable: one example I am familiar with is the International Development Research Centre, based in Ottawa, Canada. The IDRC's new "Think Tank" initiative builds on lessons learned over almost 40 years of research for development.

Section 6.2.1: The preparation of special reports on a regular basis - and global assessment every two cycles, would provide greater flexibility and ability to address regional needs and enhance policy relevance.

References

Pielke, Jr., R.A., Prins, G., Rayner, S. and Sarewitz, D., 2007. Lifting the taboo on adaptation. Nature, Vol. 445, pp. 597-598.

Elisabeth A. Holland

I am writing in response to the request for input on the future of IPCC. I appreciate being asked to provide input and apologize for the delay in my response.

First, I am concerned about the use of Special Reports. The choice of topics for Special Reports has the possibility of being politicized. One of the strengths of the AR4 was the comprehensive look at all aspects of the problem. This could not have been accomplished by a series of special reports that already framed the problem.

Second, There needs to be a clear institutionalized mechanism for interaction amongst the working groups. As currently structured, the working groups themselves have a disciplinary bias. Part of the "capacity building dimension" of the IPCC is to provide the opportunity for clear dialogue across scientific boundaries. As an example, during the AR4, the people appointed to be WG liaisons had no power other than simply participating in the WG dialog. Their effectiveness was dramatically reduced and the challenges of creating the Synthesis Report were amplified. The treatment of uncertainties is another area that could use additional cross Working Group discussion.

Finally, as a lead author of both the TAR and the AR4 (WG1), I am sympathetic to the desire to reduce the burden on the scientific community for the production of the IPCC Assessment Reports. However, the scientific progress between the TAR and the AR4 is dramatic. Given the urgency of the issues facing society, the growing public commitment to address Climate Change, and the pace of scientific enquiry, Is this moment to increase the elapsed time between reports?

The science is not done and needs to be done in parallel with the search for solutions. The IPCC assessment process and the resulting reports are critical to the search for solutions and to catalyzing science enquiry.

Fortunat Joos, Vice Chair WGI during TAR, LA SAR: WGI carbon cyle

The proposal by the chairman on the future of IPCC is well balanced and an excellent document.

I particularly appreciate that the current structure of IPCC which has proven to be very successfull is only changed very slightly. It is my believe that an evolution will serve the IPCC much better than any
radical changes.

It is also well received that the mandate for WGI continues to be to provide the physical science basis for the debate.

Francis Zwiers, CLA, IPCC WG1 AR4, Chapter 9

Please note that the following comments reflect my own views, and do not necessarily reflect the views of my organization.

1) The IPCC should ensure that it continues to have a clear remit that is squarely focussed on climate change science. There are aspects of its remit and operation that could certainly be further improved (e.g., the assessment of regional climate change, impacts and adaptation, and improved interaction between working groups), but very careful consideration would have to be made before venturing more broadly into areas such as sustainable development. Climate and climate change provide constraints on sustainable development, but they are but two of a very complex range of factors that affect the scope for sustainable development. In my view the IPCC would best inform sustainable development strategies and policies by continuing to focus its efforts and expertise on providing the very best possible assessments of climate and climate change.

2) It takes time to produce well considered assessment reports, both to allow for the careful reflection and thorough review that have been IPCC hallmarks, and to allow for the scrutiny and maturation of new rapidly developing parts of the science necessary for assessment. On the other hand, the previous 20 years of the history of the IPCC has also shown that the science does evolve substantially between assessment reports, and that policy makers have a requirement for a new, comprehensive, assessment report at intervals of the order of the current 6 years. Given the sea change in public opinion that has occurred in the wake of the AR4 report (and in fact, the WG1 contribution to that report), it is hard to imagine that governments would have been well served if, at the time of the TAR, the decision had been made to extend the interval between major assessments to 10-years and to provide a series of specialized reports in the interim. It would be hard to imagine that public perception of climate change would have changed as profoundly or as quickly had the IPCC decided to do its work via a series of specialized reports in the interval since the TAR, or that the IPCC would have been able to share in the Nobel Peace Prize as a result. The current approach, involving a comprehensive assessment at intervals of about 6 years preceded by a careful scoping process and government approval of the resulting outline prior to beginning the assessment, is not broken and should be retained.

3) Specialized reports and technical papers certainly do have their place, as is demonstrated, for example, by the impact of the first synthesis product produced by the US Climate Change Science Program. That report (CCSP Synthesis and Assessment Product 1.1 – see http://www.climatescience.gov/Library/sap/sap1-1/finalreport/default.htm) looked into, and largely resolved, the apparent discrepancy between the warming at the surface and the lack of warming in the UAH reconstruction of tropospheric temperature from satellite data. However, the IPCC needs to be very careful not to over-burden the scientific community or undermine its main strength, which is the quality, rigour and acceptance of its comprehensive assessment reports. In developing special reports the IPCC also has to be very careful to avoid undertaking the science itself because it can not credibly assess and at the same time conduct the science. Further, the IPCC should avoid the temptation to attempt a synthesis derived from a series of specialized reports that are not as comprehensive or subject to the same level of review as the assessment reports. The ownership by governments of the IPCC assessment reports and their findings results from the comprehensive assessment process, the extensive review to which it is subjected, and the line-by-line approval that is obtained in plenary with the completion of each report. A less integral system of assessment would be less influential and would not serve the governments as well. The strength and influence of the IPCC rests very heavily on the integrity of the assessment and review process.

Francesco N. Tubiello, LA, WG II Ch. 5 and Water TP

I would like to respond to the issue of publication cycles, while I have no suggestions relating to the structure of the Bureau.

I am in favor of a continuation of the current practice, i.e., a comprehensive report every 5-6 years, with Special Reports written earlier, possibly to serve as useful inputs into the general assessment.

The reason I favor a cycle of 5-6 years for the general assessment reports, as it is currently done, is that I believe that there are pressing issues that the public at large and policy makers in particular need to be continuously updated upon. Examples from my own contribution relate to the impacts of climate change on agriculture and food security. There are critical issues that were left out of—or not sufficiently elaborated within—our "consensus" conclusions, because of either uncertainties or lack of enough research efforts in select areas, related for instance to climate extremes, pests and disease, competition with bioenergy, and surprises in socio-economic development paths, including issues of sustainable development.

More research in each of these areas –to be captured within future IPCC reports—would make the quantification of the impacts of climate change in agriculture much clearer – and I believe it would lead to predictions of larger negative impacts, in better regional detail, than currently summarized by the IPCC— thus better informing the public and policy makers more thoroughly. I would therefore think that publishing another comprehensive report in 10 years from now would be a disservice to those who need to know the state-of-the-art in order to develop response strategies effectively.

Note that the arguments about uncertainty and "consensus" science made in one critique of the IPCC published in Science recently, in my view logically lead to a request for frequent comprehensive reports rather than not, since it is by analyzing increasingly certain research results that a consensus scientific summary such as the IPCC can become an ever more effective tool for action.

Having voted in favor of a 5-6 year cycle for the comprehensive reports, I have nonetheless a number of observations about how the current WG reports are organized. In general, I see a need to better integrate adaptation and mitigation, both within the very chapters of WGII and WGIII, as well as with respect to the construction of socio-economic scenarios that are both more dynamic and realistic. The issues of paying more attention to sustainable development and economics in general, made by the Chairman, are closely related to this, since adaptation and mitigation choices determine, as well as are determined by, the sustainability of the particular socio-economic path(s) we embark upon in coming decades. Here are a few more specific points.

1) The entire IPCC analysis process seems to be driven almost entirely by "SRES" scenarios (or their future offsprings). It is indeed useful to have contrasting socio-economic scenarios at the foundation of the enterprise—we do need projected emissions and GHG concentrations to set the entire ball rolling. However, as the public and policy-makers become more active in the "what to do about it" kind of mindset, I think that such scenarios should be changed to accommodate several issues of importance to "real-world" operators. First there is an issue of credibility. Do we have socio-economic scenarios that have withstood the test of the first decade of the 21st century, for instance? Some of this goes back to the old debate about realistic projections of GDP growth etc. Second, I would suggest creation of scenarios that allow the possibility for "shocks." My consideration is based on the observation that current and future "SRES" scenarios used in IPCC are fairly smooth growth curves of economic development from present until 2100…however when has that ever happened in the last 100 years? For instance, the last hundred years have seen two world wars and several regional ones, which have crippled the economy and thus presumably the ability to respond to other threats—should they have arisen. I see the lack of such shocks as too much of a simplification, one that makes the task of assessing adaptation and mitigation scenarios perhaps too "easy". Third and more practically, why can't we have different scenarios alongside the "SRES" types, based on actual trends, such as those used by FAO in its periodic forecasts—they would be more realistic, although their would be more likely limited to the short-term, maximum 2050.
2) Despite critiques of the old "SRES", I like them more than the family of new ones being debated, i.e., families of scenarios each corresponding to given "forcing limits in Wm-2. In fact, I believe it would be nearly impossible to make meaningful integrated assessments using these new types of scenarios. This is because the impact assessment models need socio-economic assumptions (population, economic growth rates, technology, etc.) as a foundation for their simulations, before they can assess climate impacts. With SRES, there was a one-to-one correspondence between socio-economic development and climate change scenario (more or less), so that impacts of each family of "curves" could be assessed in an orderly and meaningful manner. If we instead fix the forcing first, we will have different sets of socio-economic development paths that may end up corresponding to the same climate forcing at the end of the century…making impact assessments analysis quite difficult in my opinion.
3) It is now increasingly evident that development, adaptation and mitigation will be closely linked aspects of the same strategies needed to respond to climate change in coming decades. The fact that there was a chapter on the interactions of adaptation and mitigation in WGII was important, but it may not be enough to address future demand from policy-makers in coming years. The very WGII and WGIII volumes will need increased integration, or else every chapter of WGII will also have to address mitigation, regardless of what the "integration" chapter does—in fact, there was no communication I know of between authors of that chapter and our own in AR4.
4) The issue of synergies between adaptation and mitigation is critically linked to the need for new socio-economic scenarios. In this sense, current SRES scenarios are "static", i.e., do not contain actions (or at least some generalized sets of actions) of adaptation and mitigation activities that, in the real world, will clearly determine, as well as being determined by, socio-economic development. Better analyses of sustainability and economics are necessary to address these issues more effectively.
5) I found much disconnect between sectoral and regional chapters in WGII. As the nature of the impacts become more clear in coming years, and as IPCC looks to become even more relevant to the public and policy-makers in future publications, we will need to address the "how to respond" question more effectively than currently. This is done best at the regional detail level. Efforts to better integrate and coordinate chapters on sectors and regions need to be developed to this end.
6) I found that Technical Publications, intended as a summary of select findings of previous comprehensive summaries geared towards specific areas of interest, are useful but not very interesting, as they do not contain anything new with respect to material already analyzed within IPCC in the past. Within this context, I do not see how TPs—as opposed to special reports, which I support-- produced earlier in the IPCC publishing cycle could contribute anything to forthcoming comprehensive reports.

Gary Yohe

I attach my reactions to your draft of the memo on the future of the IPCC in two versions.

In the first attachment, I have added some ideas (highlighted in yellow) and offered some editorial revisions. To my reading, the edits do not alter your meaning, and I hope that you are not offended by all of the suggested changes in wording. I find that I read much more closely these days if I am in an editing mode - a residual from the IPCC experience, I am afraid.

In the second attachment, I accept all of my edits, preserve the yellow highlighting, and add comments on your two questions in part 6. They are:

I agree that comprehensive assessments, particularly when complemented by true Synthesis Reports, are indeed valuable and should not be abandoned. I also agree that waiting 12 years for another set of comprehensive assessments is too long is well taken. I still favor creating some special reports during the cycle, though, and I feel that they would be most helpful if they were released well in advance of even the beginning of the comprehensive assessment process. This is especially true of the products produced by reviews of the strengths and weaknesses of the TAR and the AR4 with respect to economics, sustainable development, and the ramifications of plenary's acceptance of a risk-based approach. This work especially needs to be completed before the scoping procedures (the two step procedure is an excellent suggestion) begin. Working backwards from
a release date for the AR5 in 6 years, these three efforts, at least, would have to begin relatively soon – i.e., sometime in 2008 perhaps after acceptance in Budapest. Other special reports could also be useful, but most useful if they, too, could inform scoping and, maybe, even lead the research community to author new contributions that could be assessed in AR5. So, why do the cycles have to be 5-6 years in duration? If the next complete cycle were 8 years, the delay would not be quite so troublesome, and the value could be enormous.

The organizational suggestions are well founded. Given reticence of a certain North American country to take a leadership role, might it be time to suggest a Vice Chair from the United States? I high position in IPCC could give that person sufficient stature to make a difference.

To be clear, my major additions fundamentally add to your short list of critical reviews of strengths and weaknesses of TAR and AR4 coverage of sustainability issues. I think similar exercises should be conducted soon on the coverage of economics as well as how to capture and convey information in support of the risk management approach accepted in the SYR in Valencia. This is an example of a more general point - some major advances in synthesis have emerged, and the AR5 process should acknowledge them and build from there! I copy these additions here:

Under 3.1.2:

It would, therefore, be useful for a small group to carry out an evaluation of the Working Group Reports of the Third and Fourth Assessments to identify where elements of the two-way interaction of climate change and sustainable development could have been strengthened. A decision on the establishment of such a group, which should include sustainability experts who have not necessarily taken climate change on board in their work, could be taken in IPCC-XXVIII.

Under 3.2:

The IPCC cannot address this gap by itself, but an initiative similar to the AIACC programme could help promote more focused research on impacts of climate change in specific regions of the world, particularly involving the developing countries. It may be useful for the IPCC to organize workshops or expert meetings involving relevant organizations and entities with the goal of describing relatively detailed science plans that could help to fill this critical gap. The outputs of these workshops and meetings could then be presented to appropriate organizations that could support deserving programmes and appropriate activities designed to work within these plans. The IPCC should, however, only serve role of facilitator in these endeavors even as it gleans important information about how regional aspects of climate change could be covered in greater detail in future assessment reports.

I add a section 3.3:

Fundamental conclusions from the Fourth Assessment Report must be assimilated fully into subsequent assessments from the very start. For example, the Synthesis Report of the AR4 included, as a major finding accepted by governments, that responding to climate change involves a series of risk management decisions about adaptation and mitigation that account for climate damages, ancillary benefits and costs, sustainability, and equity." The Fourth

Assessment, of course, included detailed coverage of risks to threatened systems, risks from extreme weather events, and risks from "singularities" in addition to aggregate and distributional reasons for concern wherein metrics of economic risk are paramount (but not exhaustive). Careful, deliberate, and extensive negotiations in Valencia made it clear that governments understand risk to be the confluence of both the likelihood and the potential consequences (expressed as vulnerabilities net of adaptation) of any impact. It follows that governments, in accepting what is really a profound change in attitude, have asked the authors of subsequent IPCC assessments to provide information about climate "risks". Governments are, therefore, asking that future assessments be organized around different sets of questions so that their negotiations are informed about risks that are "high", about vulnerabilities that are "key" and about "reasons for concern" that are serious based on assessments of risk. Future IPCC authors will be required, therefore, to convey information about impacts whose consequences are potentially large even if scientific confidence in their occurrence is medium or even low.

Under 4.1.4:

Such a report would take account of the externalities imposed by the impacts of climate change and how these deviate from sustainable development. It should account for the role of sustainable development in promoting the capacity to adapt to climate risks. And it should account for the positive and potentially negative relationships between sustainable development and mitigation. As noted above, it should also conduct a retrospective review of the contents of the TAR and AR4 – assessing objectively what these documents did well, and where they fell short of what was possible at the time of their release. It may be useful to begin work on a technical paper on the subject over the relatively near term so that its preparation could inform the scoping process for AR5. The hope is, of course, that AR5 will more adequately cover this subject.

I hope that this is helpful in some way as you prepare for this critically important discussion in Budapest. You will note that I have also sent these files and comments off to the Secretariat to get them into the "official process", but I wanted to send them along to you personally so that they might be most productive to your efforts. If changes are to be effective, they must begin soon!

PART II

I reprise, here, some of my larger comments to Patchy's draft about the future of the IPCC so that all can see. I sent them earlier, I was not sure about the distribution protocol. Now that I have seen many others' thoughts, it struck me that I should chime in more broadly to engage the larger conversation.

In January, I offered some thoughts on specific sections of the letter and added some thoughts on the two questions in part 6. They were:

I agree that comprehensive assessments, particularly when complemented by true Synthesis Reports, are indeed valuable and should not be abandoned. I also agree that waiting 12 years for another set of comprehensive assessments is too long is well taken. I still favor creating some special reports during the cycle, though, and I feel that they would be most helpful if they were released well in advance of even the beginning of the comprehensive assessment process. This is especially true of the products produced by reviews of the strengths and weaknesses of the TAR and the AR4 with respect to economics, sustainable development, and the ramifications of plenary's acceptance of a risk-based approach.

This work needs to be completed before the scoping procedures (the two step procedure is an excellent suggestion) begin. Working backwards from a release date for the AR5 in 6 years, these three efforts, at least, would have to begin relatively soon - i.e., sometime in 2008 perhaps after acceptance in Budapest. Other special reports could also be useful, but most useful if they, too, could inform scoping and, maybe, even lead the research community to author new contributions that could be assessed in AR5. So, why do the cycles have to be 5-6 years in duration? If the next complete cycle were 8 years, the delay would not be quite so troublesome, and the value could be enormous.

The organizational suggestions in the draft letter are well founded. Given reticence of a certain North American country to take a leadership role in the negotiations but the chance of some change in that attitude, might it be time to suggest a Vice Chair from the United States? I high position in IPCC could give that person sufficient stature to make a difference in the US deliberations.

I offered some additions to the text. They fundamentally add to the original rather short list overed in the draft of critical reviews of strengths and weaknesses of TAR and AR4 coverage of sustainability issues. I think similar exercises should be conducted soon on the coverage of economics (to demonstrate clearly that the conversation has to be conducted in the broad context that Steve has identified) as well as how to capture and convey information in support of the risk management approach accepted in the SYR in Valencia.

This is an example of a more general point - some major advances in synthesis have emerged, and the AR5 process should acknowledge them and build from there! This conclusion lead me to suggest some additional language to the draft (on top of some suggested language editing that I will not bore you with):

Under 3.1.2:

It would, therefore, be useful for a small group to carry out an evaluation of the Working Group Reports of the Third and Fourth Assessments to identify where elements of the two-way interaction of climate change and sustainable development could have been strengthened. A decision on the establishment of such a group, which should include sustainability experts who have not necessarily taken climate change on board in their work, could be taken in IPCC-XXVIII.

Under 3.2:

The IPCC cannot address this gap by itself, but an initiative similar to the AIACC programme could help promote more focused research on impacts of climate change in specific regions of the world, particularly involving the developing countries. It may be useful for the IPCC to organize workshops or expert meetings involving relevant organizations and entities with the goal of describing relatively detailed science plans that could help to fill this critical gap. The outputs of these workshops and meetings could then be presented to appropriate organizations that could support deserving programmes and appropriate activities designed to work within these plans. The IPCC should, however, only serve role of facilitator in these endeavors even as it gleans important information about how regional aspects of climate change could be covered in greater detail in future assessment reports.

I add a section 3.3:

Fundamental conclusions from the Fourth Assessment Report must be assimilated fully into subsequent assessments from the very start. For example, the Synthesis Report of the AR4 included, as a major finding accepted by governments, that "responding to climate change involves a series of risk management decisions about adaptation and mitigation that account for climate damages, ancillary benefits and costs, sustainability, and equity." The Fourth Assessment, of course, included detailed coverage of risks to threatened systems, risks from extreme weather events, and risks from "singularities" in addition to aggregate and distributional reasons for concern wherein metrics of economic risk are paramount (but not exhaustive). Careful, deliberate, and extensive negotiations in Valencia made it clear that governments understand risk to be the confluence of both the likelihood and the potential consequences (expressed as vulnerabilities net of adaptation) of any impact. It follows that governments, in accepting what is really a profound change in attitude, have asked the authors of subsequent IPCC assessments to provide information about climate "risks". Governments are, therefore, asking that future assessments be organized around different sets of questions so that their negotiations are informed about risks that are "high", about vulnerabilities that are "key" and about "reasons for concern" that are serious based on assessments of risk. Future IPCC authors will be required, therefore, to convey information about impacts whose consequences are potentially large even if scientific confidence in their occurrence is medium or even low.

Under 4.1.4:

Such a report would take account of the externalities imposed by the impacts of climate change and how these deviate from sustainable development. It should account for the role of sustainable development in promoting the capacity to adapt to climate risks. And it should account for the positive and potentially negative relationships between sustainable development and mitigation. As noted above, it should also conduct a retrospective review of the contents of the TAR and AR4 - assessing objectively what these documents did well, and where they fell short of what was possible at the time of their release. It may be useful to begin work on a technical paper on the subject over the relatively near term so that its preparation could inform the scoping process for AR5. The hope is, of course, that AR5 will more adequately cover this subject.

Geoff Levermore, LA WG3

I am in agreement with most of the document and the very useful comments coming from the UK DEFRA, which have been discussed.

I would just like to add these comments in support.

Re the organisation I am surprised and disappointed still at the numbers of people in responsible positions who do not understand the IPCC and its procedures. This is not helped by the lack of transparency of the Panel, Bureau, and its (s)election, its members and procedures.

Re WG3 and my chapter 6 I was not aware of many practitioners or representative organisations being asked to review (e.g. ASHRAE, CIB, CIBSE etc).

I'd suggest more support for CLAs to keep account of the edited text especially with a number of contributing authors and edits occurring.

More support for LAs from developing countries so that they can contribute more.

Georg Kaser - LA AR4 WG I Ch. 4 "Observations: Changes in snow, ice, and frozen ground" CL AR4 WG II Ch. 1, LA TPW, Expert Reviews: AR4 WG II Ch. 1 and 3, SYR

To start with, I would like expressing my gratitude for the opportunity to contribute to IPCC in various roles. It was (and it still is in the case of the TPW) an impressive positive experience. Now I am pleased to contribute to the discussion on the future of IPCC from my views related to the different roles I played and that are listed above.

Ad 6.2.1:

I concur with your view that comprehensive assessments every 5-6 years are to favour.

Special reports are of great value and they may be appropriate to meet the fast changing knowledge particularly in some areas of climate change (e.g. on the future of the Greenland and the West Antarctic Ice Sheets). Still, they may fail to account for the entire complexity of (i) the potentially fast near future changes of the climate system, and (ii) the quickly developing knowledge about climate change and related impacts.

I also have concern that special reports, being published at irregular intervals on isolated topics, will not gain the attention that comprehensive assessments can obtain from both the broad public and the policymakers. Special reports will probably have the effect of fruitlessly competing among each other for this attention, even if not intended by the authors.

A 10 - 12 year gap between comprehensive assessments is definitely too long in view of both (i) and (ii).

Ad 6.2.2:

There is a great need to establish instruments that allow and force formal interaction between WG I and WG II (I have no experience with WG I / WG III or with WG II / WG III). In AR4 I identified the miss of such a link as a serious problem.

In the process of contributing to both WG I and WG II in various roles I observed and realised the following problem. When reviewing the FOD of WG II Chapters 1 and 3 it appeared that the respective colleagues had widely tried to assess the physical science basis of e.g. glacier changes and related climate reasons at their own. Since the primary task of WG II (impacts and vulnerability) was to be met too, the physical science basis was not only superficial but also contradictory to the respective WG I assessments in many cases (respective remarks I made as reviewer are documented as expert review comments). This had only in parts been improved in the WG II SOD and in the final documents; some statements contradictory to those assessed in WG I (e.g. on the state of Himalayan and Andean glaciers) persisted. A WG II box on Kilimanjaro glaciers was changed in the very last minute after intensive interventions from WG I Ch. 4 LAs.

Also the attempt to pass material (on glaciers and runoff) from WG I to WG II was of very limited success. Later, the material had been of great value in the TPW if available.

Maybe a slightly bigger interval between WG I and WG II preparation steps would help. In addition, cross cutting meetings seem to be of need. An official link should be provided to force interaction.

Ad 3.2.

While methods on smaller scale aspects of climate change modelling are quickly improving, the mentioned gaps in observations are of considerable concern. In the course of my services to the International Commission on Snow and Ice (later Union Commission for the Cryospheric Sciences, now the International Association for Cryospheric Sciences) of IUGG, both as Secretary and as President, I have actively witnessed various attempts to extent glacier monitoring and respective transfer of knowledge both to the Andes and the Himalaya. Results are below expectations for various reasons. I would highly appreciate if IPCC could take action and I am willing to contribute.

Gregg Marland - Author on first, second, and third Assessment reports, Special reports on LULUCF and CCS, and Guidelines for Emissions Inventories.

During preparation of the TAR, I was struck by the comment from a colleague that "the biggest problem with the IPCC is the success of the first two assessment reports". With receipt of the Nobel Prize, the problem is only accentuated. In planning for the future of the IPCC I encourage recognition of two important characteristics: focus and humility. I suggest that the IPCC maintain its focus on climate change and not try to broaden the focus to include all of the problems of mankind, and that it remain humble in what science can contribute to the public policy discussion of dealing with climate change. Best wishes for the future of the IPCC.

And further applause for the quiet, humble and thoughtful leadership of our first chairman - the late Bert Bolin.

Hans-Martin Füssel - Contributed to the AR4 as author, review editor, expert reviewer

Since there seems to be general agreement on the strengths of the IPCC process, I focus my comments on those weaknesses of IPCC work that might be addressed by revisions in procedures and management.
Production and scope of the AR4:

The treatment of uncertainties in the IPCC process has generally improved over time, but with large differences between various sources of uncertainty. Model-based uncertainty is now routinely reported in all WG reports, including in their SPMs. In contrast, structural uncertainties (e.g., deficiencies in all ice-sheet models) and limitations of scenarios (e.g., the absence of stabilization scenarios from the SRES emissions scenarios) are treated unsatisfactorily. In areas where models are known to involve substantial deficiencies, more weight should be given to other sources of information, such as direct observations, paleoclimatological evidence, and expert elicitations. When relevant uncertainties cannot be adequately described by a standardized semi-quantitative terminology, the additional use of narratives should be encouraged, including in SPMs.

The need for consensus among authors has, in some instances, lead to the omission of information in the AR4 that would have been highly policy-relevant from a risk-management perspective, such as on high-impact scenarios (such as the potential contributions to sea-level rise from WAIS disintegration). Future reports should highlight important areas of disagreement among experts explicitly rather than restricting themselves to consensus statements.

There was insufficient coordination across WGs. For instance, WG I apparently made the decision on the emissions scenarios to be used for their climate simulations without extensive consultation of WG II and WG III. Future comprehensive assessments should make even stronger efforts to identify cross-WG issues early in the process, and to find more inclusive approaches for addressing them.

The AR4 makes insufficient use of the findings from some scholarly communities that are relevant for designing response strategies, in particularly from the humanities. For instance, ethical considerations are inadequately reflected in the full AR4 and are completely absent from the WG SPMs.

The allocation of page space across chapters in the WG reports does not reflect their relative importance for international climate policy. For instance, the chapter on Australia and New Zealand and that on Asia in the WG II report are about the same length, despite the latter region being more than hundred times more populous (and presumably more vulnerable to climate change) than the former. The allocation of scarce page space in future reports should better reflect the importance of different chapters for policy decisions, based on criteria such as the population size of a region, the severity of projected impacts, the emission level of an economic sector, and the amount of scientific literature available.

H.-Holger Rogner

Maintain the structure of three working groups (WG) but create a quasi virtual, small, crosscutting WG or Task Force (more formalized and structured than previous attempts of inter-WG coordination) for the next comprehensive assessments.

While participation of industries (WG III) has been considered valuable, actual industry involvement in the writing process has been minimal. Clearly the IPCC conducts scientific assessments and as such scientist must be in the lead, but in order to remain policy relevant, the implementation constraints on the ground in a real life settings are often clouded by scientific optimism (and unfortunately at times also by individual or group preferences/prejudices). Soliciting comments from industries on the various drafts provides only limited opportunity (to little - too late) and a straightforward involvement of industries in the writing process should be considered in future assessments.

As to the cycle of future assessments, the option of producing a series of special reports before launching another comprehensive assessment sounds promising. But the next comprehensive does not have to follow any length cycle (5-6 or 10-12 years). Rather one should schedule assessments on a "need" basis. From a mitigation and adaptation point of view another comprehensive assessment could start around 2011 - by then the implementation effects of the Kyoto Protocol will have become clear (and given the 3-4 year duration of a comprehensive assessment, the full first commitment window would end early in the assessment period).

In the interim, the option of producing a series of special or topical reports - as standalone products but with immediate relevance for the AR5 (e.g., on renewables) - seems desirable. The framework and criteria for Special Reports, Technical Papers, etc agreed in 2002 serves such processes well and should be retained.

Starting the next comprehensive assessment in 2011 would allow more time for conducting original research - LAs of the AR4 had complained about the lack of time between the assessments.

Isabelle Niang - WGII, CLA of chapter 9 (Africa)

First of all, I think that after have winning the Nobel Prize and given the consequences of this especially in terms of communication and awareness rising, there is a strong need to reaffirm the importance of the IPCC process and products. No other organization is able to deliver such an equitable view on the progress made regarding the different aspects of climate change and its consequences on biophysical and human systems.

This has the following implication: the review made for the assessment reports is invaluable and must continue. This is specially true because of the growing literature on climate change. No special report will cover all the regions, sectors and thematics as does the assessment report. Moreover, the end products like SPM and Synthesis Report are used by the decision makers community to help them to take good and informed decisions.

Considerable efforts have been made to include socio-economic aspects but this must be amplified. There is a demand for more information on the economic consequences of climate change, especially the costs. I will thus suggest to reinforce the presence of economists, sociologists at the level of writing teams (for each chapter) and also in the WGIII. I consider also that among needed special reports one on the socio-economic aspects of adaptation (particularly the costs) would be useful.

After my experience in Brussels for the WGII SPM, I consider that there is a need to reconsider (improve) the way SPM are adopted and more generally our relationships with political decision makers. The process is long, and rather inequitable (important delegations from northern countries against very limited delegations from developing countries) which makes the results a little bit unbalanced. Even though it is necessary to have this kind of process in order what is coming from IPCC is taken in account by governments, the process should be revisited.

Inside IPCC, the links between the 3 working groups are insufficient. More exchange is needed so that to ensure some coherence and consideration for the results of each WG.

The language problem is still there. The non anglophone delegations have to digest a document which is not translated in their own language. The time requested for translation is too long. There must be more efforts on the translation of SPM and synthesis report because of their importance for decision makers. These documents must be available in the other UN languages as soon as possible.

I have no comments on the functionment of bureau.

J. Shukla – WG III

I would like to respond to some of the items in the attached text on issues etc. in particular to the statement in the section 3.1.1 (sections 3: Drivers of required change in the future).

"There is now greater demand for a higher level of policy relevance in the work of IPCC, which could provide policymakers a robust scientific basis for action".

1. While it is true that a vast majority of the public and the policymakers have accepted the reality of human influence on climate change (in fact many of us were arguing for stronger language with a higher level of confidence at the last meetings of the LAs), how confident are we about the projected regional climate changes?

I would like to submit that the current climate models have such large errors in simulating the statistics of regional (climate) that we are not ready to provide policymakers a robust scientific basis for "action" at regional scale. I am not referring to mitigation, I am strictly referring to science based adaptation.

For example, we can not advise the policymakers about re-building the city of New Orleans - or more generally about the habitability of the Gulf-Coast - using climate models which have serious deficiencies in simulating the strength, frequency and tracks of hurricanes.

We will serve society better by enhancing our efforts on improving our models so that they can simulate the statistics of regional climate fluctuations; for example: tropical (monsoon depressions, easterly waves, hurricanes, typhoons, Madden-Julian oscillations) and extratropical (storms, blocking) systems in the atmosphere; tropical instability waves, energetic eddies, upwelling zones in the oceans; floods and droughts on the land; and various manifestations (ENSO, monsoons, decadal variations, etc.) of the coupled ocean-land-atmosphere processes.

It is inconceivable that policymakers will be willing to make billion-and trillion-dollar decisions for adaptation to the projected
regional climate change based on models that do not even describe and simulate the processes that are the building blocks of climate variability. Of course, even a hypothetical, perfect model does not guarantee accurate prediction of the future regional climate, but at the very least, our suggestion for action will be based on the best possible science.

It is urgently required that the climate modeling community arrive at a consensus on the required accuracy of the climate models to meet the "greater demand for a higher level of policy relevance".

2. Is "model democracy" a valid scientific method? The "I" in the IPCC desires that all models submitted by all governments be considered equally probable. This should be thoroughly discussed, because it may have serious implications for regional adaptation strategies. AR4 has shown that model fidelity and model sensitivity are related. The models used for IPCC assessments should be evaluated using a consensus metric.

3. Does dynamical downscaling for regional climate change provide a robust scientific basis for action?

Is there a consensus in the climate modeling community on the validity of regional climate prediction by dynamical downscaling? A large number of dynamical downscaling efforts are underway worldwide. This is not necessarily because it is meaningful to do it, but simply because it is possible to do it. It is not without precedent that quite deficient climate models are used by large communities simply because it is convenient to use them. It is self-evident that if a coarse resolution IPCC model does not correctly capture the large-scale mean and transient response, a high-resolution regional model, forced by the lateral
boundary conditions from the coarse model, can not improve the response. Considering the important role of multi-scale interactions and feedbacks in the climate system, it is essential that the IPCC-class global models themselves be run at sufficiently high resolution.

Joel B. Smith - WG II

Thank you very much for soliciting thoughts on the future of the IPCC. The IPCC has been enormously successful over the years, capped off with it being awarded the Nobel Peace Prize I 2007. I have been fortunate to have been a participant at the first organizing meeting for Work Group II (held in Moscow in 1989), a CLA on Chapter 19 in the TAR Work Group II, and most recently, an LA on Chapter 19 of the Work Group II 4AR.

Even a successful organization should from time to time revisit how it operates. Renewal and refocusing can always be of benefit to an organization. The environment changes and organizations need to change in tune with it.
I have a number of thoughts about where the IPCC should go in the future. One of the most important questions is whether the IPCC should do another comprehensive assessment on a five to six year cycle. Updating the science of climate change on roughly a five year cycle has been of significant value. Each successive assessment has advanced the state of knowledge on the science. I am not as convinced that such frequent assessments on vulnerability and mitigation are necessary. So, I think a less frequent cycle of full reports, perhaps 8-10 years, would serve to provide comprehensive updates of the state of knowledge on climate change vulnerability and mitigation.
It is important that the science be updated approximately every five years or so. There are enough improvements in the science on observations and projections to justify such a frequent updating of the science. New emissions scenarios will soon be produced and we will need new projections of change in global and regional climates. We have also seen substantial improvements in our capacity to project changes in regional climate. We can hope that improvements in regional projections continue to be made.These reasons justify a routine updating (i.e., every five years or so) of the science. (Note that production of integrated regional reports, recommended below, could include updates on the state of science on regional projections.)
If less frequent assessments are conducted, there is room for more special reports. I think special reports on a number of topics are needed. In the impacts area, I'd suggest two:

- Observed impacts. Chapter 1 of the AR4 was an excellent overview of impacts of climate change. Nonetheless, with so many impacts that at least are consistent with climate change are being observed around the world, an entire (special) report devoted to observations is justified. Such a report can review observations by region and globally. It should address the attribution of observations at different scales, as well as whether impacts are happening as had predicted, faster or slower, and whether surprises are occurring.

- Adaptation. With climate change impacts becoming more evident and with concern about climate change increasing particularly in recent years, a special report on adaptation to give the topic the depth it needs. The report can address adaptation theory, but more importantly, should review adaptations being made on a regional and local scale. The report should also offer prescriptions on what adaptations should be made.

- Integrated regional reports. If full assessments are done less frequently than five to six years, there will be time to have regional reports which integrate across the three IPCC work groups. The reports could provide assessments of observed and projected regional climate changes, observed impacts, projected impacts, observed mitigation and adaptation measures, and analysis of options for further mitigation and adaptation.

Juan Llanes- Regueiro - LA, 4AR, Chapter 12, WG III, Review Author WG II

Comments to the Future of IPCC

3.1.2 Sustainable Development
The approach given to Chapter 12, was to produce a statement related with "more sustainable or not" and links between mitigation and SD. In Lima it was agreed to include into the Chapter some references to SD indicators. One important finding, was that no research or indicator was developed to deal directly with CC and SD. This was perhaps because scientist working on the development of such indicators does not think that CC is a relevant issue and now perhaps may change their mind.
One of the outmost researches related indirectly with this matter is Naredo and Valero´s research on the physical cost (energy related) of resource extraction. It's not known probably because both publish their research in Spanish and French, but not in English. Another important approach is Ruebbelke´s study quoted on chapter 12.

These words are only to illustrate what I have in mind: The direction of what should could be done related to CC and SD should be clear enough determined, is research towards indicators needed or research towards the study of direct synergies between mitigation strategies and SD an their effect on mitigation and adaptation costs?.

I think such a definition may be very useful.

3.1.3 Economics
As I understand, there is an emerging science: The science of Climate Change that has developed first as the scientific theory and assessment of atmospheric or meteorological and physical sciences.

Other than natural sciences or scientific theories and practices related to the climate change issue has been more or less an adaptation from theories developed by other disciplines but not new theoretical developments to deal with climate

change. Most of the theories dealing with social sciences are "laden", and to a great extent economics and specifically environmental economics.

In this sense, we do not have yet something like "economics of climate change" but a group of theories and analytical tools coming mostly from neoclassical economics that arose almost 120- 130 years ago and evolved almost 60-70 years ago into the "neoclassical synthesis".

These economic theories are permeated by monetary-quantitative tools for analysis and decision making, but it's doubtful if the explanation given by them are suited for long term issues and pervasive "externalities", where monetary valuation of so called "social cost" is uncertain difficult to understand and to put in monetary terms.

I have read the Stern Report and other reports from the Pew Center for Climate Change as "The Economics of Climate Change" and found them exiting, interesting but less useful but I doubt that for instance "growth theory" (where natural resources are only a driver) and "externalities" theory will help to correct present situation.

I suggest that with regard to economic theory or "economics of climate change" IPCC should be an open Forum with regard to other theories and research than neoclassical economics, inviting other scientist and researcher working on post- normal science or bio- economics and ecological economics, to work together looking for consensus on economic facts and promoting the development of economic tools that are best adapted to deal with climate change. It's challenging but exiting

Reading the report (Summary for Policy Makers and Technical Summary) you notice that qualitative assessment and judgments (uncertainty definition and sustainable development as examples) have increasing relevance within the report.

4.1.2
I agree with your own preference, last row, page 4

4.1.3
About some special reports. Although economics of adaptation is included into "economics of climate change" studies and guidelines are old, including the references from Stern Report. Adaptation constitutes a high priority for developing countries and the need for an assessment and an introduction to economics of adaptation is needed. Our experiences are brief and we feel the need to produce more research on this field and to exchange experiences. Perhaps the organizing of a special report on the economics of adaptation could be very useful because such an assessment could be done as an interdisciplinary research and as South-South collaboration.

4.1.4
Something feared by several countries, specially developing ones, are the mitigation costs. It's already known that ancillary and co benefits are important. But several studies and reports focus more on outdoor air pollution and less on indoor air pollution, reforestation, soil management and improving waste management. There is a need to link in practice mitigation options with SD priorities, National Environmental Strategies and to focus more on synergies between adaptation and mitigation as a way to produce zero cost mitigation, reducing mitigation costs or obtaining important benefits. This could be obtained by linking bottom- up mitigation, on site mitigation with economic valuation of changes on environmental quality. It's difficult, but amazing when you come out with good results.

6.2.1
Discussion about Climate Change is increasing. I have the feeling that a special report on new information and facts with regards to physical sciences aspects could be needed by 2009. I suggest discussing the issue.

Ken Denman - CLA WG-I, SAR and AR4

I welcome the opportunity to comment on the future of the IPCC. First, I want to reinforce the initial comments of Dr. Pachauri: in my experience the IPCC is the most successful model of organizing scientific information free from other influences and then having an indelible impact on public policy, in this case the actions of national governments on the issue of climate change resulting from human activities. My comments relate to the entire IPCC, but stem from my perspective as a CLA for WG-I of two comprehensive assessments, the SAR and AR4.

6.2.1 The issue of a comprehensive assessment during each cycle vs. special reports on a regular basis and a comprehensive assessment every two cycles.

I strongly prefer switching to a comprehensive assessment every two cycles, with targeted special reports. I would also recommend a general Synthesis Report midway between the comprehensive assessments, providing an update of changes in the assessment based on special reports published since the previous comprehensive assessment. *Overall, I feel that the rate of climate change is increasing and there is an increased urgency for targeted advice and action.*

For example, in WG-I since AR4 there are several issues that have arisen that need to be addressed in special reports:
1. **Rate of CO2 emissions.** There is evidence that anthropogenic emissions of CO2 exceed all the SRES scenarios, most convincingly that the rate of increase in emissions since 1999 exceeds the rate of increase of all SRES scenarios.
2. **Ice sheets and sea level rise.** WG-I of AR4 has been criticized for being too conservative in estimates of sea level rise because we did not include potential effects of reduction in the Greenland and Antarctic Ice Sheets. It was felt that the science is not yet understood well enough to include in models, but the wording in the SPM probably should have stated that our estimates of sea level rise were minimum estimates. I think that this issue needs to be reassessed within two years.
3. **Positive feedback between the carbon cycle and climate change.** The so-called C4MIP model intercomparison (Coupled Carbon Cycle Climate Model Intercomparison Project) showed that all models produced a positive feedback between atmospheric CO2 increase and climate change. Overall, for the same scenario, the C4MIP models projected by 2100 slightly more than 1oC extra warming than the mean of the standard group of models used in the AR4 projections. The C4MIP models varied widely however, primarily because terrestrial carbon cycle modelling is less mature than physical climate models, but also because the emphasis of C4MIP was the terrestrial models and the ocean carbon models were not well constrained.
4. **Stabilization scenarios with 'C4' models.** The positive feedback described above means that emission cuts need to be greater in these models with a dynamic carbon cycle to 2/2 achieve the same temperature stabilization than in the suite of physical climate models employed in AR4. For some 'acceptable' scenarios, such as stabilization at 450 ppmv 'equivalent' CO2 (i.e. including effects of both methane and nitrous oxide), these models might actually require negative emissions to achieve the stabilization target, depending on the timeline imposed. We cannot wait 10-12 years to do these stabilization assessments.

6.2.2 Organizational issues

The emphasis in the proposal seems to be to strengthen ties between Working Groups I and II and to bring closer together the issues of climate change with sustainability. I agree with both of these recommendations, but there seems to be a sense that either the work of Working Group I is finished or that it needs no changes, beyond an increased emphasis on regional climate change.

1. Interaction between WG-I and the other WGs. My experience from being a CLA in the SAR and in AR4 is that there is little meaningful interaction between WG-I and the other WGs until possibly the drafting of the Synthsis Report. I recommend a much stronger interaction between WG-I and the other WGs. As comprehensive climate-carbon cycle models evolve into earth system models, aspects of impacts and adaptation become embedded into the WG-I models, and separation of the two assessments becomes even less desirable. Similarly, scenarios beyond the SRES scenarios can no longer be done separately by WG-III, then handed over to WG-I. The interactions must take place right from the design phase of a comprehensive assessment, rather than occurring during drafting of the Synthesis Report, after the assessments by the individual Working Groups are essentially complete.

2. Closing the circle between IPCC Assessments and post-Kyoto protocols. The work of the Task Force on Inventories was described in Dr. Pachauri's proposal, but what seems to be missing is an official IPCC assessment on the effectiveness of cumulative actions proposed under the Kyoto Protocol. Individual scientific groups in some countries undertook such modelling exercises by themselves, but they probably were not considered by the members of the UNFCCC at their periodic 'CoP' meetings.

I propose that WG-I be tasked with assessing using the suite of models used in AR4 the efficacy of (i) the emission reductions agreed to under the Kyoto Protocol, and of (ii) proposed emissions measures under any agreements that result from meetings of the UNFCCC member countries to develop protocols to follow the Kyoto period. Such an assessment (as one or more special reports) should consider the projected effect both on the atmospheric concentrations of long-lived greenhouse gases (and aerosols), and on the projected warming.

I cannot comment on specific proposals for reorganizing / strengthening the Bureau, but my experience with WG-I is that the IPCC operates with a minimum of personnel. I endorse the recommendation of having Vice-Chairs willing and able to share in increased outreach and communication activities.

Kevin E Trenberth - CLA WG I AR4

IPCC has indeed been very successful. Within WG I we have seen a progression of statements about increasing confidence that we have detected and attributed observed climate change to human influences. On that topic we are at a point of diminishing returns and little further seems to be gained from more of the same. Therefore I agree with item 2.1 that we should be looking for some real major changes in IPCC.

Having unequivocally determined that climate change is happening and it is very likely due to humans, there is an enormous need to move on to address adaption to the inevitable climate change that is coming. This also means that we must switch from projections to predictions of climate. The main difference is the need to initialize models to the observed state. To me, this means some substantial changes in IPCC are in order. First and foremost, a substantial part of WG I activities ought to be “operationalized” and become more routine and more frequent. Maybe this does not happen under IPCC and a handoff procedure is required to GEOSS or some other entity? It probably could not happen under the same rules.

The concept for this is to build a "**climate information system**", as outlined in my recent article in the January 2008 *WMO Bulletin* (available at http://www.cgd.ucar.edu/cas/Trenberth/trenberth.papers/WMO-BullJan08galley.pdf). As outlined there in Figure 2, this relates to the flow of information and technology transfer from basic research, to operational research, to climate services. This relates very much to linking changes in the physical system to impacts, vulnerability and adaptation issues that are the domain of WG II and it also relates to the sustainable development issues raised by the Chairman in the discussion paper. It suggests that a component of WG II is similarly tied into this operational system whereby it assesses impacts in near real time and why they have happened, and provides ongoing information to decision makers, stakeholders and users. It is directly related to item 3.2 on the need for regional aspects of climate change (e.g., see Fig 1 of my article). I do not agree with the change in emphasis to more economic aspects, however. The economics aspects must be balanced by resource, environmental and sustainability aspects. Instead, missing altogether from the Chairman's draft is the need to initialize models and produce climate predictions on multiple time scales, but especially for up to about 3 decades ahead. See the article for details.

If there is any progress toward the above, then the nature of AR5 certainly changes substantially. However, I would hate for the heritage IPCC has established to be lost. It would suggest that something closer to the current synthesis report would be needed rather than the full WG I and II reports, as much of the latter would be assessed in nearer to real time.

Therefore, I am arguing against a major comprehensive assessment every 6 years or so as we can not wait that long for information as climate changes. It also means a transition away from a pure assessment activity of research to an assessment of analyses and predictions that become more routine in many countries. Hopefully these can be done with integrity and procedures developed in IPCC. I am not sure that special reports fill the need. The organizational issues would have to follow the above changes. The considerations I have raised here really go beyond what IPCC has done in the past, and so can not be decided solely by IPCC. But the governments involved have the capacity to bring in these other aspects.

I hope you will consider these suggestions in modifying the way forward for IPCC.

Kornelis Blok

I generally agree with what is set out in the material that we were sent the 4th of January. I think after the recognitions by the Nobel Peace Prize committee and on the COP in Bali, the IPCC has an extremely strong basis to continue it's work.

I have a number of comments:

- First of all, a practical one. In most cases for each of the three WG reports, the work actually consists of two stages.

1) The writing of each Chapter,

2) The integration. The latter not only includes summarizing material (SPM and TS), but also some chapter-overarching assessment. For instance, in WG III, we had to consolidate the results of Chapters 4 - 10 into a summary table in Chapter 11. Working on such consolidation while the individual chapters are not yet completely ready is not easy. A two-stage approach (not entirely subsequently, but somewhat shifted in time).

- Second, I have some doubt on the emphasis that is put on 'climate change and sustainable development'.
  I agree that this is an important relation and should get enough attention. But our limitation is the basic scientific material on which the assessment should be based. I think that we pretty well exhausted this material in the past assessment, and I doubt whether the scientific production on this issue nowadays justifies an assessment that is larger in size.

- Third, I do not completely oversee the topic, but I have similar doubts with respect to the topic of economics.

Kristie L. Ebi

I appreciate you soliciting comments on the discussion document on the future of the IPCC. I support adding two vice-chairs to report to the IPCC Chair, particularly with the increased interest in developing more special and technical reports. I also support adding another position to the Secretariat to facilitate the extra work that will result.

One issue I would like to see more strongly addressed is the need for the IPCC to provide policy-relevant assessments of the practice and costs of adaptation. The memo clearly articulated the need for stronger economic focus by future IPCC documents. What was not stated explicitly is the companion need to better understand the process of adaptation, including the constraints for applying lessons learned in one region and sector to others. The UNFCCC has put mitigation and adaptation on equal footing for preparing for and responding to the risks of climate change. This should be better reflected in the structure of the working groups. This could be accomplished in a number of ways, from moving assessment of observed climate change impacts to Working Group I, thus changing the focus of Working Group II to an assessment of projected impacts and possible responses. Or, Working Group III could focus on assessing the range of possible responses, from adaptation to mitigation. I am sure there will be multiple opinions on how best to achieve this end, with a lively discussion at the next IPCC Session.

In order to move the assessment of adaptation forward, this may be an appropriate time for a special report on adaptation, building off the excellent foundation of the chapters included in the TAR and AR4. An informal proposal for this was submitted last fall. A global assessment has not been conducted of the programs and activities that have been implemented to reduce climate-related risks and increase resilience to climate variability and change, including through NAPAs, national communications, AIACC, GEF-funded projects, and other activities. Understanding the details of implementation of specific adaptation programs would facilitate learning across countries, including how political, social, financial, and technical constraints were addressed and the costs and benefits of implemented activities. The Special Report is envisioned to be a series of detailed case reports, in many cases based on government reports, project reports, and other grey literature, for each vulnerable population and region included in the AR4, with the addition of a separate chapter on LDCs. There also could be a chapter on various actors, particularly NGOs, and their experiences with adaptation, and a chapter on disaster risk reduction. Synthesis chapters could include lessons learned across the case studies, a chapter on the costs of adaptation (based on costs estimated in the case studies) and what those costs imply for future climate change, and a final synthesis chapter. The case studies would need to be of sufficient length to convey a good sense of the process by which it was decided (and by whom) to undertake an adaptation project, what was done and why that particular issue was chosen, what parts of the project were successful and why (including metrics for measuring success), what were the constraints and how they were overcome, how the process could have been improved, what were the costs, how the results were integrated into national development plans, and other issues.

I support continuing regular assessments, possibly spaced slight longer apart, with more special reports early in each assessment cycle.

A final suggestion, which I know has been tried unsuccessfully in the past, is to have agreed questions to frame each assessment cycle. Articulating questions at the beginning of the assessment cycle can help focus the tasks of the working groups and provide a structure for the final synthesis report.

Lino Briguglio

I read the document "Some issues related to the future of the IPCC". I think it provides considerable food for thought. I would like to react in particular to paragraph 3.1.3 where the document states that "there would be need to place much greater importance on the economic aspects of climate change". I think this is very true, because there are major short-run costs in moving from the use of fossil fuels to less damaging energy sources, and major long-run costs associated with climate change. If there were zero costs of moving away from using fossil fuels, adaptation would have been much easier to undertake.

The document also suggests that it would be useful for a small group to carry out an assessment of the Working Group Reports which form part of the Fourth Assessment to identify wherein the economic dimensions of the assessments should have been stronger. As an economist I would be interested in forming part of the group, possibly representing small island states.

Lourdes Maurice

Thank you so much for the opportunity to comment on the Future of the IPCC. I have found my work with the IPCC very useful and rewarding and I trust these comments are constructive.

1. It is important to have balanced coverage of the issues - not unilateral views. Unfortunately while balance may occur at a high level -- it does not always happen across the board. The aviation sections of some of the fourth assessment were written by one or two individuals from the same country.

2. While global analyses are useful, a focus on sectors and regions would be helpful. It is also important to seek input from other UN organizations (e.g., ICAO/CAEP in the case of aviation).

3. Would be helpful to develop sector (and region) specific climate impact metrics and then relate those to global impacts.

4. There is a need to provide a better scientific basis and metrics for relating CO2 impacts with non-CO2 impacts due to short-lived causes (e.g., contrails/cirrus).

5. Being "greener" is now a big business being sold to the public – with outcomes of specific practices not always clear. Climate change will be ultimately abated at the personal level -- would be helpful to have guidance from IPCC.

6. In its role to inform the public IPCC may consider PRIMER (similar to WMO Stratospheric ozone) targeted to nontechnical and non-policy individuals.

7. Need to guard against bigger gaps in assessments - the time gaps between products now should be considered the high end.

8. Alternate and renewable energy are receiving a lot of attention. Many people are looking at a GHG life cycle analyses -- with varying results and opinions. Would be helpful for IPCC studies weighing in on pro-cons of alternative and renewable sources. I consider this to be the most important topic for a sectoral report.

9. The "universal" interest in the Stern report may be pointing to the need for more economic assessments. This should not be interpreted as Stern-type reviews- as a good deal of its economic assumptions were arguably unrealistic. The "economic dimension" should be stronger- but only if we avoid the limited author/viewpoint problem we encountered on aviation- and any economic assessment was framed more as a sensitivity analysis with multiple assumptions (very critical given the lack of precision in economic analyses). Above all if an economic task group is formed, need to ensure widespread and geographically diverse participation.

10. Growing computation power is giving us the opportunity to run more than a few scenarios -- ideally we should be seeking to run 100s of scenarios so we can identify the compelling issues that must be dealt with.

11. Having served as both a LA and a reviewer -- the process is not very transparent for a reviewer. As a reviewer I was never able to see the response to comments - which I know I carefully prepared as a LA. I believe these should be posted on the web (if they were I could not find them -- which may point to a cumbersome website.

12. While I understand the need for additional support, caution against growing the Secretariat. Need to ensure the IPCC products continue to be guided by the "volunteers" scientists and not professional staff.

13. While the interaction with policy makers is helpful, I found that at times CLAs and LAs tried to second guess how a policy maker would react and adjust text accordingly. I feel this should be discouraged.

14. There needs to be a process to ensure that LAs fully participate. I was a BOG lead and after the first meeting all but a couple of the other LAs disappeared and did not contribute any more. It is important for everyone to participate - otherwise you end up with the opinions of one person -- but with the endorsement of IPCC, which is not healthy.

15. Lastly, it is always best if we leave to others to tell us we are doing a great job. Suggest toning down the self-congratulatory note of the document, as it comes across as arrogant.

M. Beuthe - LA, WG III, Ch.5

1) « Some issues related to the future of the IPPC »

In short I would like to indicate my agreement with

- 3.1.1: the need of providing policymakers a robust scientific basis for action;
- 3.1.2: the need to focus in more concrete ways on various aspects of sustainable development;
- 3.1.3: with much greater importance on the economic aspects of climate change.
  With respect to these three points, it is necessary to enlarge the scope of analysis to the study of more local external effects, which result from the same drivers that induce climate change. From a policy point of view, the choice of actions cannot be made without assessing their total economic and social impact.

- 3.1.4: with some regional research in developing countries. This is necessary because the issue of climate change must be tackled at the international level for preventing that local policies induce net negative effects in other parts of the world.
- 4.1.1 to 4.1.4: special and technical reports would be useful, for instance of local external effects associated with climatic effects; they should be issued without too much delay and thus inform on the continuous progresses of research in the field. Ten to twelve years for a comprehensive assessment is too long.
- 5.1.1: Yes, one of the Vice-Chairs better be an economist.

2) Submission by The Netherlands

I agree with the background comments.
As to the specific proposals

- Transparency and objectivity: yes, as long as it does not make the writing process even more burdensome that what it has been; the proposals maybe could certainly apply to narrower special or technical reports.
- Support to the scientific research: Yes. You can add to the list of international organizations OECD's CEMT for transport and mobility, E.U's programmes and similar organizations on other continents.
- Generation and dissemination: Yes.

Maria dos Anjos Hauengue

Congratulations to all IPCC for the job done.

As part of Africa and developing country I felt during the IPCC working group II exercise lack of scientific information from developing country to sustain the theories about vulnerability, impacts and adaptation. Either because there are no studies done, or unplished data, or lack of international recognition on such data. I proposed therefore in the future of IPCC that one technical and scientific group could deal with ongoing studies and editing and publishing in connection with local Universities in Africa, Asia or in low income countries. Indigenous people may also have experiences especially on the adaptation and mitigation, and these knowledge must be recognised, tested and published.

Michel Boko

About indigenous knowledge recognition, I totally agree with Miss Maria Hauengue. But, the real challenge is the bottle neck of peer revied publication about this knowledge. Is-it possible to use grey literature in a such sound scientific work like IPCC Report ??? It could be difficult to deal with. I suggest that research pogramme initiatives could be reinforced and enlarged so as to have more and more scientific materiel for the forecoming IPCC activities.

Short reply to "Some issues related to the Future of the IPCC"

R-3.1.2 & 3.2
How to use outputs from programme research initiatives such as AIACC and DFID will depends on our capability to involve state institutions in the conception and implementation plans, from the beginning to the final step of these initiatives, and to convince our government to take these outputs into account in their development plan at local, national and regional scales

R-4.1.2
I suggest that special reports could be produced for a period of two cycles, so as to take public opinion into account in the opportunity and the usefulness of such reports. It will be important that such special reports could focus on energy consumption and sustainable development, poverty alleviation.

R-4.1.4
I agree totally with this idea and I will wish to take part in this initiative

R-5.1
I don't agree. There is no regional balance in the structure of the Bureau, since English Speaking Countries and the donors are more numerous than French speaking countries and the poors

R-5.1.1
Not only on economic issues, but also on socio-anthropological ones, for adaptation and mitigation are matters of sociological and anthropological context

R-5.1.4
I agree totally. Travel and DSA costs could be dealt with the participants without the intermediation of a local UNDP office. But the IPCC or WMO secretariat should be more reactive, instead of waiting for the last days before transferring fund to participants, as it occurred during our last meeting in Brussels.

Mike MacCracken (this time round, WG 2 review editor for chapter 14)

As a review editor for IPCC WG 2 during this go around (and having been involved in all of the major assessments in one way or another), I'd like to offer a suggestion that will hopefully make the effort a bit easier while also making the information more available and helpful to the public. There are three problems that prompt the suggestion:

1. The page limits for at least the regional chapters in IPCC WG 2 this go round were so tight as to really impact the presentation of the available material, especially given that the IPCC regions are so large. Impacts start at the small scale, and so there is lots of material available and a huge amount more coming in the future. While it is important to ultimately have an overview of the information and a few synthesized highlights and key messages, not in some way presenting the diversity of material that is available and not having information more specific for specific regions seems to me to really limit the usefulness of what the authors have to go through to get to their conclusions.

2. To keep reports of limited length, one of the guidelines is to only highlight the most important findings from earlier assessments and to focus on new materials. Basically, this is based on the assumption that readers will have available earlier assessments and will go back and read through them to get explanations about the basis for the findings, to look into questions they might have that are now so accepted they are not covered again, etc. With the issue now fanning out to well beyond the experts in the field, I think this assumption of knowledgeable readers is inadequate, and we should basically have things set up so that a new reader can get access to all previous information. And this should apply for all WGs.

3. Too much time is being spent on the effort to summarize the literature in a condensed way, and too little time on overall synthesis and evaluation, looking at linkages and for risks and thresholds, in probing areas and ensuring overall consistency of the findings and chapters, etc. We need to find a way to shift the focus of the time together to synthesis and linkages, etc.

Another reason to prompt the suggestion is that there is an increasing tendency for materials to be on the Web and linked to broader sets of materials--we should be keeping this trend in mind given the types of developments likely to occur over the coming years to decades.

So, my suggestion is for each chapter to have an authoritative Web site that is organized based on an outline prepared by the chapter authors. This round, number of the modeling chapters had additional figures available, but I'd like to see the site have a good deal more than this. A key feature of the site would be that it would provide easy access to the integrated set of materials across previous assessments (and perhaps special reports, etc.), and to, as needed, an even broader set of materials that provides more detail (e.g., other regional assessments, review articles, etc.). In the past there have sometimes been problems that articles which are referenced are not easily accessible to the average reader (one might have to pay a journal or something for access)--this is slowly changing, at least in some fields, so that free access is available after some time, and in the future, hopefully, we'll find ways for all articles to be accessible. Also, in many cases (e.g., descriptions of impacts in various regions), reports are not always in the main literature, but appear as gray literature reports, etc.--using the authors as filters, access to such reports should be provided, etc. For the Web site, we should be working to provide access for the wide variety of readers (resource managers, planners, industry and environmental and public interest groups, etc.). We'd still keep the actual chapter conclusions high level, but with lots more information.

So, for example, I'd like to see:

A. In WG 1, there are often questions about possible problems about the surface station network. The ways in which potential problems have been addressed is covered much more in some of the earlier assessment reports than in the recent one, so the Web site would have excerpted text from previous assessments about this point to help expand the coverage of that point 9we should not force the new people who come to IPCC to search through all the past reports to understand this issue). One could also point to other authoritative articles on the subject (probably referenced in the earlier reports, and then updates of similar authoritativeness).

B. In WG II, I was review editor for the North America chapter. We are a pretty diverse content, though so are the others: Asia, Africa, and so one. Just providing information on a region as one line in a table or as part of a region-wide figure is just not enough--not really useful for the risk manager. For regional chapters, there needs to be much more information--indeed, the authors could oversee an effort to assemble all the various literature for a region in a Web site,

having at least the article abstract readily available. Much of this literature is currently being reviewed by the authors, leading to reference lists that contain many hundreds of articles--but everything gets condensed down to a citation or a phrase. Perhaps some remember the Second Assessment, where the WG 2 materials were organized by sectors, and then the official audience for the reports asked for a special report that was organized by region (I had urged Bob Watson to have the technical summary of the SAR do this type of crosscut, but it did not really happen, so the team had to do a whole special report). While the current assessments do now have regional chapters, they are necessarily very high level--readers want to know what is going to happen to them where they are, not what is going to happen to Asia or Africa, for example, as a whole. Much more detail is needed. Ideally, each region (or even subregions) would be doing their own assessments, as the Arctic did, but in lieu of this, it seems to me that, using an approved outline, having an on-going Web site for each region (and more generally for each chapter) that provides organized access to the literature would be very helpful to everyone--author, governments, resource managers, the public, etc.

C. For WG III, with all the various types of policy, regulatory, and technological approach, having a Web site that provides lots more detail than is possible in the present chapters would be very helpful—giving examples of what is working, etc.

There could be lots more examples--I hope this has given a sense of what I think is needed.

As to how this would affect the overall effort,, I would hope that this would make it easier to prepare the chapters--the detailed materials would be organized and available and accessible to others. The main effort could then be focusing on the synthesis effort to get at key issues and points. This past time it seemed to me that the early drafts were doing on paper what I would put on the Web site, leading to original drafts of chapters that were, in the case of WG 2 at least, several times too long and with little synthesis, leading to much time being focused on condensation rather than on synthesis, which happened mainly at the last part of the last day as efforts were made to draft the Technical Summary. I would want the Web site to be the place for the assembly of information, and for this to happen over a few year period, even be continuous (so it will take some dedicated staff--a new expanse).

Then, the actual IPCC meetings could focus on synthesis relating to the particular topic and, even more, synthesis across topics. Right now, for example, there is precious little in the WG 2 report about how impacts in one region will affect other regions and how impacts on one sector will affect others. So, how will global trade and commerce be affected, how does climate change play versus sustainability (as others has mentioned, I agree this needs to be more directly addressed), how are mitigation and adaptation coupled (not just theoretically, but at subregional, national and even subnational scales), and so on.

While it will take some effort and funding, I think IPCC would thus be more effective and more able to generate penetrating insights if it would utilize Web sites to organize and present the summary of information (so, for example, each type of health effect and disease can be listed instead of having to generalize so much to meet page limits). I would not go so far as to suggest that all that is then generated are the technical summaries, the SPMs, and the synthesis report, but I would hope that the content of those could be much more the focus of the efforts--and in doing this, I think IPCC would be, overall providing a much richer source of information for the public and decision-makers, who are increasingly looking to the Web for guidance.

Mikiko Kainuma

1) The issue of a comprehensive assessment during each cycle vs. special reports on a regular basis and a comprehensive assessment every two cycles.

I recommend that a comprehensive assessment follows the usual 5-6 years cycle. Someone may expect the comprehensive assessment in the shorter period, but the assessment needs at least 5 year to keep a good quality. 10-12 years seems too long to provide adequate signals.

Now we know the climate change caused by the anthropogenic interference, we need to focus more on strategies to reduce GHG emissions. A special report can provide information on countermeasures, but still it is very important to have a comprehensive report that provide basic scientific information and cross-cutting issues.

2) Two vice chairs

It is recommended that IPCC has two Vice Chairs. Now IPCC has more works including a comprehensive assessment, special reports, handling of cross-cutting issues such as integrates scenarios, and outreach activities, two vice chairs would enhance the effectiveness of IPCC. Vice chairs could have responsibility on special reports and task forces.

3) Specification of IPCC works

Although it is expected IPCC would produce reports on every important climate change issues, it is very difficult to address all. The tasks should be carefully chosen to produce reports with good quality. IPCC has three working groups. It becomes more important to have interaction among working groups, especially between WG II and III.

4) Climate change and sustainable development

Sustainable development is a key to promote climate change policies.

5) Participation of developing and economy-in-transition

IPCC will provide opportunities of capacity building of researchers of developing and economy-in-transition.

Mitsutsune Yamaguchi - LA of TAR (Chapter 6) and AR4 (Chapter 1)

1. I fully support the idea to focus more on the relationship between climate change and sustainable development, especially on the need to place much greater importance on the economic aspects of climate change with this respect I have the following points;

Firstly, as long as economic aspects are taken into consideration, efficient allocation of the global resources should be one of the main subjects. This means efficient resource allocation among sustainable development (which includes climate change) and other urgent subjects adopted by the United Nations as the Millenium Development Goals.

Secondly, adaptation, not only mitigation, aspects should also taken into account in discussing economic aspects of climate change. This is the issue of resource allocation between mitigation and adaptation.

Thirdly, I do not think it is a good idea to cite Stern Review, because the issue of "economics of Climate Change" has been continuously taken up by several economists, such as William Nordhaus since 1990. Another reason is that the Stern Review is, to some extent, a controversial one among economists.

I should appreciate it if the draft proposal would be revised taking the above points into consideration.

2. With the above respect, I support to issue a technical paper on economics of climate change with special emphasis on sustainable development, which would take into account the externalities. As I think current comprehensive reports are quite useful, I support the proposed idea to continue to issue them every 5-6 years and publish special report or technical report in the early years of the terms of Bureau.

3. I also support the idea that at least one Vice Chair in two working groups should have substantial expertise on economic issue.

Finally, I am glad to see that people, including global leaders, have growing interests on IPCC reports. This means, however, that IPCC should be very careful in writing reports in policy relevant way and never be policy prescriptive way. This applies to the addresses (or even press conference) of the Chairman when he makes various comments. For example if the Chairman recommend to introduce some particular policies (ex. economic instruments) to the country that, somehow, does not do them, it may be understood quite often that IPCC asked the country to change their policies.

Mostafa Jafari - LA AR4 (WGII, Chapter 10 Asia)

With many thanks to all of you and IPCC working groups, here I briefly mention few recommendations and response to the some issues related to the future of the IPCC:

1- Even though in AR4, WGII has well done his job, but in my understanding Working Group II could split in two groups or in two sub-groups (reference to paragraphs 2-4-2 and 3-1-3). The importance of social and economic of human dimension is the reason of this recommendation. The number of the Bureau should be adjusted according to the new structure (reference to the paragraph 5-1-1). The topics could be as follow:

I- Assesses the scientific, technical, and environmental of the impacts of climate change, the vulnerability of various natural systems to these impacts and adaptation to climate change.
II- Assesses the scientific, technical, economic and social aspects of the impacts of climate change, the vulnerability of various human systems to these impacts and adaptation to climate change.

2- I think it is better to prepare a Synthesis Report on the regional bases, like synthesis report for Asia and others (reference to paragraphs 2-5 and 4-1-5).

3- We faced with serious lack of information in Central Asia and Middle East. IPCC could arrange regional task force for tackle the issue. Regional meeting for considering Water & Climate Change in Middle East and Policy measure and capacity building could be considered as one of the IPCC' actions (reference to the paragraph 3-2).

4- Before preparation of AR5, in a 1-2 years period, assessment of Adaptation and Mitigation actions should be focused on regional and national bases (reference to the paragraph 4-1-2).

5- Surely further strengthening of the IPCC Secretariat is required. But it seems to be find synergetic mechanism for using available and already exist potential in UN organization such FAO, UNEP, UNDP, WMO UNIDO UNFF and others for facilitating in using including technical assistance (reference to the paragraph 5-1-3).

6- All primary suggestions made through this work should be circulated among CLA, LA and others, then conclusions would be considered in a meeting.

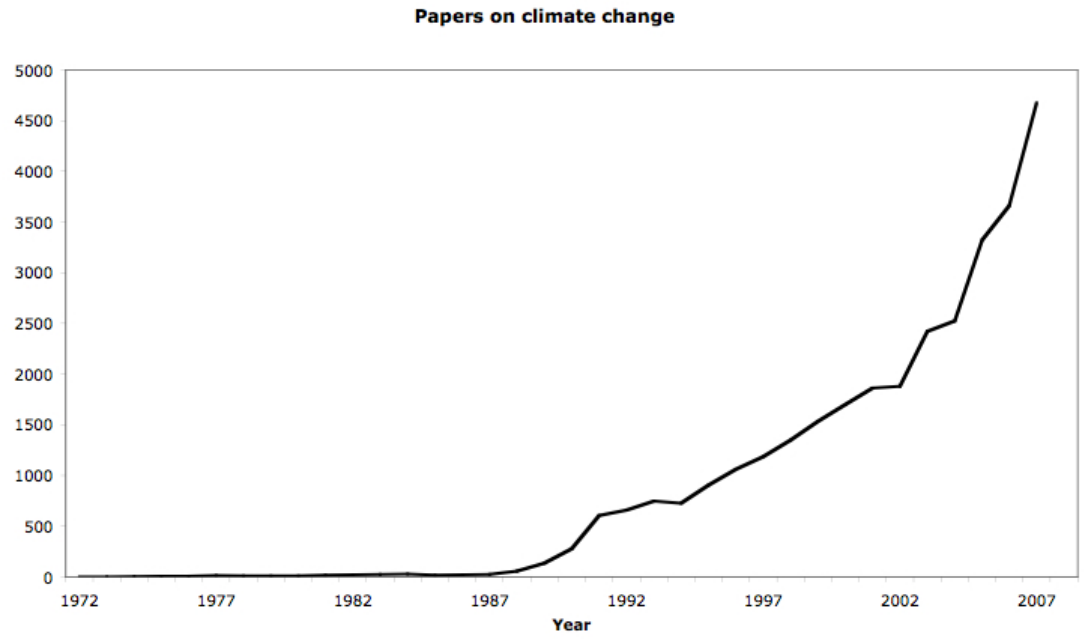
Neville Nicholls - AR4 LA WGI, and SYR Core Writing Team

I wish to comment on the issue of the desirability of comprehensive assessments versus special reports.

For two reasons I believe that it will be physically impracticable to prepare comprehensive assessments on climate change in the future, and suggest that a different approach be used in which a number (10-20) of high interest sub-topics are identified and smallish teams (10-20 people) are selected to write assessments on these topics. A Synthesis Report would collate and merge the results of these special assessments.

Reason 1: The exponential increase in climate change publications.

The figure below shows the number of papers published in the refereed literature (Web of Science) for each year since 1972. I prepared this by searching for all papers with one of the terms “global warming”, “greenhouse effect” or “climate change” as a topic. In 1972 only a single paper on this topic was published (by John Sawyer in Nature – this was a four-page assessment of what was known about the link between carbon dioxide and climate change). In 2007, 4675 papers on this topic were published in the peer-reviewed literature.



I have extrapolated the exponential rate of increase since 1992, to project the numbers of papers likely to be published in 2007-2011. The number is likely to be more than 30,000. This is a factor of ten greater than the literature that had to be assessed for the SAR. It seems to me that such an enormous quantity of work means that it will be physically impossible for the IPCC to prepare a quality, comprehensive assessment of the entire field of climate change research.

One (only one of many) obvious problem such a large literature causes is that it will be very easy for a critical paper to be overlooked.

Reason 2: Increasing number of reviewer comments

The IPCC "open" review procedure whereby any person who maintains that she/he is an "expert" can provide comments, and the requirement that IPCC authors respond in writing to all comments, means that the review process in a future comprehensive assessment will be physically overwhelming. During the AR4 and subsequently, many more people have become aware of the "open" nature of IPCC review procedure, and we can expect a substantial increase in the number of comments on any future comprehensive assessment. I believe that WGI dealt with over 30,000 comments in the AR4. The next comprehensive assessment can be expected to receive many more comments (perhaps a factor of ten more?), and adequately responding to these will constitute an unreasonable demand on the (unpaid) IPCC authors.

Proposal: Focussed special reports, plus a brief Synthesis Report collating these.

Not all climate change science needs to be reassessed every five years. However, there are topics of current interest amongst scientists and policymakers. To note just a couple:

- Tropical cyclones and climate change.
- The El Niño – Southern Oscillation and climate change.

There is sufficient interest at policymaker level in these topics (and other topics), to justify an assessment in the next IPCC "cycle", ie in about five years from now. Such specific assessments would be more manageable for small teams to assess the relevant literature, and would attract substantially fewer review comments. I would suggest that the IPCC could identify 10-20 such topics, and select teams of 10-20 persons to prepare assessments of these specific topics. Some, perhaps most, topics would overlap between traditional divides between the Working Groups.

Selection of specific topics for focussed assessment means that a smaller literature would need to be assessed, and would decrease the likelihood of a massive increase in review comments. Careful identification of the specific topics would also minimise likely overlap and duplication between author teams (a consistent problem for IPCC comprehensive assessments), facilitating the preparation of the focussed assessments. The preparation of such focussed assessments, then, would be a less demanding task for authors than would be a comprehensive assessment.

Although these assessments on specific topics would be useful in their own right, because they would focus on topics of high interest and importance, they could be combined in a Synthesis Report that would collate the important results and projections from each specific report, and identify overarching issues and problems, as well as providing a "road map" for work required in the following IPCC 'cycle".

Nováky Béla - CLA Chapter 12 (Europe), AR4

Ad 3) Drivers of required change in the future

I agree that one of the drivers required change in the future is a much greater interest in the sustainable development, as it is formulated in SPM of WGII "the sustainable development can reduce the vulnerability to climate change". To link two questions of climate change impact assessment and the projection of sustainable development is highly necessary. At the same time the simultaneous study of climate change impact and sustainable development requires to use more complex models including all climatic and non climatic drivers, biotic and non biotic factors, direct and indirect consequences of climate change and accepted measures. Development of similar complex models and also their wide ranging, more reliable calibration and verification are a very important task in the future which would have a high priority.

Ad 4) Future outputs of the IPCC

In the IPCC reports more attention must be paid to the questions of the implementation of climate impact assessments. More good and explanatory examples from the past are required to present how the climate impact assessment may/can be taken into the consideration in the formulation of future strategic policy for different climate-sensitivity sectors, especially in the everyday planning/designing processes.

Oleg Anisimov

My view on the prospects of IPCC are stemming from my personal experience. I was involved in four assessment reports, in the capacity of CLA in AR-III and AR-IV, and contributing to AR-I and AR-II. I also served as a core

writing team member in Special report on biodiversity. To be concise I will limit my comments on the issue of comprehensive assessment vs. special report, and on the practices in the functioning of the Panel.

My ultimate opinion is that only the full-scale comprehensive assessment reports are the documents that fully address the goals of the Panel. They do attract the public opinion, they are discussed in the media, they deliver the key messages to policymakers through their Summaries. After all, in their entirety the volumes that we produce are important scientific and HISTORICAL depositories. They reflect the evolution of climatology from being a relatively small part of physical geography to one of the most comprehensive environmental sciences that addresses the issues of physical, biological, economical, social, and political life. In this capacity the full assessment reports have the separate stand-alone value.

In my view it is important to maintain the tradition of bringing together the world-recognized experts to get insight into the future using the best of our up-to-date scientific knowledge. The full scale reports provide kind of the "ground truth" historical record. Even within the relatively short time span of 20 years (since the first IPCC report), some of the concerns that seemed to be of major importance now became marginal compared to other stronger factors that govern the climate change. I may give an example of the effect of sulfate aerosols on climate, which was obviously overestimated in the AR-2. Similar problem exists in AR-4, since many of the positive consequences of changing climate have not been mentioned. The effective mitigation and adaptation should by based on such knowledge since regions and sector that are "winners" may share the resources with those, where impacts will be negative. I am sure this issue has to be given much more attention in the next assessment report, and the findings will have important implications in global economy and policymaking.

Special reports do not possess most of these properties. They are not visible, often are read by very limited number of people. In my view these are technical documents that do not have any serious outreach and they have to be produced on demand.

Another important consideration in favor of the full assessment reports being produced at every cycle is the Nobel Peace Prize. This year we were given a serious public credit, and my understanding is that rather than being the acknowledgement of our preceding work this is the appreciation of the ongoing assessments. We do not have a right to take a break at this moment.

The issue of credibility that I touched brings me to the next section of my letter that is devoted to the practices in the functioning of the Panel.

We are very visible, which is why we have to be careful in our practices making sure it is in accord with our status of a credible group of scientists. Regretfully, some problems evolve progressively in the last years. The key point is that the life style of a scientist presumes certain living standards that are reasonably good, but by no means compatible in any sense with the lifestyle and standards of the top business people or policymakers, whom we often address our work. And here I see the need for immediate attention. I will give one example.

In November 2006 we had the SPM meeting of WG-2. The meeting was organized in one of the worlds-most expensive places – relatively small and fancy hotel in Surrey, the UK. Everything, -pronounced luxury of the private environment, the room prices, proximity to the Royal residence, indicated that this is not a right place to organize the meeting of IPCC experts! I expressed my concern writing to the IPCC Secretariat and to the TSU, who have chosen this place, but it was left without attention. Our meeting took place in this hotel, and we ended up discussing one of the WG-2 favorite topics, "The risk of hunger", during the lunch that costs 18 UK pounds per person! On a minor note, this everyday lunch was part of a hotel package; the menu and price were not negotiable. It was a shame of IPCC, which does not have any excuse in my mind. We would never pass "The Sun" test in the UK, should there be any leakage of this information, and our credibility would have been lost forever. I talked with some of my colleagues during this meeting, and their position surprised me. Many of them agreed with me that this is not how scientist live, and also not how the taxpayers, who ultimately take all the bills, think the scientist who drive them into the future should live. However, people are weak, they can not resist such offers, if someone pays for it.

My only form of protest at that time was to decline the "luxury" package, to get a room in "B&B" in the small town nearby and to have a nice 45 minute walk every morning to this isolated place. Now when we discuss the future of IPCC I want to revisit this issue. We have to discontinue this practice. If we go further this way, next time there will be limousines surrounded by body guards that bring IPCC experts and senior officials to the meeting place… This is the way to nowhere, we should not replicate the lifestyles of some ambitious business people and politicians.

I fully support the practice of IPCC meetings being held in different regions of the world, I see good rationale for it. However, we have to scale the standards of these meetings to the level that is appropriate for the scientists. This is a must, otherwise our credibility will occasionally be gone forever. We will never be heard if we direct people how to fight hunger while enjoying 18 UK pound lunch.

There are other specific comments on the practices in the functioning of the Panel that may be discussed. These include the responsibilities of technical bodies, like Secretariat and TSU; improvement of the procedures at the meetings that would encourage experts from different countries, particularly from developing and non-English speaking, to express their opinion, and many more. These may be discussed further under appropriate circumstances.

Patrick Gonzalez - LA

I will address below the issue of comprehensive assessments vs. special reports, address other IPCC issues, and conclude with details of my service as an IPCC lead author.

1. Comprehensive assessment report

1.1. Development and publication of a periodic comprehensive assessment report builds the strongest scientific foundation that IPCC can provide to global action on climate change. I agree with the IPCC Chairman that IPCC should maintain its core scientific product of an assessment report and maintain the 5-6 year frequency of publication. This would place the IPCC Fifth Assessment Report in 2013.

1.2. The advantages of a unified comprehensive assessment report include the application of uniform methods (especially the treatment of uncertainty) across sectors and geographic areas, cross-analysis of the same analytical results among working groups, treatment of cross-cutting issues such as sustainable development from different perspectives, and the credibility created by the great weight of evidence accumulated only in a comprehensive assessment. A series of special reports cannot match those advantages. The IPCC can learn from the negative example of the United States climate change program. In 2001, the U.S. Global Change Research Program had produced a unified national assessment that provided a unified, comprehensive, substantial scientific basis for national policies. In contrast, the current U.S. Administration, which has been hostile to taking action on climate change, replaced the national assessment format with a series of 21 small special reports, with the specific intention of diluting any impact of the scientific findings. It would be a mistake for the IPCC to take a similar route.

1.3 The scientific stature of the assessment reports drives much of the climate change scientific research agenda, as scientists plan to publish findings specifically for use in the IPCC assessment reports.

1.4 Efforts by the Third and Fourth Assessment teams have generally succeeded in avoiding assessments of excessive length. The Summaries for Policymakers and the Technical Summaries provide concise information for the media and the public.

1.5 If the IPCC needs to find ways to economize funds or time, it could consider discontinuing the Synthesis Report. The Synthesis Reports have been well-written, but they essentially recapitulate conclusions of the three Working Group reports. By the time the Synthesis Report comes out, users have already found the information that they seek in the Working Group reports. In 2007, the media did not report as much on the Synthesis Report as on the Working Group reports. For these reasons, the benefits of the Synthesis Report may not be worth the large investment of time from the authors.

2. Other IPCC issues

2.1 I agree with the IPCC Chairman on the great value of the work Task Force 1 in producing the IPCC National Greenhouse Gas Inventory Guidelines. Due to the rapidly improving nature of carbon measurement methods, it would be useful for the IPCC to increase the frequency of publication of the guidelines from 10 to 6 years, matching the frequency of the assessment reports. This would place the next IPCC Guidelines in 2012.

2.2 IPCC assessments need to conduct more extensive and detailed analysis of sustainable development issues. IPCC could produce information in this area with high impact since numerous countries are seeking ways to engage in development that does not cause negative climatic impacts.

2.3 IPCC has made great efforts to increase the analysis of impacts, vulnerability, and adaptation in Africa, Asia, and Latin America. These efforts are worth strengthening.

2.4 An IPCC Special Report on Climate Change and Desertification would address the important scientific and socio-economic relationships between these two global environmental phenomena. Such a Special Report would also assist in implementation of two Rio Conventions, the U.N. Framework Convention on Climate Change and the U.N. Convention to Combat Desertification.

2.5 The production and Internet posting of all IPCC reports as pdf files increases the diffusion and use of IPCC work. The IPCC should continue to produce and post pdf files.

3. Patrick Gonzalez service as IPCC lead author:

3.1 IPCC Third Assessment Report 2001:

Desanker, P., C. Magadza, A. Allali, C. Basalirwa, M. Boko, G. Dieudonne, T.E. Downing, P.O. Dube, A. Githeko, M. Githendu, P. Gonzalez, D. Gwary, B. Jallow, J. Nwafor, and R. Scholes. 2001. Africa. In Intergovernmental Panel on Climate Change. Climate Change 2001: Impacts, Adaptation, and Vulnerability. Cambridge University Press, Cambridge, UK.

3.2 IPCC National Greenhouse Gas Inventory Guidelines 2006:
Aalde, H., P. Gonzalez, M. Gytarsky, T. Krug, W. Kurz, S. Ogle, J. Raison, D. Schoene, and N.H. Ravindranath. 2006. Forest Land. In Intergovernmental Panel on Climate Change. National Greenhouse Gas Inventory Guidelines. Institute for Global Environmental Strategies, Hayama, Japan.

Aalde, H., P. Gonzalez, M. Gytarsky, T. Krug, W.A. Kurz, R. Lasco, D.L. Martino, B.G. McConkey, S.M. Ogle, K. Paustian, J. Raison, N.H. Ravindranath, D. Schoene, P. Smith, Z. Somogyi, A. van Amstel, and L. Verchot. 2006. Generic methods applicable to multiple land use categories. In Intergovernmental Panel on Climate Change. National Greenhouse Gas Inventory Guidelines. Institute for Global Environmental Strategies, Hayama, Japan.

Peter Stott - LA AR4 and a member of the CWT of the AR4 SYR.

I have one concern about the paper from the Chairman in terms of its balance. I think it important that this Paper should reflect the needs of the AR5 and I think a key requirement of such a report is an improved assessment of the Physical Science Basis at regional scales.

I would highlight 3 key questions AR5 should be tackling. These are :

Is climate change accelerating? [Monitoring and attribution activities to assess observed changes in climate]

What emissions cuts are required to reduce the risk of particular impacts below specified levels? [Link observationally constrained estimates of future rates of regional climate change with risks of impacts and infer corresponding emissions, with uncertainties]

What are the likely rates of regional climate change over the coming decades to which societies around the world will have to adapt ?
[Probabilistic regional climate change predictions integrated with climate impacts assessments]

Given these three key questions, it seems to me that the Chairman's paper does not make the case as clearly as it could be of the increased importance of the WGI physical science assessment for AR5. Without such a statement, the emphasis given to drivers of required change in section 3 risks leaving an unbalanced impression.

Section 3 discusses the need for greater policy relevance, for more on sustainable development, for more on economic aspects and for more on regional aspects, where the discussion in 3.2 focuses on impacts. 3.1.1 could perhaps be mis-interpreted to imply that the WGI work is done while 3.2, by focusing on impacts, seems to miss an obvious opportunity to stress the need for an improved WGI assessment in 5 or 6 years time of the understanding of the regional aspects of climate change.

The 3 questions I highlighted as being key questions AR5 needs to tackle will all require a considerably enhanced physical science assessment for AR5. In addition the WGI information will need to be well integrated with climate impacts assessments. I think therefore we should not overlook that there is a strong case for a comprehensive physical science assessment for AR5. I worry there is a risk that some might think that this aspect is less important than it has been in the past, and I would hope the paper would therefore make explicit why this is not the case.

Petra Doell - FAR WGII

I am in favour of a comprehensive assessment every two cycles and special reports on a regular basis.

Philip M. Fearnside - RE, WG II, Chapter 13 – Latin America

The opportunity to adjust the course of future IPCC efforts is welcome and timely. The following observations on the draft chairman's statement on the future of the IPCC may be helpful.

Section 4.1.2 is worrisome in raising the possibility that the interval between assessment reports may become longer (i.e., 10-12 years). What is needed is a shorter rather than a longer interval. An AR5 will obviously be needed, the question is when. The capacity of the IPCC administration should be increased such that an AR5 can be produced simultaneously with various efforts for task forces and special reports.

The possible subjects for special reports mentioned in the draft proposal are all "add-ons" to the AR4, giving additional information on the significance of the AR4 for subjects such as economics and renewable energy. They do not affect the core of the AR4s information on the climate system, such as projected temperatures for the next century, expected rates of sea-level rise, etc. A report is needed as quickly as possible on these core aspects with more recent literature than that covered in the AR4. Given the long period required for a full assessment report, a task force or special report might be appropriate first. A rather large number of significant observations and modeling advances have been made since the cut-off date for the AR4, including those that affect biotic feedbacks, ice movement and sea-level rise.

The model runs used in the AR4, involving different GCMs, were done without the biotic feedbacks, even for the models that had the capability for including these at the time of the assessment. This allowed a large number of models (around 20) to be compared, and their results averaged for the projections used for the bulk of the AR4's conclusions. The omitted feedbacks, such as the greenhouse release from forest and soil if substantial areas of Amazonian forest were to be replaced by savanna, can make a substantial difference in the conclusions reached. For example, in the case of the published results of the Hadley Center model (i.e., the most catastrophic one with regard to tropical forests), the average global temperature in 2100 is 38% higher if the biotic feedbacks are included under business-as-usual assumptions. The need for an update of the core information on model results for temperature, sea-level rise, etc. is apparent and should not wait for a full assessment report, regardless of the cycle length adopted. This is particularly urgent given the negotiations in progress regarding Article 2 of the UNFCCC in defining "dangerous" levels of GHGs.

Philippe Crabbé - LA, WG III, 3rd (c.5) and 4rth AR (c.1)

- The capacity building dimension in terms of research and research funding attraction seems to me to go beyond IPCC's mandate, as evaluator of published research (p. 1, before last par.).
- I certainly agree that public perceptions and knowledge related to climate policies requires further understanding (par. 3.1.1). This seems to be especially true for WG II and III. It seems to me that some journalists have a good grasp of WG I issues because scientific journals like **Nature** and **Science** do an outstanding job in terms of communication and because some journalists have special training (science communication) in the natural sciences. Moreover, the flow of scientific information is relatively continuous. This is not the case for socio-economic issues including risk perceptions. In Canada, journalists were completely baffled – if I rely on the questions asked - after a public presentation of AR4 WG III results. This is also why the former are able to publish all kinds of scaremongering statements about economic impacts of climate policies. So communication of socio-economic results and rebuttal of the perception that climate action is necessarily economically devastating should be a priority. There seems to be little evidence that journalists who write in the business pages of newspapers are abreast of the academic literature. No socio-economic academic journal seems to have been successful at communication to a large public. The closest in Economics is the **Journal of Economic Perspectives**, which does not publish press releases as far as I know. I never saw a newspaper article referring to it! The **New-York Review of Books** also contains very good review articles of an economic nature. This is an initiative that IPCC could contemplate.
- Focus on sustainable development is certainly required (par. 3.1.2). The problem with sustainable development is that it is often considered as a politically charged subject rather than as an academically respectable subject (certainly in Economics) in the sense that no body of consistent theory is attached to it. It is a highly successful pragmatic subject – it was born as a political compromise at a UN preparatory conference in Founès prior to the Stockholm Conference - whose success is more rhetorical than real in terms of accomplishments.

- I could not agree more that much greater importance on the economic aspects of climate change is required (par. 3.1.3). The consensus which has materialized in the natural sciences through the release of AR4 WG I is not perceived to exist in Economics. Like in the Stern Report, one should not separate Adaptation from Mitigation in economic assessments. Few economic studies of climate change impacts exist. They are needed in order to assess the cost of required and of planned adaptation.
- A special report which would be a compendium of the policy measures adopted worldwide, their success or failure, and their economic impacts (if known) would be most welcome.

Poh Poh Wong - CLA, WGII, Chapter 6 (Coasts and low-lying areas)

1. A review of the past

I do not foresee any major change to the current structure, processes and practices of IPCC which have worked well and covered by the principles. I would suggest an improvement to one operational aspect – the selection process of authors which itself is a sensitive issue. Based on my interaction with other CLAs, independent feedback from CLAs on the poor performance of LAs at meetings, due to their language problem or very narrow geographical/sectoral knowledge, would be useful in future selection rounds. Such authors can still be useful contributing authors.

2. Do we need any change?
IPCC needs to change in the face of increasing challenges in future. The change is basically in response to the post-Kyoto Protocol and different subsequent needs. Without involving much structural change to the WGs, IPCC should still be able to carry out the assessment work AND additional work (smaller groups from one or more existing WGs plus additional members, if necessary).

In the post-Kyoto Protocol, there would be less urgency to update the climate change impacts and vulnerabilities (as already known in AR4), but more on adaptation measures and emission reduction. Special reports on a regular basis on speeding up adaptation and reducing emissions would be more relevant. Reports on a wide range of topics dealing with application of adaptation measures and affordable mitigation technologies would be most welcomed by developing countries.

Also, given that the AR4 is utilized for the post-Kyoto Protocol, the next assessment should be conducted after the post-Kyoto Protocol comes into operation in 2012. Thus, 2017 would be a suitable target date for AR5.

3. Drivers of required change in the future
Some countries have difficulties in relating the scientific results to their climate change policies and measures due to the problem of geographical scale or lack of data. In particular, some small countries do not seem to be able to relate these well enough and demand more detailed studies.

The economics of climate change would probably be the most important driver behind the policy relevant changes. Many governments, agencies and the private sector are now asking what are the costs of climate change impacts. Although there are studies to show costs of adaptation and mitigation outweigh costs of inaction, better knowledge is required on the range of the costs or relative costs in various sectors for an typical developing country; how the costs can vary or decrease appreciably depending on adaptation measures to be taken first (priority); what useful "coefficients" or rules of thumb in costs can be used for various sectors, e.g. agriculture, small-scale farming, water supply, rural health, etc. Definitely, a lot can be done in this area, even starting with some ballpark numbers.

Although sustainable development is sometimes a misunderstood concept, IPCC needs to show clearly what it means in terms of climate change adaptation. More concrete and workable examples are required for governments, various sectors and the average man to see that adaptation measures can also lead to sustainable development.

For regional aspects of climate change, downscaling work is likely to be continued in the developed countries but this should not involve costs to developing countries. Such work does not provide the necessary answers to local climate change adaptation (e.g. downscaling to 1 km by Tyndall Centre would not be possible for at least a decade). As such, more efforts should be given to specific projects that deal directly with climate change adaptation and the lack of climatic data should not stop adaptation measures.

4. Future outputs of the IPCC
Of various suggestions for more special reports by IPCC, I would comment on the need for including natural hazards within climate change adaptation. My work on tsunami-impacted coasts shows that it is necessary to consider climate change adaptation with disaster risk reduction within a new sustainability framework. The coastal communities of

countries around and the islands, especially, in the Pacific and Indian Oceans should consider these. A new sustainable CZM framework should be developed that includes local examples, existing measures, future measures, etc.

I would suggest that the Nobel Prize award be used for research grants on adaptation within the new sustainability framework. Grants should not be large but many to generate new and workable ideas on adaptation and mitigation measures for developing countries.

If we expect climate change adaptation to work, we have to be realistic and acknowledge that our present and modern way of life has to be modified in such a way that we continue to emit lesser GHGs in our daily life and work and within the various economic sectors. We need hundreds and maybe, thousands, of such practices/projects to demonstrate how we can achieve it – ranging from knowing traditional ecological knowledge to new and sometimes untested small-scale measures, e.g. ecological engineering. Larger programmes on removing carbon, e.g. CCS, CDM, etc, can still operate on existing climate change funds.

5. Organizational issues relating to the functioning of the next Bureau
I would put more emphasis on the IPCC outreach programme, especially if the assessment is to be carried out over a 10-year cycle. The existing AR4 has benefited from the publicity generated by the Nobel Prize award. Increased attention has to be given to outreach efforts. Continuous and increased propagation of future IPCC results at every level is important so that the messages do not end with the publication of the reports (we may not have another prize to boost the publicity).

6. Next steps

6.2.1
This is a crucial decision. This major change seems to be very much driven by the post-Kyoto Protocol agreement. In the post-Kyoto Protocol, there would be less urgency to know about the climate change impacts and vulnerabilities but more urgency on adaptation and emission. Special reports on a regular basis on speeding up adaptation and reducing emissions would be more relevant. Also, other natural hazards should also be considered in climate change adaptation within a new framework of sustainability science.

6.2.2
Whatever has been said about the structure of the IPCC and the processes and practices and having experienced two rounds of writing, I am in favour of retaining its existing structure. Two points are likely to come up in future assessments – one, increasing the number of representatives from developing countries as more qualified candidates are available; two, increased attention to be paid to future outreach efforts in which AR4 has benefited from the Nobel Prize award. Continuous and increased propagation of IPCC work is important so that the messages do not end with the publication of its reports.

Rais Akhtar

We should call, future directions of the IPCC Future of course is bright, and with the award of Nobel Peace Prize, the whole world realized the significance of the work this UN institution is involved in. In general I consider the document circulated by The Chair, very impotant with useful suggestion. I have few points to make in this regard: Selection of Scientists: The selection of scientists for the IPCC, must not be left to each government, particularly in developing countries, but an independent group of Scientists be formed to select LAs and CLAs for various chapters. This would help minimize impact of political agenda in scientific conclusion. Literature Review: Besides peer reviewed literature, other scientific publications, Government reports, university publication particularly on regional studies pertaining to adaptation and mitigation be also considered for inclusion in the assessment. In the FIFTH ASSESSMENT REPORT, in Working Group II which assesses adaptation to climate change should include chapter on Metropolises, and a regional Chapter on Tropical Region, similar to Polar Region. Tropical Region is important as it consists most population belonging to low and middle income groups. Mitigation: Low and middle income countries be supported by UN Agencies financially to adopt and implement strategies towards mitigation.2.3 Bureau must not only consists members from low and middle income countries but with balanced geographical distribution.3.2 Regional Studies: I agree that there is need to conduct regional studies, and similar to AIACC,IPCC must involve scientists in conducting regional studies on climate change to fill the data gaps.4.1.1 As I stated, IPCC has been doing great work, and it should be a continuous process with 5-6 years period. Longer period will be ineffective in the implementation aspect, as well as assessment of mitigation strategies.4.14 I suggest to produce a Technical paper on Climate Change and Cities (with focus on Metropolises).

Ralph E H Sims - LA in the TAR and CLA in AR4 for WG III

My comments are very short:

1) The current system works well on the whole – remarkably so given the "voluntary" nature of much of the work.
2) Social issues have not been covered well in TAR or AR4 – at least by WG III
3) An extreme change could be to merge Adaptation and Mitigation – which tend to overlap more in policy makers' minds – and to perhaps introduce a new WG on the Social dimension – to include behavioural change, political drivers, co-benefits, happiness etc.
4) Finally the recent publication of Energy & Environment 18, (7+8), 2007 is a special issue on THE IPCC: STRUCTURE, PROCESS AND POLITICS (Ed. Benny Peiser) which you are most probably aware of but it gives some useful insights if not.

Reid Miner

Two comments:

1. While there is value in targeted special reports, it would be a mistake to eliminate the regular assessments. The regular assessments force a periodic examination of all aspects of the issue, whether they warrant attention in a special report or not. By enforcing a discipline of regularly revisiting everything, we ensure that important aspects are not ignored just because they have not caught everyone's attention.

2. In Bali, there was recognition that industry has an important role to play in addressing this issue. The efforts made to include industry in the preparation of scientific/technical resource materials for the Fourth Assessment Report were important and should be continued.

Thank you for the opportunity to provide comments on the future of IPCC.

Reto Knutti - TAR WGI contributing author chapter 9, AR4 WGI Lead author chapter 10, contributing author chapter 9,11,TS, SPM

In my view, the current structure if IPCC has served its purpose very well, and AR4 was extremely successful. While discussing possible improvements and changes is certainly appropriate and useful, too many people propose changes to the IPCC process without knowing what it actually means to write the reports, in terms of the amount of work, the time required to coordinate across chapters and working groups, and to incorporate all the comments.

I do think that a few shorter topical special reports would be valuable. However, they would need to be very focused, and would need to occur well before AR5 to be incorporated. Also, these shorter reports cannot replace the full assessment reports. I believe that it is critical to have the full assessments in order to establish a coherent consensus across every aspect of the problem. This requires time and effort, but the success of IPCC is partly based on time, effort and the extremely rigorous review process. There is some danger that the quality of short, topical and faster reports may get compromised by time pressure.

Having the full assessment only every 10 to 12 years does not seem an option to me. If we are saying that emissions should peak in about ten years, and urgent measures are required, then the policymakers will want to know how well we do as we go along. If IPCC does not provide that information, they will take it from some other (maybe less credible) source.

Changes in a established process can result in an improvement, but there is also a danger for mistakes (a simple example being the that WGI decided not to have a sea level chapter in AR4). Failure is not an option for IPCC, given the success in the past, so changes to the process should be made with great care.

Bottom line: the full assessment should be kept every about six years, there is no reason to change it. A few more special reports would be useful for certain very specific topics, but the structure for that is already in place to a large degree.

Rik Leemans

Thanks for sharing Pachauri's IPCC's future document with us. I have read it with interests. The accomplishments of the global assessments such as IPCC and others are important. Indeed, the clear procedures followed by IPCC have improved the scientific credibility and its policy relevance, but also the visibility to broader audiences.

I have been involved in IPCC as contributor, lead and convening lead author in the first, second, third and fourth assessments and in several technical reports. Additionally, I chaired one of the Working Groups of the Millennium Ecosystems Assessment (MA). The latter assessment was instrumental in introducing the relationship between ecosystem services and human well-being to a wider audience, but was less influential than IPCC, primarily because it targeted several UN conventions, NGOs, governments and also the private sector. The strong focus of IPCC created a stronger influence towards the UNFCCC. Recently, I wrote a paper (soon to be published in GEC) comparing the MA and IPCC. The proofs are attached. It described some of the strengths and weaknesses of both processes from my personal experience. My definition of an science assessment is: a scientific assessment applies the judgment of experts to existing knowledge to provide scientifically credible answers to policy-relevant questions. To create such a bridge is extremely important! Therefore comprehensive assessment must also be published in the near future.
<<GEC Leemans.pdf>>
The question is, however, What constitutes a comprehensive assessment? The structure with in-depth topical chapters, with an good and complete bibliography, with a detailed discussion on uncertainties and disciplinary biases and/or inconsistencies, a well-structured executive summary, summarized by a technical summary and the summary for policy makers, is comprehensive to me. But the sheer size of each report reduces the comprehensiveness again. I was very pleased with the TAR's synthesis report approach that focused on the main users questions. This was a real comprehensive synthesis with a lot of added value. The AR4's synthesis was unfortunately just a super-summary and therefore less comprehensive. I understand that that was politically the best possible, but I would urge that future synthesis reports again take a different, more transdisciplinary approach, focusing on the needs for the users. It enhances the comprehensiveness.

For the future of these important assessment processes, I have one major worry. Since I moved to the university form a governmental research institute, I experienced that in these environments is becoming difficult to actually participate in the assessment processes. The research institutes, such as RIVM, are mandated to contribute to these assessments and can allocate budgets and expert time. University employees can get their travel rei9mbursed by their respective governments, but not their time. This is not an incentive to participate. A good assessment requires participation of the best scientists, including those from universities doing some of the cutting-edge research. That will improve the scientific credibility. If the majority of the authors become professional assessors and are less involved in the cutting-edge research, this will reduce credibility on the longer term. IPCC should actively invite contributions from the broadest possible scientific research communities and strongly lobby that their contributors are fully supported by their governments.

The Future document further speaks of capacity building. This is a very particular use of the concept of capacity building: i.e. catalyzing research on basis of the assessments. Indeed individual researchers, national funding agencies and the global change programmes have used the IPCC assessments to motivate their research priorities and this is indeed an important but secondary role of the assessment. When I talk about capacity building, I more strongly think about educating people in either doing assessments (in the MA we actually had to teach the difference between an assessment and a review, see Table 1 GEC paper), or creating the expertise in countries where that expertise is lacking. The MA actually had an effective capacity building component. Several chapters team were supported by a PhD or Post-doc from developing countries. This proved to be very effective. Also several courses were developed to create and use scenario in the regional assessments. IPCC tried to do that earlier by for example, developing guidelines for impact assessment (e.g. Carter, T. R., M. L. Parry, H. Harasawa, and S. Nishioka. 1994. IPCC Technical Guidelines for Assessing Impacts of Climate Change. IPCC Special Report CGER-1015-'94, December 1994, Intergovernmental Panel on Climate Change, WMO and UNEP, Geneva.) These documents are very useful and should also in the future be further promoted. In regions with little published information on, for example, impacts, adaptation and mitigation this could help. Another advancement, where capacity building is urgently needed, could be the addition of sub-global assessments like in the MA. This will also enhance the capacity building. Off course, such assessment should not be done on the systemic parts of the climate system but on those aspects, such as local land and energy use & the resulting emissions, impacts and adaptation. Such assessments could replace the regional chapters and will further inform the global assessments. Adding them will enhance the policy relevance. However, this will also further complicate the timing and coordination of the reports.

In the future I would also like to see a stronger integration between the working groups. Until now each group has delivered a quite separate assessment. Such an integration could become a separate task of the Bureau, like the assessment panel of the MA, which developed a common framework, discussed and resolved emerging inconsistencies between working groups and held contact with the user community. The IPCC treatment of some concepts in the different working groups (e.g. the definition of tropics) and especially the somewhat different approaches to deal with uncertainty was annoying. These inconsistencies should be avoided because they reduce the credibility. The Bureau and the chair should take a much stronger lead here.

Especially the latter, increasing flexibility, is important in my view. In my experience the IPCC outline is too much cast in stone early on in the process and this leaves little room for adding emerging new relevant policy topics. For example, initially the MA-outline was approved in 2001 and in 2002 the Millennium Development Goals (MDGs) were agreed upon. The flexibility of the MA and the efforts of its assessment panel allowed to include an assessment of these MDGs in a separate chapter. Without this specific assessment, the MA would have been much less valuable for the different conventions. With the probably rapidly developing policy discussion, decisions and responses over the coming decade, IPCC should also be able to increase its flexibility, maybe by adding short targeted special reports. The rapid development of new policies also argue not the lengthen the assessment cycle. A comprehensive assessment every 5/6 years seems very adequate.

When the target moves somewhat more towards sustainability, in stead of just climate change, it would be advisable to create a small cross-assessment team and create a short but comprehensive sustainability assessment (e.g. by evaluating progress towards the MDG targets) together with the synthesis authors of other assessments, like the MA. This would create an enormous added value, while minimizing efforts. In my opinion, IPCC should focus on climate change and the treatment of or focus to sustainability can be improved in several chapters of especially WGII and WGIII. Be aware, however, that sustainability is not just an economic issue but PPP. But working together with other assessments and publish a common view will do no harm and strengthen the scientific views.

Rob Swart - former head of TSU WG3 during TAR and LA of WG3 and Synthesis Reports during AR4.

- Comments largely based on thinking in November 2007 Science "Policy Forum": Raes, F and R. Swart, 2007: Climate Assessment: What's Next?, *Science*, vol. 318, pp 1386 (attached)

- With some exceptions, comments and suggestions below are mostly of a general nature, because I believe that the paper is in a stage too early to warrant a discussion on the wording of specific paragraphs.

1. *Consider changes beyond "refinements".* The paper is very timely and welcome, and many of the views expressed coincide with mine, notably the increased emphasis on Special Reports and the importance of regional focus. However, I feel that the paper can be strengthened in several ways. In my view, in several areas changes more fundamental than "refinements" of the status-quo should not be excluded beforehand, both in terms of the structure of the IPCC and of its products.
2. *Take into account shift in policy focus.* My main concern with the paper is that it acknowledges that the world in general and the context of international climate assessments in particular have changed significantly during the 20 years of IPCC's existence, but it does not name or analyze those changes. And thus, it does not derive its recommendations from them. As elaborated in the Science article mentioned above, one important change is the relative shift in international policy focus from the science of the climate system in the early 90s to the impacts, and more recently to the response options, reinforced by the recent shifts in position of important countries such as the United States, Australia, and China.
3. *Facilitate interdisciplinary integrated assessment.* Similarly important is the recognition that many of the current policy questions are not limited to the expertise of any one of the current Working Groups. Examples are questions about the potential and risks of biofuels and other renewable energy sources, the costs and benefits (over time and regions) of strategies aiming at meeting long-term climate goals (related to UNFCCC Article 2), the risks of large-scale singularities, and the role of adaptation in limiting and managing climate change risks. My personal experience as member of the core writing teams of both the TAR and AR4 Synthesis Reports has clearly demonstrated to me that such interdisciplinary questions could NOT be adequately dealt with. This may have partly been caused by the procedures followed - a Synthesis Report largely AFTER the Working Group reports rather than fully in parallel leads to a Summary Report rather than a Synthesis Report.
4. *Do not exclude changes in WG structure beforehand.* One could imagine that crosscutting Special Reports can remedy the lack of integration to some extent. However, in my view also the pros and cons of a more fundamental option should seriously be considered, namely the abandonment or change of the current Working Group structure in order to allow for an effective interdisciplinary assessment of policy-relevant scientific questions.

5. *Reconsider frequency and forms of output*. From a pragmatic and financial point of view, a focus on integrated or other Special Reports could avoid the necessity of individual member countries to commit to the long-term funding of a TSU. This could be 5-6, but also more than 10 years if the frequency of the comprehensive assessments would be lowered, an option given by the paper. One central and possibly strengthened Secretariat combined with shorter term commitments by countries for supporting particular integrated and other Special Reports with a 2-3 year cycle may be easier to finance. To avoid the huge and expensive efforts involved in producing fully comprehensive reports every 5-6 years - which some people assert mainly serve the scientific community itself rather than policy makers - either the frequency of such reports could be lowered, or only the changes in scientific insights since previous assessments could be captured in concise though comprehensive assessments. This would not require fundamental changes in the established IPCC principles and procedures. It would also address the problem of the apparent decreasing availability of high-ranking experts for the time and resource consuming IPCC assessments.
6. *Strengthen social sciences assessment*. From the issue of integration, I also derive a specific comment on paragraph 3.1.3 on the Stern Report and economics. In my view, the universal interest in the Stern report not so much (or at least not only) relates to its economic focus (the same economic literature has been assessed in AR4), but more on its integrated assessment of (the costs and benefits of) climate impacts and response options. Hence, I disagree with the suggested special treatment of economics in future IPCC activities. The assessment of Working Group 3 at least suggested that a lot of information on economics is available, but it is not integrated. More importantly, knowledge from social sciences other than economics appeared to be not only much weaker as far as relevance to climate change is concerned, but also much more difficult to access. If any special group would be formed, I would recommend to have this group focus on social science in general rather than economics alone. This group should also explore the opportunities to develop collaboration with international organizations in the area of development, economics and technology (such as UNDP, Worldbank, IEA), following successful IPCC collaboration with more environment-oriented organizations in the past (such as the Montreal Protocol and the Convention on Biological Diversity). This would also facilitate the strengthening of the sustainable development context of the climate change core beyond what was possible during the TAR and AR4 processes. Possibly, this group could also explore the opportunity to strengthen the engagement of expertise from non-governmental stakeholders, something that becomes increasingly important as the emphasis in international policy shifts to response options.
7. *Introduce stronger regional focus.* A second specific comment, on paragraph 3.2. While I fully agree with an increased effort to strengthen regional diversification of future IPCC assessments, I suggest that such efforts do not only focus on impacts and adaptation, but also on mitigation. From the time of the SAR, IPCC WG3 has considered to adopt a regional structure in its reports. This was rejected eventually mainly because of the lack of regionally differentiated literature on mitigation options at the time. With the increasing emphasis on mitigation, in the coming years this may change and also for mitigation more regional diversification should be considered. This also raises the question about how to link the different levels, from the local scale where climate change impacts and concrete response actions take place, to the international scale at which climatic changes occur and objectives and boundary conditions for policy are negotiated. The experiences from the organization of the Millennium Ecosystem Assessment and UNEP's Global Environmental Outlooks may provide some good ideas on how this difficult scale issue could be addressed.
8. *Further enhance review process*. A final point on the review procedures. While the thorough review procedures determine the credibility of the IPCC assessments, further improvements may be possible. It is at least my personal impression based on experiences during the last three Assessment Reports that both the quality and quantity of review comments have not really improved. More in particular, recognized international top experts and experts from developing countries are not sufficiently represented. Options for a further intensification of the efforts to engage such experts, possibly also mobilizing supporting financial resources, should be explored. As to the response to reviewers' comments, Working Group III has good experiences with anonymity of reviewers, increasing the neutrality of the review process. Length and timing of the review period are also important (e.g., avoid review periods to coincide with holiday periods in important world regions). Possibly, a small group of interested Bureau members and/or delegates could focus on the options for improvement of the review procedures for the next IPCC meeting.

Robert Jefferies - Reviewer for Chapter 15 (Polar Regions) in WG II for the AR4

(1) I support strongly that there should be a comprehensive 5th Assessment, I appreciate that at times the process is very time-consuming and clumbersome involving an enormous amount of effort and expense, but the final statement stands as the best available benchmark to judge the impact of future change. The comprehensive reports convey information on topics where there are strong interactions and shifts in the nature of these interactions may be anticipated overtime. This requires current, up-to-date information on all topics, not just those where changes are known to be occurring. The information is needed and used by a Government and Private Organizations, by Industry, by Universities and by the general public. It is the unexpected that calls out for attention and the first requirement is the availability of a synthesis

of the current situation in these different areas. A cycle of 10-12 Years is too long given the research output on most topics.
I am not adverse to specialised reports on individual topics, in fact I welcome them, but I think first and foremost a comprehensive assessment is needed. I am somewhat apprehensive that there may be insufficient qualified personnel available to prepare both specialised and comprehensive reports? The commitments are onerous and not all scientists are prepared to register for a second sitting.

(2) The innovation of a Synthesis Report has been a valuable undertaking that is widely read. I strongly support its continuation.

(3) I agree strongly that the IPCC Secretariat needs to be strengthened. These are a very dedicated group of people who are very overworked. The latter leads to inefficiences and to mistakes. As the IPCC grows and ever increasing demands of all kinds are placed on the Secretariat, there is a danger the infrastructure will collapse, hence I recommend that additional resources are made available to the Secretariat.

Rodel D. Lasco, IPCC 2007 WG 2 Chapter 20 CLA

My comments are in relation to this section:

"3.2 The IPCC by itself cannot address this gap, but there may be need for an initiative similar to the AIACC which could help in promoting more focused research on impacts of climate change in specific regions of the world, particularly involving the developing countries. It may be useful for the IPCC to organize a workshop or expert meeting involving relevant organizations and entities, which could assist in coming up with a desired programme of action which may help to fill the needs of research on impacts of climate change in different parts of the world."

I was involved both in the IPCC and the AIACC. AIACC is the best science capacity building I have experienced. It is fair to say that it built the capacity of scores if not hundreds of experts in the developing world in such a short period of time. Many of us eventually participated in AR4. The reality is that there is very limited research funding being allocated by developing countries to climate change (partly because of more pressing concerns). Building on the gains of AIACC is essential to nurture and expand the network of scientists in the developing world. Thus, I would strongly encourage and support future initiatives similar to the AIACC.

Roger Jones - CLA WG II Chapter 2 AR4, LA WG II Chapter 3 TAR

These comments are based on the conclusion that addressing anthropogenic climate change is a risk management exercise. However, the IPCC has not moved beyond the general proposition that it is assessing research, and communicating that assessment in a way that is policy relevant. This lacks focus and leads to inconsistent outcomes, in part because policy relevance is assessed along disciplinary lines rather than through a more structured process. Framing IPCC assessments according to the general principles of risk management would improve them enormously.

Past assessments have been reviewed to see how they fit into a risk assessment framework. Over the years, the IPCC treatment of risk has been an iterative process, beginning from an assessment of climate change as hazard, through to vulnerability assessments. The conclusion of the TAR was that both mitigation and adaptation were required to manage the risks posed by climate change. Therefore, the assessment of risk has expanded and has now reached stage where risk management options are being proposed, tested and applied.

The character of IPCC assessments has changed in response to improved knowledge and changing policy needs but has the IPCC itself managed to keep up? The working groups have and assessments been largely unchanged between the Second and Fourth Assessments. The end of the Fourth Assessment offers the opportunity to reflect on this.

My own conclusion is that despite containing a great deal of valuable information, the AR4 is not very well suited to decision-making.

Several examples attest to this:

- It was difficult to illustrate the benefits of avoided damages by comparing climate change and impacts associated with no policy (e.g., SRES) emission scenarios with those associated with mitigation (e.g., stabilisation) scenarios because consistent methods for estimating warming from existing scenarios were not generated by Working Group I.

- Sea level rise was not treated consistently with TAR (fewer components were quantified this time), and the qualifications given regarding ice-sheet melting were wrong in any case (melting is not proportional with warming).
- The difference between projections made in "model worlds" and how the real world was tracking were overlooked, allowing misleading projections to be made for the early 21st century especially (e.g., 0.2°C per decade for the next few decades – we are already above this rate and accelerating).
- Inconsistent methods of combining information of temperature, sea level and a general lack of transparency, means that the AR4 conclusions cannot be used directly in decision making except at the most general level.
- High consequence, low confidence risks were understated, a moderate confidence tended to be the cut-off mark for serious consideration.

Uncertainty continued to be applied differently by the different working groups despite a crosscutting workshop and report.

Rolph A. Payet

1. I think with the Nobel Prize our future looks even brighter. So I support the move to relook at the IPCC and it work. However, we should not go backwards but forwards.
2. The strict scientific peer review process should be maintained as this is what gives credibility to the report and work, although it is difficult sometimes.
3. Government reviewers to involve their local universities and research institutions a bit more.
4. Reduce the pressure on the authors, as we have very hard deadlines to follow, and often the lead authors have to spend considerable time to put the chapters together. One of the ways is to facilitate access to reports and publications. I come from Seychelles and we do not have a University, and often access to publications on islands (globally) is not easily accessible and thus may not receive attention in the IPCC reports. Access to some of those documents is also costly and at present there is no budget to cover access to peer reviewed documents. There are also books that have been published but these are even more inaccessible unless you are located close to a big University library. A suggestion would be to fund appropriate non-university based experts a week's work in an appropriate University where they could access all appropriate materials. I raised this issue during the last report and I hope by the next report we would have worked out a mechanism.

5. Besides having their names published in the IPCC reports I think some form of recognition for such work is developed by the IPCC, I think some form of academic or professional recognition is given. Secondly I suggest that free recreational/educational activities are organized during our conferences, sort of a small thank you to authors.
6. We do not use the IPCC expert network enough. I think the IPCC network of authors is one of the planets most influential and knowledgeable network, and we do not have a framework to engage those authors into other work, such as combined research/lecturing between developing and developed, agreements between universities and so on. I think there is potential to turn the list of authors into a social/knowledge network which can then allow for the further exchange of know-how expertise around the world.

Ronald J Stouffer - Author of WGI SAR, TAR, AR4 reports; WGI SPM TAR, AR4; SYR AR4

My first comment is the time line for AR5. Due to the long time scales for developing the large climate models used in the report, the time line for AR5 needs defined as soon as possible. All the major modeling groups on the planet are actively involved in developing models for use in AR5. Decisions are being made today which impact the fidelity of those models (resolution, number of components, types of physical parameterization, etc.). These decisions will have a great impact on the type of models and therefore results, we will obtain for AR5. Some of these decisions may limit the types of runs or analysis that can be performed. The bottom line is if AR5 will be published in 2014 or earlier, the modeling groups must push the model development cycle forward to completion this year (2008). If AR5 is delayed, then there is more time for model development. The time line for AR5 needs to be published as soon as possible.

My second comment is towards the changing of the structure of the report towards many smaller reports with some overall synthesis, instead of the current structure of 3 big reports per IPCC cycle. As you know, the WGI models play a big role in the whole report. One could view much of the WGI report as a big model intercomparison exercise. If fact as the IPCC has matured, one of the big advances has been better coordination of this exercise. I am worried that in this proposed new structure, there is a lack of coordination for the model intercomparison exercise as the WGI currently plays this role. It is possible that the WCRP could fill this coordination role, but the IPCC may not get what it wants

since it will not be running the exercise. This issue seems very important to me and could threaten the quality of the whole IPCC report.

Stephen H. Schneider

I will briefly address three issues:

A-Moving toward stronger interdisciplinary collaborations and reports
B-Maintaining a broad definition of what is? economics?
C-Being confident special reports will not be too narrowly focused

A-Moving toward stronger interdisciplinary collaborations and reports

To be sure the three Working groups model with disciplinary concentrations has been enormously successful up through the AR4, further enhanced with Synthesis reports. However, in my view there was not enough cross working group coordination at early stages, perhaps in part because of rather different disciplinary orientations of physical, biological and social scientists with regard to type 1 error aversion (avoid false positives) versus type 2 error aversion (avoid false negatives via risk-management strategies). Fortunately, some of the seemingly contradictory statements along these lines appearing in Working group reports produced when there was too little communication with other working groups was successfully negotiated and the problems overcome in the year and a half that the Synthesis Core Writing Team worked together. Thus, the sometimes different working group orientations and somewhat differing conclusion on certain issues like long term sea level rise were eventually addressed successfully from the viewpoints of most parties. That these issues were resolved in synthesis bodes well for the interdisciplinary cooperative spirit that is possible when interdisciplinary teams are convened well before each working group report is in stone, so to speak.

Therefore I propose for your consideration that if the 3 working group model is retained by governments, that there be more formal cooperation via common memberships at critical points on critical issues to be certain that different working groups? Conclusions are fully consistent with both the literature and each other at the end of the day. Perhaps this could be accomplished by double duty LAs or CLAs, but that would be a very big travel burden on top of hefty writing responsibilities for such dedicated souls. Perhaps a Vice-Chair could convene a task force of a dozen or so members with IPCC experience to be cross-working group ambassadors and share the load of attending several different LA meetings of different working groups to facilitate coordination across the groups, particularly when potential topics where different viewpoints might emerge. Regardless of the form of such coordination to minimize any evolving inter-working group differences, further upstream cooperation and coordination similar to that which was accomplished by the Synthesis team of the AR4, seems important to keep the conclusions consistent and facilitate formal Synthesis at the end of the process--with much more ease at Plenary.

B - Maintaining a broad definition of what is economics?

At several points in the memo from Patchy and Renate the need for economics in the context of sustainable development was emphasized. I fully concur, but would hope that by economics what is meant is a comprehensive treatment of all metrics of impacts and development, not just what is or could conceivably be monetized. The five reasons for concern have only one explicit monetary metric, like the five numeraires discussed in Chapter 2 of Working Group 2 TAR or Chapter 19 of WG 2 AR4. Biodiversity, human life, quality of life, distributional implications of both impacts and policies are the kinds of metrics that need co-equal status with traditional monetary metrics in my view. I presume that broad view may have been what was intended by the term economics in the sustainability context, but wanted to explicitly raise this issue for your consideration to be sure we have adequate debate and focus on a broad definition of what constitutes "economics".

C - Being confident special reports will not be too narrowly focused.

Several references to special reports were made and I again concur with that particularly when there is strong government pull for them. However, if defined too narrowly from a disciplinary point of view these reports could again suffer from some paradigmatic narrowness that might be problematic later on when working groups with different orientations refer to them or try to integrate them into the working group reports. So, just as working groups need broad upstream coordination across the vast array of multiple disciplines involved, so too I believe would special reports. Maybe only a few ambassadors like those I suggested for working groups in point A above would suffice in this attempt to lower the risk that special topics might get so parochial that they miss methods or ways of knowing that might differ across various disciplinary orientations. Again, perhaps a Vice-Chair task force could handle this mission, but I am sure you will have additional ideas of what would be most workable.

Thanks for the very effective leadership of the AR4 in general and the Synthesis Report in particular. It was both an honor and a pleasure for me to have worked in the AR 4 in general and the Synthesis team in particular--and the very highly praised Report that emerged is testimony that inter-working group cooperative efforts can produce the best outcomes.

Steven Running - LA AR4 WG II

I want to add a few comments, a bit tardy, to thinking on the future of IPCC. First, none of us expected the incredible reception that AR4 received, we clearly got the attention of the press and policy makers like never before. Consequently I would not want to change the basic Working Group structure or 5 year major reporting cycle now that it is well understood and anticipated by our audience. However, subtly I think the emphasis could shift a bit for an AR5. The international GCM groups have carried a tremendous load in the 3rd and 4th assessments, with WG I being the focal point of the reporting, and WG II and III being rather subordinate. The huge demand for climate projections under multiple scenarios possibly could be focused to a tighter set of most likely society responses and give the GCM groups a little less demanding task that must be finished years ahead of the reports. The WG II impacts literature is now exploding in multiple topic areas, and AR5 will have abundant material to cover. I agree that economic impacts need to be much more prominent in an AR5, which will stretch the current capabilities of integrated Earth system models. But I anticipate highest interest in AR5 may be on mitigation/adaptation.

In mitigation/adaptation I see, among many others, two topics that are now in high interest, biofuels (cellulosic vs maize ethanol for example), and terrestrial carbon credits. Airlines now sell "carbon offsets" for your flight that typically then are invested in some kind of tropical forest protection scheme that I doubt truly offsets the airplane emissions. I am reading papers in major journals almost weekly coming to a wide spectrum of conclusions about potentials and limitations of biofuels and terrestrial carbon credits for various ecosystems and regions of the world. Much of the problem is there are no clear global standards and methodologies for measuring and monitoring these terrestrial carbon dynamics at national scales and terrestrial carbon modeling is not as mature as climate modelling.

I see AR5 as playing an important role in evaluating and assessing the realistic potential of these two significant mitigation options that already are having huge amounts of money directed to them. The policy neutral IPCC reputation may be critical in 5 years for sorting out true legitimacy of biofuel and ecosystem carbon credit markets.

Stewart Cohen - LA AR4, WGII-Ch20 (also CLA TAR, WGII-Ch15)

I support the idea that major assessments should continue to be produced once every 5-6 year cycle. The amount of literature being published in various fields is continuing to increase, and our awareness of new sources of literature is also expanding. This is particularly relevant when considering how IPCC should improve its coverage of linkages between climate change and sustainable development.

There is a need to explore economic and social aspects of climate change, especially of the effectiveness of adaptation and mitigation measures, and how well they would, or would not, integrate with sustainable development plans. In the AR4, WGII Chapters 17-20 and WGIII Chapters 2 and 12 represent, in my view, a considerable advancement over the TAR. The recent completion of the AIACC program should provide important information for an AR5. Another important aspect is recruitment of additional authors from developing countries who have had some experience with the AIACC or other relevant case studies. In the AR4, most of the LAs of these chapters were from developed countries. It would be important to identify individuals who have relevant knowledge/experience with literature written in languages other than English. Much of this may be grey literature, but in any event, this would add considerably to our knowledge base.

I believe there is an advantage to having more focused special reports in between the issuance of major assessments. This can allow for the creation of larger author teams for particular topics operating with greater flexibility than a chapter team within a major assessment.

Regarding the Bureau itself, I feel that while it is useful to ensure there is expertise in economics within the IPCC Secretariat and/or the Bureau members (given the recent Stern Review), I would suggest that the larger objective would be to ensure that the breadth of expertise matches the breadth of topics covered by IPCC documents. Adding economics would be important, but I also feel that the social dimension needs attention, requiring someone with a good overview of the challenges and opportunities created by engagement of local governments and cultures in dialogue on local impacts, the design and implementation of various adaptation and mitigation measures, and the implications this has for governance, innovation diffusion, and global security. I would also suggest that the concept of integrated

assessment is one that is continuing to evolve, as models change and dialogue processes are offered as complements to the modelling process. I feel that it would be valuable for the Bureau to be able to monitor progress on integrated assessment methodologies, and their potential role at contributing to further understanding of how climate change science can better link with adaptation and mitigation decisions at various scales.

Sukumar Devotta - WG III

My comments are as follows:

3.1.1: "a higher level of policy relevance in the work of the IPCC, which could provide policymakers a robust scientific basis for action". This needs clarity as IPCC reports are not supposed to be policy prescriptive. There was a lot discussion in Bali on such an issue.

3.1.2. IPCC should define Sustainable Development and develop methodologies, as there are many approaches with each having its own limitations.

3.1.3. Yes. It is time we start looking at economic aspects climate change, particularly with respect to sustainable development.

3.1.4. Yes. All the impacts are too global, with lot of uncertainty. We need some regional focus.

4.1.1 We need some sort of revision of NGGIP at least every 5 years as the knowledge and polices keep changing in a very dynamic manner. Ten years will be too long.

4.1.3. We need assessments of renewables and biofuels, particularly with respect to sustainable development.

Thomas J. Wilbanks - CLA for WG II AR4 and LA for the WG II TAR

First, let me say that this draft paper is exceedingly well-done:
thoughtful, balanced, and professional. I support what it proposes, which in many cases are courses of action that are similar to what I would have recommended myself. The leadership of the IPCC is in good hands, and we are grateful for that indeed. Thank you for the chance to comment.

I especially welcome the emphasis on synthesis as a core commitment and challenge, and I welcome the emphasis on special reports. I think that these thrusts are timely, promising, and likely to strengthen future messages that emerge from IPCC¹s assessment processes.

I would like to suggest one additional general issue that might be considered for explicit treatment in the paper about IPCC¹s future, along with two more specific items that might need to be addressed explicitly but I think could be considered at the next level of detail.

The general issue is recognizing that the current information technology environment calls for a rethinking of historic IPCC practices regarding the confidentiality of draft materials (and even deliberations). We are finding, I would suggest, that IPCC¹s assessment processes are inevitably becoming more open, whether we would wish that or not. It seems to me that, rather than fighting this trend (and losing), we should accept it as an unavoidable aspect of how science relates to policymakers and the public in this age and consider when and how to open up our processes, which might affect patterns of engagement with governments and other users during the course of an assessment.

The two more specific issues are: (1) clarifying how the three working-group structure will be able to consider mitigation and adaptation in an integrated way (e.g., if mitigation is successful in moderating climate change, adaptation can handle more of the resulting impacts; if adaptation potentials are considerable, mitigation can aim for a more realistically affordable stabilization levelŠ); and (2) assuring attention to what is not known as well as what is known, which means that each substantive chapter should consider and articulate key gaps in available knowledge to help the global community understand priorities for climate
change research. Too often, especially in the SPMs, this important function of IPCC reports gets lost in the pressure to reach agreement on other findings.

Wilfried Winiwarter -LA in the 2006 National GHG Inventory Guidelines, Volume 1 (General Guidance and) General structure of the paper: very logical structure, interesting views. Recommendation: Sections 2.4-2.6 could be shifted under a new sub-heading "Current IPCC Tasks/Outputs"

Specific issues that may be considered in future work:

Cycle of AR's: Timing of assessment reports may be coupled with policy cycles rather than IPCC cycles. This means in consequence going to a ten-year timescale. IPCC should now be stable enough to carry that along.

There is a number of consequences to that. In order to keep up "institutional memory" of procedures, a harmonization of procedures will be required for all reports to be provided (technical reports, special reports, assessment reports). Note that not many people will continue over the full 10-year cycle without changing their professional position and therefore persons that have gone through a previous "assessment period" will be few.

This means enhancement of the meaning of special reports. Special reports can be called upon items that the IPCC believes worthwhile to be put into a future assessment report – in case of positive outcome, results could be adopted. If results are less interesting, the topic of a special report could also not be included in the assessment report. The Terms of Reference for the Working Groups to assemble the Assessment reports could then be based on successful Special Reports, and in fact some of the write-up required could be replace by reference or adoption of material from the Special reports

Still an overview of the scientific understanding of IPCC needs to be provided. Probably this should not be termed "Synthesis report" which is a synthesis of the assessment report, but differently – maybe "IPCC Status report". Input from status reports could be drawn from recent IPCC reports, specifically Special Reports. IPCC Status reports should be presented on a shorter timeline, maybe every other year.

Starting out with Special Reports may lead the way to link climate change issues with issues like sustainability, air pollution, policy. Here an integrated view could be adopted, or at least work can commence to simultaneous (no-regret) consideration of climate issues together with other issues (e.g., air pollution).

In order to improve transparency and open for diverging views, the visibility of IPCC meeting background documents can be enhanced. Already now IPCC meeting reports are available via the internet as "supporting material", but it may be worth the trouble to make them more visible. While assessment reports and special reports still should be carried by consensus, it may be easier for authors to accept their opinion is not taken up when it still remains visible. Thus dissenting scientists may be kept in the community, and an image of openness can be strengthened.

Finally, IPCC may wish to, in addition to the traditional way of country nomination, to invite authors for specific reports according to known expertise. Such author invitations could be done e.g. via CLA recommendations to the IPCC secretariat – but only in addition to the nominations. They could also help extend the balance of world regions, scientific expertise and gender as required to fulfill a specific task.

WU Shaohong

The document of "Some issues related to the future of the IPCC" is well prepared. It is an excellent design for IPCC's future. Generally I endorse what the document proposed. I would like to have some minimal comments:
1. Differentiate "review" with "research". The previous reports sometimes were not clear in this point, which misled some readers thinking "the results of IPCC".

2. No need to bring every thing in the world wide and pay more attention to the regional situation. It is great different on the global surface, for example, precipitation project in AR4 say that increase in the medium and higher latitude regions and decrease in the lower latitude regions. Such conclusion would not to be accepted in many areas because of its inconsistency.

3. For the second part "do we need change?", I DO NOT think we need change. Five to six years period is properly. Too many assessment reports would confuse people. By the way authors do the report as an extra work. Too much such work could reduce the quality of reports.

4. The third part said that "as a consequence of there changes there would be need to place much greater importance on the economic aspects of climate change". Personally I think this is being misled by "Stern Review". IPCC's report would not follow that way even I agree with Stern Review. That is an individual viewpoint. IPCC's report is in terms of governments. Economic component should be properly. Too much economic component would lead "economy" to "interest" and lose science.

5. Workshops, seminars, and symposiums are good ways to gather information and ideas. No matter published or not, discussing together makes the assessment reports easier to compile.

Zoltan Somogyi - LA of five chapters of Methodological Reports

Section 1., especially: „The structure of the IPCC and the processes and practices that it has established have proved extremely successful not only in attracting some of the best talent available in the world for carrying out assessments of all aspects of climate change but also in being able to address the needs of policymakers for appropriate information, comprehensive scientific assessments and scientific analysis. The IPCC has also completed a number of methodological reports…"

- From the second sentence (i.e. from the word "also") I have the feeling that the completion of the methodological reports does not count as important "to address the needs of policymakers for appropriate information, comprehensive scientific assessments and scientific analysis" as that of assessment reports, and preparing the methodological reports (MR) did not "attract some of the best talent available in the world". These statements are unsupported by any evidence that I know of, and should be replaced by a balanced formulation.
- The statements fail to make a reference on the quality of IPCC reports (both AR, as well as MR). I think policymakers do need "appropriate" information, but this should also include quality. While I think that there is no institution without criticism, IPCC is yet to address those concerns that are linked to its ability to take on board and appropriately handle all those concerns and opinion that may question some of the mainstream ideas of people within IPCC. It is never to forget in science that concepts like "mainstream", "majority", "consensus" etc. are not part of the scientific method. Thus, I suggest to explicitly mention that a comprehensive "quality assurance" (i.e. soliciting opinions from those that have not been involved in any form in the development of the reports, either as authors or reviewers) has not taken place.
- Concerning "the structure of the IPCC and the processes and practices", I think it is indeed unique and ensures high quality. However, I have read much criticisms, and I have also collected a number of inadequacies. The point is that selecting the authors and CLAs should be improved. Selecting the authors is not transparent enough, and many people have been selected many times, while others have not (I am speaking about people of similar quality). Concerning CLAs, the same concern could be made: how come that there is only one person to be CLA in a certain field from countries of hundreds of millions of population? I would e.g. certainly restrict "inbreeding", and let much wider the inclusion of new and new people in the authors' cycle – and thus also that of thoughts and approaches. This, and only this could ensure an impartial development, and to avoid the too much influence of certain people or schools. (Practically this could be done by explicitly requesting governments to always nominate new people and to suggest a wider selection of experts).

How to select CLAs?

- In case somebody that was a CLA in a previous report is suggested again, carefully check if indeed there is nobody else that could do the job
- Ensure that people from CETs and developing countries with good scientific record could have EQUAL chance to become CLAs.
- One way of electing CLAs is a decision by a few "core" people at a meeting, as it is done now. However, it could also work that CLAs are at least partly elected by the team itself, i.e. the LAs elected. The LAs could be more knowledgeable with respect to the scientific record, or leadership capabilities, of a CLA. Also, once a CLA has been elected by his or her "people", he/she would feel more responsible for the group to live up to their expectation.

Otherwise I must mention that, in my opinion, it was especially the inception of the structure of the IPCC that made it possible to work so effectively and at such a high quality that IPCC must under all circumstances be credited with.

Section 2.

The section deals with the three WGs in details, but "only" mentions the Task Force as something marginal. I pretty much believe that e.g. the phenomenon of climate change will not be so much important any more as its impact, adaptation and mitigation, the latter including effective ways of measuring greenhouse gas emissions. Therefore, in the changing world will require even more efforts on estimation of GHG emissions and removals, and mitigation, thus, IPCC's work in these fields should be intensified, and its efforts so far should also be more recognized. Under section 2.6, much more emphasis should be given to the Task Force, but also to the Special Reports that also made at least as important effect on climate change talks as the assessment reports. This is because exerting an effect does not necessarily mean repeated quotes from an AR how much temperature has increased, but also information for decision makers who created the Kyoto Protocol and its provisions.

Section 3.

There is no mentioning of the NGGIP at all. I think this is a pity as IPCC should also help by identifying possible ways of mitigating climate change, in which GHG inventories and project-level methodologies should be taken into account. CF. the speech of the Chairman at Davos in which he makes reference to "deep cuts" in emissions of GHGs with a sense of urgency". It is common sense that, before being able to cut, one should know all sources of emissions and opportunities for removals before taking a decision. Also being a certified reviewer of GHG inventories under both the UNFCCC and the KP, I am pretty sure that IPCC should play a critical role in addressing issues related to GHG inventories.

One critical issue here is that, for both the UNFCCC and the KP, Parties are using the 1996 Revised Guidelines (to a less and less extent), the 2000 and 2003 GPGs, and (to a growing extent) the 2006GL. These GL should also be a good basis for all those developing countries that have not, or not regularly, prepared a GHG inventory. It is the outputs of these inventories that a lot of Parties make or will make their decisions concerning intervening in order to reduce their net emissions. However, the application of these methodological guidelines is still difficult, making room e.g. for differing interpretations, capacity building is certainly needed (so a similar impact is still missing in this field that is mentioned for the ARs), tests of the methodological guidance is needed, and future development of the guidance is also required. Clearly, there is a need for additional activity for either a Task Force, or a WG IV. One project of IPCC could e.g. be to assess how much and with what errors it was possible to estimate emissions and removals, where gaps there may be, and what could be done to close those gaps.

Section 4.

Concerning the future work program, I think that moving towards a continuous flow of suggestions for special reports would ensure a more flexible framework to adapt to any need or to follow-up any development in certain areas. Also, instead of just closed meetings of always a few people on certain issues, a flexible system should be established:

- with a mailbox to continuously receive and process suggestions from the scientific community,
- with a suggestions board, with fixed rules of engagement, to collect opinions from as wide an audience as possible on serious issues before any decision taking meeting on the issue. This is absolutely necessary as it often happens (most probably in each country) that, because the current system of processing suggestions and requests from the Secretariat involves the interaction of government officials, the majority of the scientific community may stay outside of the stream of information and of the opportunity of express their views. When it is only about scientific issues, no reference to any "official domestic policy" or other excuse (e.g. lack of time etc.) should be allowed to exclude anybody from the scientific world.

Just a "grammatical" comment on 6.1.: "governments and authors of AR4" should be replaced by "governments, IPCC participating organizations, authors involved in the preparation of the Fourth Assessment Report (AR4), as well as Methodology and Special Reports released during the fourth assessment period, and members of the IPCC Bureau and the Task Force Bureau".

Note: I am an author of Chapter 4 of the Good Practice Guidance for LULUCF (2003), and of Chapters 1, 2, 4 and 13 of Volume 4 (AFOLU) of the 2006 Guidelines.

Zong-Ci Zhao - Translator from English into Chinese for FAR, WG1 IPCC (1990-1991), Coordinator of GCMs data for SAR, WG1 IPCC (1992-1996), LA for Chapter 8, TAR, WG1 IPCC (1998-2001), LA for Chapter 10, AR4, WG1 IPCC (2002-2007), LA for Chapter 2, Technical Paper on Climate Change and Water (2006-2008).

Comments and suggestions

(1) **Need changes-The experts of WG1, WG2 and WG3 need more dialogs and discussions.** Therefore, they can get the further agreements on climate change, impacts and strategies between WG1, WG2 and WG3. For example, before and during AR5, IPCC organizes a number of workshops between the experts of WG1, WG2 and WG3 to discuss and exchange the ideas on the changes and projections of droughts and floods in the globe and regional areas, glacier/snow/ice changes in the globe and regional areas, climate change and water resources in the globe and regional areas, climate change and sea level rise in the global oceans and regional oceans, climate change and sustainable development in the globe and regional areas, climate change and renewable energy resources in the globe and regional areas.

(2) **Outputs-A number of technic papers:** IPCC should organize several technic papers (or reports) before or after AR5, such as Climate change and sustainable development, climate change and renewable energy resources assessments, climate change and sea level rise.

(3) **Next Time table:** Scenarios of human activities and projections of climate change in the 21st century and later play a key role for policymakers and public. Therefore, IPCC should pay more attention to these issues. The scenarios of human activities should be given to the model groups as early as possible before AR5. So, they have enough time to run AOGCMs models and to do intercomparisons between models. WG2 experts have enough time to study the climate impacts by using AR5 model results.

(4) **Methodology:** For the last four reports of IPCC, the impacts of human activities on climate change in the 21st century have been considered. In fact, both natural and human-made climate change should be investigated, rather than only human activities. AR5 should try to involve the natural climate change in the projections of the 21st century. I often heard from some Chinese experts that the IPCC reports did not think about the natural climate change in the 21st century. They thought that the IPCC projections of the climate change in the 21st century without the natural change were not correct and were not full forcing at least.

Assessing Impacts, Adaptation and Vulnerability: Reflections on the Working Group II Report of the Intergovernmental Panel on Climate Change

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Assessing Impacts, Adaptation and Vulnerability: Reflections on the Working Group II Report of the Intergovernmental Panel on Climate Change

The publication of the Working Group II (WGII) Fourth Assessment report of the Intergovernmental Panel on Climate Change (IPCC) is a significant occasion for this journal, marking the international impact of the articles that appear in it and setting an agenda for future research by those who read it. The report includes a large number of authors and citations associated with Global Environmental Change: Human and Policy Dimensions. Two chapters, for example, have more than 25 references to research published in the journal.

The report is summarised in a Synthesis for Policy Makers (SPM) published in April 2007 (www.ipcc.ch) and the full report has 20 chapters written by more than 380 coordinating, lead and contributing authors (Parry et al 2007). The full report includes seven sectoral studies (water, ecosystems, food/fibre/forests, coasts, industry and settlement and health) and eight regional assessments (Africa, Asia, Australia and New Zealand, Europe, Latin America, North America, Polar, Small Islands) as well as chapters on observed changes, methods, adaptation, adaptation-mitigation links, key vulnerabilities and sustainability.

IPCC Assessments are published about every five years, and authors are asked to review literature since the last assessment (2001 in this case) and highlight any new results. There has always been a sequencing problem with IPCC in that it is difficult for impacts researchers (WGII) to use the latest climate projections (WGI) and for climate modellers (WGI) to use the latest emission scenarios (WGIII) when reports are written simultaneously. The Reports are often overtaken by new analysis during the long process of writing and review – for this round of IPCC the Stern Review (Stern, 2007) partially scooped the limelight appearing after most of the report was completed. The Reports must conform to general guidelines set by IPCC which in the Fourth Assessment included a common language for communicating uncertainties in terms of confidence levels (about the chance of statements being correct) and descriptions of likelihood (probabilities of an outcome occurring in the past or future).

Report highlights

Working Group I (IPCC, 2007) highlighted the unequivocal evidence that the world is warming and the attribution of much of this observed warming (and some other climate changes) to greenhouse gas emissions. In terms of observed impacts the WGII conclusions with the greatest levels of confidence (nine in ten chance) are that recent warming is affecting terrestrial biological systems with polar and upward shifts in the range of many species and earlier timing of vegetation growth and animal breeding in spring (Ch 1). These conclusions are based on meta-analytical studies of hundreds of ecosystem observations and are synthesised in a map (SPM-1) that shows the percent of ecosystem (together with other physical) changes in different world regions since 1970 consistent with a warming. This map clearly shows a bias to Europe (where more than 95% of the data series were generated) and the urgent need for studies in the southern hemisphere and Polar Regions.

A rather laboured argument suggests that these impacts can be attributed to anthropogenic warming because they are consistent with WGI attribution of global temperature to increase emissions and with the direction of change expected as a response to warming, because of spatial agreement between observed impacts and because of a modest number of modelling studies that show better simulations of climate impacts with anthropogenic forcing than without.

There is less confidence in other observed impacts although there is some evidence that high latitude agriculture and forests are responding to early spring warmth and that human health is being affected by heat waves and allergic pollen, at least in Europe. Polar and mountain regions are seeing the greatest impacts on livelihoods and ecosystems with reduced ice and snow cover affecting transport, tourism, biodiversity and water resources. There are isolated examples that people are already adapting to these changes.

The assessment of projected future impacts follows previous reports in highlighting the critical role of vulnerability and adaptation in determining the impacts of global warming. This insight – one of the most important contributions of the social sciences to climate impact research - bears repetition because it shows that the science reported in Working Group I is only a small part of the story of human interactions with climate and because it reminds us that part of the response to climate change must be the reduction of vulnerabilities through development and adaptation. The Fourth Assessment is more comprehensive in showing how vulnerability is exacerbated by other stresses such as disease, poverty, and some aspects of economic development but could go further in thinking how the broader context and other stresses may influence future impacts and vulnerabilities. More innovatively the report analyses important interactions with alternative development pathways and shows that unless climate change is considered in sustainable development it will limit the ability to reach the Millennium Development Goals (Ch 20). Another new approach is the consideration of the synergies and conflicts between mitigation and adaptation (Ch 18), although there are few published analyses of their interactions. Among its more general conclusions the WGII report notes that although the literature reports a wide range of possible adaptations, we need to better understand the limits to adaptation and its costs (Ch 17).

The report suggests that water availability will increase at high latitudes and decrease in some parts of the mid latitudes and dry tropics, that the resilience of ecosystems will be exceeded by a combination of climate and other changes, that up to 30% of species will be at increased risk of extinction, that millions of coastal dwellers will face increased flood risks exacerbated by other pressures such as population and economic growth, and that many of these changes will negatively affect human health (Chapters 3-8).

Climate impact research is sometimes criticised for focusing on the more negative effects of global warming (Ausubel, 1991) but WGII does provide some more positive results in projecting an increase in crop productivity and successful adaptations at mid and high latitudes for modest warming but this reverses once temperatures exceed 3°C and for tropical regions where warming is likely to decrease production and adaptive capacity is low (Ch 5).

Africa is reported as extremely vulnerable, especially to food and water stress, because of poverty and low adaptive capacity (Ch 9). Polar Regions and Small Islands are highlighted, as in previous assessments, for their vulnerability to warming and to sea level rise (Ch 15 and 16). Australia (Ch 11) and Europe (Ch 12) are projected as developed regions particularly likely to suffer from warming and changes in the hydrological cycle.

The chapter (Ch 19) on key vulnerabilities appears as a narrative update of the 'Burning Embers' graphic from the Third Assessment Report of five reasons for concern at different levels of global temperature change. New research is reported to show more evidence of observed and projected impacts on unique and vulnerable systems, increasing risks of extreme events, more uneven distribution of impacts within countries, that market benefits will be lower and damages higher, and more detailed assessments of the risks of discontinuities.

This chapter is also an attempt to define measures of 'dangerous anthropogenic interference with the climate system' in the context of Article 2 of the Framework Convention on Climate Change (linked to goals for stabilising greenhouse gas concentrations). Both scientific argument and value judgements are seen to define key vulnerabilities that are high magnitude, early and fast onset, persistent or irreversible, high probability, difficult to adapt to, unequally distributed, and valued for their uniqueness or human significance. This chapter is full of new ideas but appears somewhat orthogonal to the rest of the report in integrating ideas from WG II together with some of the work on relationships

between emission scenarios and climate change risks from the other Fourth Assessment reports and the published literature.

Reflections and recommendations

My overall impressions of the Fourth Assessment report on Impacts, Adaptation and Vulnerability are that progress has been limited since the Third Assessment in 2001. There are too many gaps in geographical and sub sectoral coverage, too few studies that analyse observed impacts and responses or include an adequate range of scenarios, too little in the way of economic analysis, too little literature in languages other than English, and too many case studies undertaken outside frameworks that permit aggregation, comparison or general insights. This is not a fault of the authors who must have scoured the world for relevant studies, but very likely reflects a lack of research funding and human capacity, the difficulty in designing comparative studies, the lack of reliably downscaled climate scenarios, and the complexity of research on climate impacts in a world where many other things are changing.

In many chapters authors have had to rely on only a couple of studies. For example, the assessment of international impacts on food (Ch 5) basically relies on two global modelling studies (Parry 2005 and Fischer 2005) that link climate to agricultural production and both use the same trade model (IIASA's Basic Linked System) to analyse the all important food system linkages. This chapter is overly focused on agricultural production and does not adequately explore the broader implications of climate change for food security and for key elements of the food system such as fisheries. The chapter on industry and cities (Ch 7) is perhaps the most limited by available research with the authors admitting the lack of studies in the developing world, on industrial impacts and adaptation, and on climate impacts on energy systems. The ecosystems analysis (Ch 4) was able to draw on a much broader range of quantitative research studies – perhaps because some measure of climate is common in many ecosystem change studies compared to studies of social systems, which are also often qualitative.

While a focus on vulnerability and adaptation reduces reliance on climate projections, the Fourth Assessment is going to disappoint many decision makers who are hoping for definitive information about how climate is going to change in their region so they can begin to adapt. WGI is still unable to produce reliable regional information, especially on precipitation, and WGII, for the most part, used a narrow range of climate model scenarios, with little use of probabilistic information, to estimate impacts.

Some Research Priorities

WGII itself has made considerable efforts to identify key research gaps, listed in most chapters, and in order for progress to occur these must be taken up by researchers and their funders despite the long term tendency to finance climate science much more generously than impacts, vulnerability or adaptation research. While climate can provide a fruitful area for the development of fundamental social science theory and methods there is also a continuing need for the more applied and repetitive analysis of climate impacts across regions, sectors and climate scenarios.

My own evaluation of urgent research priorities, echoing some of those identified in the IPCC report includes:

Addressing uncertainty and probability: We need more comprehensive assessments of impacts that use probabilistic output from ensembles of climate models to better represent uncertainty, and which clearly communicate what we know and do not know about how regional climate may change.

Barriers to adaptation and links to mitigation: Now that adaptation and mitigation are being implemented in many regions there is a critical need to assess the barriers and limits to adaptation, the conflicts and synergies with mitigation, and the interactions with development plans and institutions.

Broader and consistent scenarios: Research across the full range of IPCC activities (climate projections, impacts, vulnerability and adaptation, mitigation, emission trajectories) that uses a more creative and consistent set of socioeconomic, technical and political scenarios to encompass new insights into socio-technical transitions, human behaviour and economics, and options for international and national climate policy.

Comparative case studies: A concerted attempt to undertake case studies (of impacts, vulnerability and adaptation) within rigorous comparative and quasi-experimental frameworks including some common metrics and questions that will facilitate aggregation, meta-analysis and generalisation.

Discontinuities and higher magnitude changes: There is very little research on impacts and vulnerabilities to sudden and larger changes such as Amazon drying or global temperature increases above 4 degrees for example. Parallel investigations of possible socio-economic discontinuities are almost non-existent.

Improved costing of impacts and adaptation: The limited discussion of damage costs and the social cost of carbon in WGII, difficulties in linking to the economic analysis in WGIII, and the inadequacies in costing damages in the Stern

report suggest that research on both the costs and benefits of impacts and adaptation may be helpful to integrated assessments and policy makers.

Observed impacts and adaptation: Well structured and geographically balanced studies of observed impacts and adaptations, appropriate for attribution analysis.

Targeted sectoral and regional analysis: Research that focuses on understudied sectors and systems (such as industry) and regions of the world (such as most of the tropics).

Trade interactions and innovations: Improved understanding of impacts and vulnerabilities will require a much more sophisticated analysis of changing global trade patterns and interactions including food systems, biofuels, embodied water and carbon, and shifts in comparative advantage as climate changes.

For serious progress to be made before a Fifth Assessment, and in order to inform actions that are already being taken to respond to climate change a number of key areas need to be addressed by a large enough group of researchers to allow for an accumulation of approaches and cases for future assessments. This means a commitment to capacity building in both developed and developing countries through fellowships for students and early career scholars; support for individuals, centres and international networks; and the development of impact, vulnerability and adaptation teams to work closely with climate scientists. A more certain assessment of impacts and vulnerabilities and a more comprehensive understanding of adaptation options across the full range of warming scenarios, sectors and regions would go some way to preparing the world for climate change. But there are limits to overall capacity to cope with climate changes at the higher end of warming and many places where poverty and weak institutions have created deep vulnerabilities and make such assessments difficult to use.

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***** End Lead Authors and Coordinating Lead Authors Comments*****

ORGANIZATIONS COMMENTS

CBD - Convention of Biological Diversity

The assessment reports and technical papers of the IPCC have had a significant impact on the development of international policy within the Convention on Biological Diversity (CBD). In fact, the seventh meeting of the Conference of the Parties (COP), through decision VII/IS on biodiversity and climate change, invites the IPCC to continue its work on the relationship between climate change and biodiversity. The same decision further invites the IPCC to collaborate with the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) on the use of scenarios linking biodiversity changes to climate change.

The reports of the IPCC have also made a valuable contribution to the Global Biodiversity Outlook (GBO) and will be drawn on during the publication ofGBO-3, to be launched in 2010. I would thus like to extend my thanks and congratulations to the IPCC authors, editors and Secretariat for the contributions they have made so far.

Given the recent findings of the Fourth Assessment Report, which indicate that if temperature increases exceed 1.5 to 2°C, 20 to 30% of assessed species will be at risk of extinction, Parties to the CBD have called 'for the enhanced integration of climate change impact and response activities within the Convention. We therefore expect that climate change considerations will be included in a number of decisions to be adopted by the Parties to the CBD and, as such, will increase the importance of the IPCC as a scientific process contributing to policy development.

CSIRO - Australia

We appreciate the opportunity to comment on the future of the IPCC. The comments below come from a range of CSIRO scientists that have been involved with the IPCC in the past. Since views differ somewhat between individuals, the response have been attributed to individuals rather than coalesced, and presented in alphabetical order.

John Church

I think six years between the comprehensive assessments is a minimum - 7 or 8 years would be better. Otherwise science can not progress because we are continually doing assessments. And real changes in science results take way longer than 3 years.

Kevin Hennessy

Regarding the frequency of comprehensive assessments and Special Reports (4.1.2), a number of CSIRO scientists indicated that the current 5-6 year cycle leads to reports that are quickly out of date on some issues, e.g. emission scenarios, loss of polar ice, sea-level rise, biospheric feedbacks and renewable energy. To some extent, Special Reports (4.1.3) and Technical Papers (4.1.4) can tackle specific issues, but they need a turn-around time of less than 1 year to be really policy-relevant (but see Mark Howden's comment about competition with journal papers). The proposal to do comprehensive assessments every 10-12 years is inappropriate. A 5-6 year cycle is about right.

The Summary for Policymakers (SPM) in each Working Group report is considered too technical by a number of policymakers in Australia. These summaries should be overseen by independent science writers to ensure that the content is easily understood by the target audience. The structure of each SPM follows the structure of the chapters in each Working Group report, but this is not necessarily the most effective form of communication. Consideration should be given to structuring the SPM in a way that highlights the key messages in order of priority, not simply as bold statements following the order of chapters in the full report. For example, the issue of dangerous climate change is highly policy-relevant, yet it was not directly mentioned in the WGII SPM, and received indirect attention on page 14.

The Synthesis Report is a very useful document, but feedback received by CSIRO indicates that it is still too technical for some policy-makers. Planning for the Synthesis Report needs to start much earlier than it did for the AR4, ideally at the same time as the Working Group reports, so that all four reports have consistent framing and scope.

There needs to be better integration across the Working Groups to avoid the disparities apparent in the AR4, e.g. regarding basic risk concepts. I agree with the need for more emphasis on policy-relevance (3.1.1), sustainable development (3.1.2), economic aspects (3.1.3) and regional issues (3.2).

Alistair Hobday

1. Nomination of time-slices for forecasts of impacts could be issued (so just as scenarios are agreed, so could timespans. With regard to biological impacts, we could request that scientists consider 2030, 2070 and 2100; need to alert scientists now.
2. marine impact time series – time period of > 20 years was long for inclusion of the southern hemisphere marine data
3. could you split the WG's into 4
    a. physical basis
    b. impacts
    c. adaptation
    d. mitigation

Mark Howden

The high level of impact of the AR4 (and to a slightly lesser extent the AR3 before it) suggests that the IPCC report approach is perhaps more effective than we, as members of the science community, often think. Now that decision-makers are used to the timing, format, rigour and process of the Assessment Reports, we need to be a little cautious about major changes unless these are based on good market intelligence. I think the 5-6 year cycle is about right. Perhaps it could be lengthened by a year if appropriate Special Reports were targeted to deliver on specific topics of high demand in the interim or where the knowledge base was altering rapidly. Importantly, the questions about timing etc need to be asked not of us but of the users of the AR4 – especially users other than the government bodies immediately involved in its preparation and approval. Perhaps a commissioned study may be needed. There are options for re-focussing the internal structure of the WG reports to be more 'issue-oriented' but there are many risks of things 'falling between the cracks'. Similarly, there are differing views about the structure of summaries (e.g. topic vs priorities). Again, we should be asking informed users about their needs and expectations.

There could be some re-alignment of content amongst the Working Groups. In particular, moving the material on observed impacts of climate change to Working Group I, leaving WG II more on future impacts and adaptations.

A stronger focus on adaptations is needed, addressing effectiveness, feasibility, costs and benefits (monetary and non-monetary), risk amelioration, mainstreaming and adoption amongst other topics. A Special Report on Adaptation could be useful at this point, allowing the above to not only be fleshed out, but supported by case studies, and integrated with other domains of concern and decision-making. The capacity to scale-up and scale out the lessons learnt also needs to be addressed.

More effective linkages between adaptation and mitigation research are needed along with the development of the ideas and tools to link these components. In particular, this will require better links between WGs II and III.

More effective staging of the three WG reports could be useful especially with WG I coming out significantly earlier to allow the other Working Groups to source more studies that incorporate the new scenarios.

Roger Jones

These comments are based on the conclusion that addressing anthropogenic climate change is a risk management exercise. However, the IPCC has not moved beyond the general proposition that it is assessing research, and communicating that assessment in a way that is policy relevant. This lacks focus and leads to inconsistent outcomes, in part because policy relevance is assessed along disciplinary lines rather than through a more structured process. Framing IPCC assessments according to the general principles of risk management would improve them enormously.

Past assessments have been reviewed to see how they fit into a risk assessment framework. Over the years, the IPCC treatment of risk has been an iterative process, beginning from an assessment of climate change as hazard, through to vulnerability assessments. The conclusion of the TAR was that both mitigation and adaptation were required to manage the risks posed by climate change. Therefore, the assessment of risk has expanded and has now reached stage where risk management options are being proposed, tested and applied.

The character of IPCC assessments has changed in response to improved knowledge and changing policy needs but has the IPCC itself managed to keep up? The working groups have and assessments been largely unchanged between the Second and Fourth Assessments. The end of the Fourth Assessment offers the opportunity to reflect on this.

My own conclusion is that despite containing a great deal of valuable information, the AR4 is not very well suited to decision-making.

Several examples attest to this:

- It was difficult to illustrate the benefits of avoided damages by comparing climate change and impacts associated with no policy (e.g., SRES) emission scenarios with those associated with mitigation (e.g., stabilisation) scenarios because consistent methods for estimating warming from existing scenarios were not generated by Working Group I.
- Sea level rise was not treated consistently with TAR (fewer components were quantified this time), and the qualifications given regarding ice-sheet melting were wrong in any case (melting is not proportional with warming).
- The difference between projections made in "model worlds" and how the real world was tracking were overlooked, allowing misleading projections to be made for the early 21st century especially (e.g., 0.2°C per decade for the next few decades – we are already above this rate and accelerating).
- Inconsistent methods of combining information of temperature, sea level and a general lack of transparency, means that the AR4 conclusions cannot be used directly in decision making except at the most general level.
- High consequence, low confidence risks were understated, a moderate confidence tended to be the cut-off mark for serious consideration.

Uncertainty continued to be applied differently by the different working groups despite a crosscutting workshop and report.

There was an unhealthy emphasis on model prediction where the origins of those predictions, scenarios, were generated subjectively. Diagnostic methods applied would still permit the predictive strength of the models to be used but much more appropriately and within context.

My view is that the IPCC's goals are more important than its disciplinary structure – but changes to its structure may help. In general, the Technical Support Unit system works well and authors find the TSUs very valuable.

The following recommendations are made:

- The principal output of the IPCC should be synthesis with technical information backing this up. To this end, it would be valuable to scope the general areas of knowledge required first (within a broad risk management framework), and then determine the more technical requirements of what is needed to provide this knowledge. IPCC members would do the first task, experts the second.
- One way to do this would be for the IPCC members/experts to propose a small number of high priority issues around the time that the next assessment is decided on. This would then give the research community a few years to work on these issues in anticipation of the assessment. These would be advice only and not restrictive.
- Working Group I could be expanded to take on biophysical impacts at the global and broad regional scale, to encompass the remit being developed by Earth System Models and their offshoots.
- Working Group II deals with impacts, adaptation and development. However, see below – it may be worth moving the working groups to more closely resemble the suggested report structure.
- Working Group III deals with mitigation and development.
- Three reports could be considered:
    - Report 1 is mainly about climate change science and is largely hazard identification and diagnosis – this could be completed substantially earlier than the others on a staggered system.

Report 2 is regional in its focus and integrates adaptation, mitigation and development on a regional basis. This report would canvas bottom up issues and cover all regions of the world. The main audience would be

    - national and local decision-makers. The author mix would be highly interdisciplinary.
    - Report 3 is global in its focus and integrates adaptation, mitigation and development on a global basis. The main audience would be national to global decision-makers. The author mix would be highly interdisciplinary.

- Reports 2 and 3 would be produced at the same time. If the route of proposing key questions early in the process were followed for eventual synthesis, then the emphasis of reports 2 and 3 would be technical and descriptive.
- Note that each report is cross-disciplinary and each working group as defined above would contribute to all reports, but take responsibility for one.
- A synthesis report would have two components: bottom up (local) and top down (global), synthesising the types of information that decisions on a range of scales need to be made. It would draw substantially on Reports 2 and 3 and be informed by Report 1.

Barrie Pittock

I suggest that for some key issues where the science or observed developments are happening fast, special update reports might be needed on those specific topics, done within 12 months, start to finish, and maybe updated every 1 or 2 years if developments keep happening fast. They could even be classified as updates on specific chapters in the main assessments that occur less frequently. In other words, the complete assessments could be made up of chapters that are updated as required, and the lot put in a loose-leaf style running report.

Clearly the present style of large report is prohibitive for most people to read or to buy. Maybe it would all be better printed or available as easily downloaded as separate chapters or mini-reports, say on "Sea-level rise and its potential impacts", or "Climate change, agriculture and food security", etc. If these were down to 150 pages or less they might be best sellers.

This could all be part of a conscious and well-expounded policy of providing up to date information for adapative responses in the face of uncertainty and new developments, as part of a risk management policy. For example, policy responses for sea-level rise developed in response to the AR4 numbers would already be inappropriate if we are to prepare for the risk of SLR greater than the numerical range in the AR4. We now have clear evidence from several lines of observations and knowledge of mechanisms not well simulated in the models, that SLR could well exceed 1 meter by 2100, and adaptive responses that plan for only 50 cm or so could be very wasteful, and indeed lead to greater exposure through unwise development to overtopping and greater losses in the future.

Anthony Richardson and Elvira Poloczanska

The FAR identified 28, 586 significant biological changes consistent with recent climate change in terrestrial systems, but only 85 from marine and freshwater systems. This reflects the distribution of global science funding, biases within the IPCC process and historical realities in marine research. IPCC guidelines for inclusion in assessment reports (> 20 years and ending in 1990 or later) prejudice marine time series because many were halted in the late 1980s, just when ocean warming was accelerating. The IPCC WGII has only 4 marine biological specialists out of 42 members, making it inevitable that some documented changes in marine systems arte overlooked. The tendency for marine researchers to report bulk responses for functional groups rather than individual species also contributes to under-estimation of the number of marine biological changes. An ideal opportunity to address some of these issues is the upcoming International Symposium on the effects of Climate Change on the World's Oceans in Spain in May 2008.

Mark Stafford Smith

As a general concern, it's obvious that there needs to be much greater focus on adaptation, and on linking with sustainable development. It's not clear to me why there isn't a WG aimed at Adaptation of equal primacy to that on Mitigation, rather than having adaptation, the most important issue for the next 2- years really, rather buried in impacts and what is dangerous change issues. But then mitigation and adaptation need to be closely aligned - so maybe this could be the new WGIII mandate, an integrated approach to mitigation and adaptation (ie. adaptation that doesn't make things worse).

It would also be good to focus the whole lot much more on priorities arising **from** adaptation and mitigation needs, rather than delivering the basic science then seeing if it is of any help to adaptation and mitigation, given that there is no longer a need to convince the world that change is happening. This probably means taking up the view at Sydney that the SYR type process and synthetic thinking needs to start much earlier - I would think it needs to be framed up at the time that the WG reports are being designed. It is also a reason to emphasise the change in scenario development logic that AIME has been pushing (I would mention this - although it's supposed to have been heard I don't see that it has been firmly agreed on in that report from the Netherlands).

Next, I think there is a real need for technical papers (and even proper assessments, knowing that these come under rather different rules at IPCC) on links between climate change and other global change issues - specifically biodiversity, desertification, and aspects of applied sustainable development. (The UNCCD has recently approached them for a desertification study I understand, and that should be promoted.)

Last, it has to be noted that there is weariness in much of the science community. Doing the process too often removes people from the basic research, and each cycle I think dilutes the top people, with just some key people with institutional support and a great deal of admirable self-drive persisting. Fortunately there are always new people, but whether the standard is truly being maintained I'm not sure.

Ian Watterson

Given the importance of the WCRP-coordinated climate model simulations, now known as CMIP3, to AR4, it is clear that the cycle of assessments needs to take into account future model experiments. Independent scientists provided valuable new material for assessment based on CMIP3. However, many results included in AR4, in particular by WG1, were produced by the lead and contributing authors. Furthermore, there was little coordination of this effort even between chapters. We suggest that a future experiment be comprehensively analysed independently of the IPCC, most likely by the agency that the archives the data set, and published in report form. Lead authors should be able to request particular results and illustrations, with reference to such reports. This would reduce the workload on authors, and may also allow the size of the AR itself to be reduced.

A. *T'P~ I* would like to suggest that, when considering the future of the IPCC, due consideration be given to its relationship with international conventions. Giv nil call for an enhanced focus on sustainable development, a stronger link with the Rio Conventions, including the CBD, would be a logical first step. In particular, based on the capacities and strengths of the IPCC, it would be useful to identify those processes for which the IPCC could contribute scientific assessments or specific technical reports. .

For example, the CBD will be considering climate change within the framework of the forest biodiversity and agricultural biodiversity programmes of work at the ninth meeting of the Conference of the Parties, in May 2008. Iri doing so, Parties will be identifying specific research needs and knowledge gaps. While the IPCC would not have the capacity ~(I carry out such research, you certainly have a strong comparative advantage with regards to coordination and synthesis . I welcome the opportunity for further collaboration and future discussions on the above matter.

Earth System Science Partnership (ESSP)

ESSP-response to the future of IPCC 1

General

The paper by the IPCC Chairman Pachauri is an important and welcome catalyst for beginning discussions about future work of the IPCC. As noted in the paper, substantial progress has been made since the formation of the IPCC in answering fundamental questions about climate change processes, impacts and response options. Likewise, substantial progress has been made in the awareness and understanding of climate change issues by policy makers and affected stakeholders and this has moved policy discourses beyond the issue of whether action is needed to consideration of what actions to take, when and where. With the advances in science, awareness and understanding, and shifts in policy discourses, new questions and remaining unanswered questions are emerging as critical for making the decisions that are now facing us. It is appropriate in this context to consider how the IPCC might adapt to the changing needs. The paper invites comments about the balance of comprehensive assessments versus special reports and technical papers; the scope and mandate of these different activities; their timing; and the organizational structures needed to manage them and integrate the appropriate mix of scientific and other expertise. No doubt the paper will elicit many thoughtful responses. But in view of the importance of the questions facing the IPCC, and the scale of effort and costs involved in IPCC assessments, **adequate time should be taken to assess the evolving needs and options before decisions are made**.

We recommend that the IPCC initiate a 6 to 12-month process to evaluate assessment needs for informing action on climate change and to consider if and how the structure and work of the IPCC needs to be modified to adequately address the needs. The process should engage persons from a range of perspectives, including authors of past assessment reports, governments, SBSTA, UNFCCC, the IPCC Bureau, outside scientific and technical experts, private sector and the diverse organizations with stakes and roles in climate change adaptation and mitigation. Such a process might include (i) preparation and circulation of background papers from different perspectives on information needed for decision making, the adequacy of information in IPCC reports, and information gaps that are critical for decision-making; (ii) a series of expert meetings to explore information needs and gaps and develop recommendations for IPCC assessment priorities; and (iii) a task group that would develop a proposal for organizing and implementing the next round of assessment activities.

Future assessment needs

Global environmental change assessments have been classified into four categories in a recent NRC report2: (1) process assessments, (2) impact assessments, (3) response assessments, and (4) integrated assessments. The goals and types of questions commonly addressed by each 1 The four global environmental change research programmes: DIVERSITAS, IGBP, IHDP, and WCRP joined together to form the Earth System Science Partnership (ESSP). The ESSP is a partnership for the integrated study of the Earth System, the ways that it is changing, and the implications for global and regional sustainability. The ESSP contributes to this endeavour through a number of activities: joint projects (carbon, food, health and water), integrated regional studies (e.g. monsoon Asia), and capacity building (e.g. START).
See ESSP website for more details, www.essp.org.

2 See: National Research Council, 2007, *Analysis of Global Change Assessments, Lessons Learned*. The National Academies Press, Washington, USA

type of assessment are summarized in the accompanying table. This provides a useful framework for considering progress of the IPCC assessments and identifying critical gaps. The reports of Working Group I (WGI) are primarily process assessments, those of WGIII are primarily response assessments, while WGII encompasses both impacts and adaptation responses. The Synthesis Report provides integration across the domains of the three Working Groups. Currently, the WCRP community is strongly linked to WGI; the IGBP community to WGI and WGII, the IHDP community to WGII and WGIII; the DIVERSITAS community to WGII and ESSP to all of them but especially to the synthesis report. In general we all would like to interact more strongly with all the WGs, thereby improving inconsistencies that emerge when different disciplines treat different aspects of the causal chain of climate change, and in the use of scenarios, that must link emissions, climate change, impacts and adaptive and mitigative responses. In particular, WCRP (and the broader climate research community) would like to interface more effectively with the impacts, adaptation and vulnerability (IAV) community (or communities) in WGII. This was also one of the recommendations of the recent GCOS-WCRP-IGBP workshop in Sydney but it was recognized that this could remain difficult because of the diffuse and comparatively less structured nature of the admittedly broader IAV communities. The ESSP (and its partner programmes and projects) could also take a lead here to interact more with these communities.

A careful evaluation needs to be made of what progress has been made in addressing fundamental questions that fall in the different domains, what unanswered questions are critical, and what new questions are emerging from evolving policy and science discussions (Table 1). While there remain important gaps, each of the Working Groups has made good progress in answering their core questions, with Working Group I having made the most progress. However, in the area of integration, relatively little progress has been made. We contend that it is the questions that fall in the domain of integrated assessment that are now the most pressing, both because of limited scientific progress and shifts in the information needs of policy makers.

Less progress on questions in the integration domain is not surprising as these questions pose extremely difficult challenges for research and for integration across many systems and disciplines. But the lack of progress may also lie, in part, in the separation of research communities into the three Working Groups of IPCC for assessment of the science. The Synthesis Report is the one mechanism that the IPCC has for bringing together the full breadth of expertise needed to integrate across the domains of climate change processes, impacts and responses. But current procedure requires that authors of the Synthesis Report draw upon the content and conclusions of the WG reports, constraining their latitude for full integration.

The IPCC should consider how its processes and structures might be changed to better address problems of integration. One option is to focus on a fast-track series of special reports, each with a well defined mandate to assess knowledge relevant to one or more specific questions that would require integration across two or more of the domains that have traditionally defined the IPCC Working Groups. These cross-cutting reports might be managed jointly by existing Working Group bureaus and TSUs. But there is a danger with this management structure that the relevant expertise would not work in a fully integrated mode. For that reason, the IPCC should consider establishing ad hoc working groups to oversee the management of special reports that would dissolve with the completion of their reports.

Finally, we welcome very much the idea to reflect the new role/need for further integration of the human dimensions in the composition of the IPCC Bureau and particularly the Vice ESSP- response to the future of IPCC 3 Chairs of working groups II and III. One of those should have a distinct background in the social sciences or economics.

Table 1. Fundamental questions for different types of assessment

Assessment Type	**Goals/Questions IPCC Report**
Process	• Understand global environmental change processes; determine if an environmental threat exists. • Is change happening in global scale systems? • What are the causes of change? • How large, rapid and abrupt will change be in the future? • How credible is the evidence of observed change, its causes and projections of future change?
WGI	
Impact	• Understand the consequences of global environmental change; determine the severity of an environmental threat. • Have impacts been observed that can be attributed to global environmental change? • What are the potential biophysical, ecological, social, economic and human development impacts of global environmental change? • Who and what are vulnerable, what are the processes and factors that determine their vulnerability, and how will vulnerability change in future?

• How credible is the evidence for observed impacts, future impacts and vulnerability?
WGII
Response • Understand options for responding to global environmental change; identify and evaluate possible responses.
• What are the response options for reducing adverse consequences of global environmental change?
• What are the technological, environmental, economic, and social feasibilities and capacities to implement different options?
• What is their expected performance in terms of effectiveness, economic costs and benefits, and consequences for sustainable development, the environment, human health, poverty, equity and other societal concerns?
• How credible is the evidence about feasibility, capacity and performance of response options?
WGII & WGIII
Integrated • Understand the connections; identify and evaluate interactions and anticipate where surprises may lie.
• Do impacts have feedbacks that amplify or dampen processes or its drivers? How strong are the feedbacks, over what time frames do they operate and how abrupt are they?
• Do impacts have consequences for the feasibility, capacity or performance of response options?
• Can responses have unintended consequences for the vulnerability of exposed systems and populations?
• What scenarios of future changes, impacts and responses are plausible and consistent with respect to drivers of global environmental change, vulnerability of exposed systems, feasibility of responses and capacity to respond?
• What responses and levels of response can reliably prevent critical thresholds from being surpassed in physical, environmental and/or human systems?
• How credible is the evidence about feedbacks, thresholds, and links between thresholds and the responses needed to avoid them?
• Where are the important gaps in knowledge? Where might important surprises lie?
Synthesis

ESSP-response to the future of IPCC 4

Regional research and capacity building

There is a large need for a greater focus on regional climate-change issues. However, progress on this front is severely limited by lack of resources (e.g. observations are lacking in many regions), lack of scientific infrastructure, gaps in our understanding of climate science and our ability to predict high resolution climate change with confidence. We are, therefore, in agreement with the statements of paragraph 3.2 about the inadequacy of observational data and research at regional scales on climate change processes, trends, projections, vulnerability, impacts, mitigation and adaptation, particularly in developing and least developed countries.

We concur with the suggestion that new programmes are needed to support and build capacity for research and assessment in developing countries and to link these activities to policy and decision-making processes. We, therefore, applaud and fully support IPCC's emphasis on the participation of scientists from developing countries. Previous programmes like Assessments of Impacts and Adaptation to Climate Change (AIACC) have proven the worth of such programmes and offer a model for future programmes. An expert meeting, organized by the IPCC, to develop plans for such programs is an excellent idea.

A recurring problem in this regard, however, is that many scientists from developing countries lack free and uncomplicated access to scientific literature. We are very supportive that IPCC has always made all of its reports and assessments publicly available. This has become a great resource. While IPCC cannot itself reform the current access and copyright policies of major scientific publishers and libraries, it may be worthwhile investigating whether IPCC could create its own additional "library" through which scientists from developing countries could access on-line publications.

There is also a need for a "revolution" in the modelling and prediction of climate change. WCRP, together with the World Weather Research Programme and IGBP are holding a Modelling Summit in May 2008 to draw up plans for such a "revolution". Many feel that with new observational capabilities, vastly improved computer resources as well as improved scientific understanding, significant improvement in our capability to predict regional climate change and to assess the confidence of these predictions is achievable. The next comprehensive IPCC assessment will profit from such scientific initiatives.

Fundamentals of sustainable development

We strongly support the notion that the growing awareness of climate change also increases interest in the fundamentals of sustainable development, resource use and ecosystem services. These issues are nowadays also at the heart of our global environmental change research agendas. In the longer term, it would indeed be desirable to broaden the acclaimed IPCC process beyond climate and climate change to include other issues of global environmental change. In this way, related issues such as biodiversity degradation, desertification, human health, urbanization, marine resources (among many others) could be included in a more coordinated way. We also strongly support the need to connect more effectively with the economic aspects of climate change. The ESSP and its partner programmes are, therefore, keen to pursue that within available resources, taking into account the full range of human dimensions research. Especially, IHDP is interested in contributing to the envisaged task force on this research. As the general discourse and/or political

debate shifts more from "causes" to impacts and adaptation/mitigation, human dimensions research is particularly important for the next IPCC cycle.

The solution to more strongly include these topics in WGII and WGIII, however, seems at odds with the integrative and cross-cutting nature of sustainable development and other global ESSP-response to the future of IPCC 5 environmental change issues. The physics of climate change and the biogeochemistry of the global cycles are, for example, major drivers of or constraints on sustainable development.

WGI should also contribute to the necessary understanding of changes leading to or jeopardizing sustainable development. It goes without saying that broadening from climate change towards global environmental change and sustainable development, or assessing the emerging discipline of Earth System Science, which was initiated a decade ago by the global environmental change research programmes3, requires to alter the structure, coverage and integration of all the IPCC working groups. The global environmental change programmes have also struggled with developing the best organizational structure to achieve this. IGBP, for example, reorganized it self from a strong disciplinarily focus to the different components of the Earth system (land-oceans-atmosphere) and their interactions. IHDP4 organized itself along major projects integrated through a series of cross-cutting themes and methodologies.

Also, the ESSP with a focus on integration resulted from these discussions. There is thus no immediately clear ideal and comprehensive organizational structure that covers all the multidimensional aspects of sustainable development and global environmental change. The three working groups have been spectacularly successful in convincing the world that anthropogenic climate change is real. However, it may not be the best one to coordinate the basic science necessary to support informed decisions about adaptation, mitigation and sustainable development. Unfortunately, we can provide little advice on a more appropriate structure. In the intermediate, however, probably a special (synthesis) report on climate change and sustainable development could fill such a void. Additionally, several other assessments, like the Millennium Ecosystems Assessment, the FAO's Forest Assessments and the forthcoming Food and Agricultural Assessment, will provide essential information on these topics. Sustainable development issues are not only relevant for the UNFCCC but also for other conventions and agreements (CBD, CCD, RAMSAR, MDGs and WTO with its Doha Development Agenda). We recommend that IPCC initiates a process to synthesize the relevant information on sustainable development from a series of scientific assessments in order to inform these communities. The global environmental change research programmes (through the ESSP) can contribute significantly by suggesting lead authors, by synthesizing research results and facilitating the required capacity building for such a broad effort.

Carry on with the regular formal assessments

In one way, IPCC faces the inadvertent danger of becoming a victim of its own success. While there is the necessity of communicating the scientific consensus (which IPCC does extraordinarily well), there is an associated danger of creating a scientific orthodoxy that is not allowed to be challenged. While "official" representatives are very good to clearly express that IPCC assesses peer-reviewed literature, individuals who have at one time or another participated in the IPCC process can sometimes promote the notion that the IPCC summaries are not only the most comprehensive consensus view on climate change, but that they are the *only* view. While IPCC cannot be held responsible for the actions of thousands of individuals who have or have not participated in the process, it could perhaps augment its communications efforts to emphasize that any new theories that are sufficiently robust to 3 Steffen, W., A. Sanderson, P. D. Tyson, J. Jäger, P. A. Matson, B. Moore, III, F. Oldfield, K. Richardson, H. J. Schellnhuber, B. L. Turner, and R. J. Wasson, editors. 2004.
Global change and the earth system. A planet under pressure. Springer, Berlin. 4 IHDP. 2007. Strategic plan 2007-2015. September 2007, International Human Dimensions
Programme on Global Environmental Change, Bonn.

ESSP-response to the future of IPCC 6 survive the peer review process are and will continue to be included in assessments. All these theories will continue to be assessed comprehensively in relation to all their known and unknown uncertainties.

The value of regular formal comprehensive climate assessments cannot be underestimated. While the timing of these assessments must be sufficiently long for significant advances to be made, and comprehensive model development and evaluation to take place, they should take place at a pace reflecting the rate of progress in the field. ESSP (and all our partner programmes) are keen to collaborate to provide more timely updates on specific science issues, but IPCC must remain the primary assessment process. In this regard, a decade between formal comprehensive assessment is probably too long. Every 5 or 6 years seems more appropriate.

We welcome and fully support the idea to pay more attention to timely special reports/technical papers, including reports across the established working groups. However, this additional workload cannot be on top of the already full agendas of the leading scientists of the global environmental change research programmes, who also act as IPCC (lead) authors. A good assessment requires participation of the best scientists from universities and research institutes in both developed and developing countries. IPCC's credibility is at stake, when the top-researchers involved in the cutting-edge research, are excluded for what-ever reason from the assessment process. IPCC should actively invite

contributions from the broadest possible scientific research communities and strongly lobby that their contributors are fully supported by their governments. Sufficient resources and/or prioritization have to be in place to prepare the AR5 and special reports/technical papers in parallel within the next cycle.

Still there is room for periodic "informal", issue-specific updates between assessments. Our programmes and scientists could play an important role here by initiating such updates and publishing them in renowned journals. Our experience with outreach will make the updated information available to the policy community and through the scientific publications; the updates are also immediately available for the next formal IPCC assessments. Improved collaboration between IPCC and ESSP and its partner programmes, could increase flexibility by responding to requests for updated information from policy-makers, while simultaneously making the information available for the next formal assessments. The update of sources and sinks in the global carbon cycle5 by the ESSP's Global Carbon Project in PNAS illustrates that such a pathway is possible. These updates received widespread media coverage. Also the recent GCOS-WCRP-IGBP workshop in Sydney and the upcoming meeting in Amsterdam to define the research agendas of the global environmental change programmes on the basis of the AR4 report show that there is ample room to improve our interactions.
Potential themes for special reports mentioned in the Chair's paper are interesting candidates and resonate well with ESSP's (as well as the other global change programmes) current work, on, for example, risk/disasters and vulnerability. ESSP can play an active role in further identifying and shaping these topics (within the envisaged task force). More themes might be 5 Canadell, J. G., C. Le Quere, M. R. Raupach, C. B. Field, E. T. Buitenhuis, P. Ciais, T. J. Conway, N. P. Gillett, R. A. Houghton, and G. Marland. 2007. Contributions to accelerating atmospheric CO2 growth from economic activity, carbon intensity, and efficiency of natural sinks. Proceedings of the National Academy of Sciences **104**:18866-18870.
Raupach, M. R., G. Marland, P. Ciais, C. Le Quere, J. G. Canadell, G. Klepper, and C. B.
Field. 2007. Global and regional drivers of accelerating CO2 emissions. PNAS
104:10288-10293.

ESSP-response to the future of IPCC 7
added during this process (e.g. on governance, behavioural changes, and social learning). This should be a point for discussion at the IHDP/ESSP-IPCC workshop in Amsterdam, April 2008.
In conclusion, IPCC can benefit strongly from increased collaboration with ESSP (and its partner programmes: DIVERSITAS, IHDP, IGBP and WCRP). IPCC as an assessment process and the global environmental change research programmes, which are generating original science to be assessed by IPCC, are natural partners. If coordinated better in future, this relationship can be even more mutually beneficial. (This is an issue for discussion at the Amsterdam meeting as well.) Furthermore, the ESSP and its partner programmes have various regional networks/committees that can add regional perspectives not fully covered but asked for by IPCC at the moment.

European Commission (Brussels)

Thank you for launching the debate on the future of the IPCC and consulting the European Community. Having read your good discussion paper, there are three issues concerning the future work of the Intergovernmental Panel on Climate Change that we would like to comment on. These relate to (1) the comprehensive assessment during each cycle, (2) the organisational structure of IPCC and (3) the status of the European Community in the Panel.

(1) The European Community agrees that the focus of the Panel and the comprehensive assessment that it carries out by relying on peer reviewed literature the scrutiny and approval by policymakers give the scientific output of the IPCC a credibility and validity that is unparalleled and is the major strength of the IPCC.

Based on the current five-year cycle of comprehensive assessments, the Panel has developed a unique reputation for comprehensive and authoritative summaries of the scientific, technical and socio-economic aspects of climate change that basically represents it's '*raison d'être*'. Policymakers need the comprehensive and reliable, scientific assessment of climate change due to its uncertainties and complexities. And they need this assessment to be widely accepted as a foundation to the debate on the scale of the threat and in particular the requirements for action. On the side of the scientific community it is obvious that the established IPCC five-year cycle of comprehensive assessments is motivating research, is providing guidance and generating helpful momentum for decisions related to allocation of human and financial resources. For these reasons the European Community strongly supports the continuation of a five-year comprehensive reporting cycle.

Future assessments by the IPCC should focus in more concrete ways on various aspects of sustainable development and the economic aspects of climate change, e.g. cost of inaction, cost-efficiency analyses of mitigation and adaptation policies, effectiveness analysis of policies. We see the need for a more integrated approach in particular considering, integrating and linking elements of IPCC WGs I, II and III *up-front*, not only in the form of a synthesis after each individual report has been written separately and – sometimes too much isolation. The Panel may want to consider a

task force on integrated assessment or to promote integrated assessment and closer integration of the working group contributions during the writing process. This would also facilitate the development of the next Synthesis report itself.

Clearly the Bali Conference UNFCCC COP13/KP-CMP3 with the adoption of the Bali Action Plan is a major step forward in shifting from identifying the problem to designing global policy responses. This new momentum on the policy side calls at the same time for new ways to respond to policy questions by IPCC more frequently. The European Community therefore also supports special reports on specific topics within the five-year cycle. We do see an important role for a special report that should be providing an update on the most pertinent questions where a lot new literature on climate science became available that could not be reflected in the IPCC fourth assessment report, in particular all issues relating to 'reasons for concern'.

(2) The European Community considers that the current structure of IPCC with its three working groups and the Task Force on National Greenhouse Gas Inventories has proven to be a successful, functioning and reliable organisational structure. Also the IPCC bureau with its balanced representation of UN regions does not require major changes. As highlighted under (1) it is important to consider options to improve the coordination and integration of the work of the three working groups – for instance a more formalised way to coordinate the work and reports from the working groups would be desirable. The chairs of the working groups should be tasked to have stronger role in this regard. Also the bureau could be asked to have an oversight role in this. We definitely agree that outreach activities could and should be an important contribution carried out by bureau members.
A problem in the current working arrangement is the so far unavoidable delay in updates on scientific key findings – the Panel may want to consider a way of introducing a new type of product that would allow a 'fast track' for responses to urgent requests for scientific assessment from the policy side.

A possible way to overcome resource constraints could be to set up an additional TSU with a special focus on Impacts and adaptation but also the capacity to synthesise findings deserves strengthening. A way of making more frequently updates available on key variables would be to set up an IPCC online data base on key indicators.

The European Community also thinks that the current capacity of the IPCC secretariat would deserve improvement for instance with a view to outreach on reports by the Panel. We see the need for more educational material based on the IPCC report.

(3) The European Community has international legal personality and is a Party in its own right to the UNFCCC and the Kyoto Protocol as an active supporter and major player in the global fight against climate change.
The European Community has developed a significant expertise on the scientific, technical and socioeconomic aspects of human-induced climate change, its potential impacts and options for adaptation and mitigation. The European Community is in fact one of the main actors that are driving forward the climate science as testified by the vast amount of research activities we funded in particular under the 5th, the 6th and the current 7th Framework programmes (please note the web links included below pointing to related publications).
In the Panel the European Community has been an active observer and is a major sponsor of the Panel through both voluntary contributions to the IPCC budget and via the annual cash contributions provided by the UNFCCC to the IPCC Trust Fund. Despite all this, the European Community is the only Party to the UNFCCC and the Kyoto Protocol that only has observer status under the IPCC.
In order to remedy this shortcoming, we would like to change the Panel's practice and suggest that the European Community be given "full participant status" at the IPCC in accordance with the usual practice under a number of other UN bodies.

The European Community, while not being a member of the Panel should be entitled to participate fully, within its areas of competence, in the work of the Panel or any subsidiary body thereof. Such full participation should include the right to speak and the right of reply, as well as the right to introduce proposals and amendments but not the right to vote.

There are many instances in which the EC is recognised as full participant, including the Commission on Sustainable Development (CSD), the United Nations Forum on Forest (UNFF), UN global conferences, such as the 1992 Rio Conference on Environment and Development (UNCED), the Johannesburg World Summit on Sustainable Development (WSSD), etc.
We believe that such a change in the Panel's practice could be done rapidly by means of a Panel decision based on a proposal submitted by the Secretariat with which we, of course, stand ready to cooperate.

ANNEX:
http://ec.europa.eu/environment/climat/pdf/bali/research.pdf
http://ec.europa.eu/research/environment/newsanddoc/other_pubs_en.htm
ftp://ftp.cordis.europa.eu/pub/sustdev/docs/environment/european_research_on_climate_change_eur21935.pdf
http://ec.europa.eu/research/environment/pdf/Polar_catalogue_final.pdf

Institute for Environment and Sustainability (IES)

Proposed IPCC Special Report on Climate Change and Desertification

A recommendation to compile an IPCC Special Report on Climate Change and Desertification was made earlier this month by "The International Forum on Soil Science and Society" which was organized at Selfoss, Iceland, by the Icelandic Soil Conservation Service under the Patronage of the President of Iceland, Olafur Ragnar Grimsson. This recommendation was supported by representatives of many international organizations and an extended summary report on the findings of the Working Groups of that meeting can be downloaded from the Internet at http://www.iisd.ca/download/pdf/sd/ymbvoll44numle.pdf.

An IPCC Special Report on Climate Change and Desertification is urgently needed. The results of our recent meeting, the workshop on 'Climate Change and Desertification: Monitoring, modelling and forecasting', held in Wengen, Switzerland, from 10 to 13 September 2007 (http://www.unige.ch/climate/Workshops/wengen07.html), demonstrated that scientific knowledge about desertification and climate change is scattered in the literature of many disciplines and that there is an urgent need to establish a policy-relevant scientific assessment. The results of our meeting also highlighted that the processes and implications of desertification are of great and widespread concern, as well as affecting particularly the poorer segments of the global population.

The most recent IPCC predictions indicate that dryland areas may be expanding. Although research related to desertification is on-going, recent results have underscored a number of challenges to policy and a lack of a consolidated intellectual understanding of the underlying causes and effects. The development of a special report and a better integration between climate change and desertification research results would establish synergy and provide a unique opportunity to examine future impacts of climate change. The rate of climate change predicted by IPCC echoes the rate of environmental change in the Sahel experienced in the past three or four decades, providing a test case of how humans have had to respond. Adaptation has already occurred to some extent in the Sahel, while massive dislocations and adjustments have taken place in central Asia after the collapse of the Soviet Union and associated institutions. Areas facing the risk of reduced precipitations in the future, and drylands in particular, host numerous inhabitants who may not have been severely affected yet, and thus may not have built the necessary expertise or conducted sufficient preparatory actions. These examples provide opportunities to examine, inter alia, the relationship between science and policy under predicted climate change.

Our meeting has also highlighted the relationships between climate change and desertification processes, which include many feedbacks at different scales so that both global and local assessments and accessible data sets are needed. It is particularly urgent to consider vulnerability as well as food and environmental security. Tackling desertification by means of ecosystem restoration and sustainable land management can positively influence micro and meso-climates, as well as the land surface energy and moisture budgets. Last but not least, sustainable land management and ecosystem restoration can and is being used to sequestrate carbon.

Participants in the above-mentioned Wengen-2007 Workshop on Climate Change and Desertification strongly support the recommendation for IPCC to issue a Special Report on Climate Change and Desertification.

International Geosphere-Biosphere Programme (IGBP)

General remarks

The release of IPCC's fourth assessment report (AR4) was a true watershed event. After decades of skepticism and even distrust, AR4 served as a touchstone for the vast majority of people convincing them that human-influenced climate change was real. This sea change in opinion was made possible by the cumulative, consistent and conscientious work of scientists around the world, working within the IPCC framework.

The framework itself contributed in a very fundamental way to the success of the AR4. It is widely regarded as a credible, salient and legitimate assessment process. As such, it is a model for how successful assessments can be carried out.

It may be asked whether it is wise to suggest changes to a process and organization that has proven to be so successful that it was awarded the Nobel Prize for peace last year. The adage "if it aint broke, don't fix it" comes to mind in this regard. However, the great success and high regard of the IPCC offer the opportunity for making changes at a time when the organization has the luxury of thinking carefully about its future, and is not under any duress to make modifications. It is in this spirit of suggesting how the IPCC could become *even more* successful that IGBP is pleased to provide some perspectives.

The Sydney workshop "Future Climate Change Research and Observations: GCOS, WCRP and IGBP Learning from the IPCC Fourth Assessment Report"

Together with our sister organizations the World Climate Research Programme (WCRP) and the Global Climate Observing System (GCOS), IGBP organized a workshop in Sydney in October 2007 to examine how our organizations may be able to adjust our own research strategies to become even more relevant for future IPCC assessments. While the main focus of the report from the workshop (included with these comments as a separate document) was on how IGBP, WCRP and GCOS may wish to adjust our strategies, there were several points that came from the workshop participants that are of relevance for IPCC. Some of these will be summarized here.

Using vulnerability as a focus

One of the main ideas of possible relevance for IPCC was the idea to use vulnerability to climate change as a way to focus research efforts. This is depicted in Figure 1 below (Figure 2 in the original report).

The idea is to first develop a consistent and clear definition of vulnerability to climate change, make a map of the most vulnerable areas of the planet, and then use this map to prioritize among and focus on the most pressing scientific questions that need to be addressed. In this way we can simultaneously work on the most important scientific questions about climate that need deeper understanding, but do so in a way that is more directly focused on and relevant for reducing the vulnerability of coupled human-ecological systems, and building system resilience.

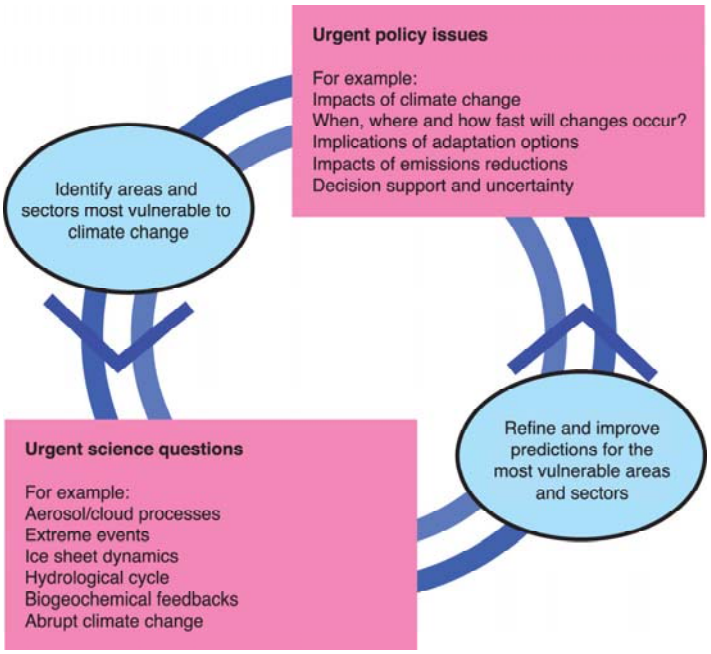

Figure 1. Using vulnerability of regions and sectors to climate change as a possible framework to link urgent science questions with societal concerns.

In this framework, the current division of research topics and approaches sequentially between working groups 1, 2 and 3 may not be the most optimal in future assessments.

A clear sentiment of the workshop participants was that the interaction between researchers working in the areas of impacts and adaptation, and those working on the scientific basis for understanding climate change needs to be improved. This new framework would provide a possible structure for improving these collaborations, and make them more natural.

Using vulnerability as a central theme allows larger focus to be placed on priorities arising *from* adaptation and mitigation needs, rather than delivering basic science information to be used (or not…) by groups working on impacts, adaptation and mitigation.

Start in the middle

A recommendation for a new strategy for climate change stabilization experiments was developed as part of a WCRP-IGBP collaboration. A central element of this strategy is to "start in the middle" of the current climate modeling process, as illustrated in Figure 2, taken from Hibbard, et al. (2007). The upper panel of Figure 2 shows the current climate modeling approach, which starts with storylines for socioeconomic development. Emissions of trace species are calculated from these storylines, which are then incorporated into climate models. The models then predict atmospheric concentrations of the trace species, and the concomitant changes in climate variables

such as surface temperature or precipitation. Uncertainties are of necessity propagated throughout this process, and the total uncertainty increases in each step.

The new strategy would entail "starting in the middle" with benchmark time series for atmospheric concentrations. The starting point for these concentration scenarios would be the presumed impacts associated with different concentration levels (for instance, concentration profiles that would lead to little interference with the natural climate, significant but manageable interference, or dangerous interference).

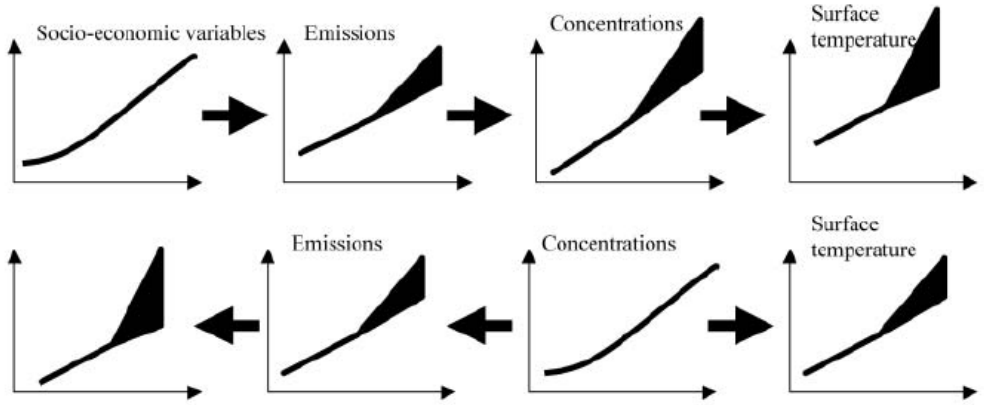

Figure 2. New strategy for climate change stabilization experiments.

Calculations would then proceed in two directions: "backwards" towards emissions scenarios consistent with the concentration profiles, and the associated socioeconomic development producing the emissions; and "forward" towards changes in climate parameters. This strategy would also better integrate the impacts, adaptation and mitigation communities with scientists looking at basic climate science.

Furthermore, the WCRP-IGBP group had recommendations near-term and long-term experiments that would enable better understanding and prediction of carbon cycle feedbacks and responses. The details of these recommendations can be found in Hibbard, et al. (2007) and Meehl & Hibbard (2007), both of which are included with this letter.

Individual points

In addition to these overarching suggestions, we have a number of other points that IPCC may wish to consider for its future development.

- Begin to move from climate assessments to global environmental change

In the longer term, it would be desirable to broaden the acclaimed IPCC process beyond climate to include issues of global environmental change. In this way, related issues such as biodiversity degradation, desertification, human health, urbanization, marine resources (among many others) could be included in a more coordinated way. This is not to say that any existing conventions on these issues are irrelevant, but rather that global environmental change become the central theme of IPCC, rather than physical climate.

- Reassess the three working group structure

Many of the suggestions above would perhaps be more efficiently addressed by an organizational structure different from the current WG1, WG2 and WG3 framework. This framework has been spectacularly successful in convincing the world that anthropogenic climate change is real. However, it may not be the best one to coordinate the basic science necessary to support informed decisions about adaptation and sustainable development. While we at IGBP do not presume to recommend a new structure for IPCC, we wonder ourselves how our own organizational structure can best support *applied* Earth System science. While the recommendations described above could be implemented within the current working group structure of IPCC, they may be more efficiently carried out under a slightly different framework.

- Create a mechanism for access to literature for developing country scientists

IGBP applauds and fully supports IPCC's emphasis on the participation of scientists from developing countries. A recurring problem in this regard is that many scientists from developing countries lack free and uncomplicated access to scientific literature. While IPCC cannot itself reform the current access and copyright policies of major scientific publishers and libraries, it may be worthwhile investigating whether IPCC could create its own "library" through which scientists from developing countries could access on-line publications.

- Avoid being *too* successful: downplay scientific orthodoxy and clearly express uncertainty

In one way, IPCC faces the inadvertent danger of becoming a victim of its own success. While there is the necessity of communicating the scientific consensus (which IPCC does extraordinarily well), there is an associated danger of creating a scientific orthodoxy that is not allowed to be challenged. While "official" representatives are very good to clearly express that IPCC assesses peer-reviewed literature, individuals who have at one time or another participated in the IPCC process can sometimes promote the notion that the IPCC summaries are not only the most comprehensive consensus view on climate change, but that they are the *only* view. While IPCC cannot be held responsible for the actions of thousands of individuals who have participated in the process, it could perhaps augment its communications efforts to emphasize that any new theories that are sufficiently robust to survive the peer review process are and will continue to be included in assessments.

- Carry on with regular assessments

The value of regular formal climate (or global environmental change?) assessments cannot be underestimated. While the timing of these assessments must be sufficiently long for significant advances to be made, and comprehensive model development and evaluation to take place, they should take place at a pace reflecting the rate of progress in the field. IGBP (and our partners in the Earth System Science Partnership – ESSP) are keen to collaborate to provide more timely updates on specific science issues, but IPCC must remain the primary *assessment* process. In this regard, a decade is perhaps the longest amount of time that should elapse between formal assessments; if the current ca. 4-year interval is too cumbersome, then perhaps some interval in between could be established for formal assessments, with periodic "informal", issue-specific updates between assessments.

International Federation of Red Cross and Red Crescent Societies (IFRC)

Suggestions relating to the point 3.1.1:
Although public awareness on climate change, comparing to the last decade, has been raised to a higher level, it is still not enough. The experience of the International Federation of Red Cross and Red Crescent Societies (IFRC) shows that climate change is better appreciated if there is a better understanding of its humanitarian consequences. Such an understanding significantly assists programs for reducing the risk of climatic disasters, while also obtaining wider support for programs at community levels in all countries.

The IPCC reports are of high scientific and technical standards. They are extremely useful references for the scientists and for the decision-makers at the highest level. In the future, nevertheless, as the information on climate change also needs to reach out to the decision-makers and all populations at local level (children, women, elderly etc), it would be useful if the IPCC could provide a user-friendly report to promote the understanding among the wider population. The production and dissemination of such a report might be assisted by partner organisations.

Suggestions relating to the points 3.1.3 and 3.2:
Within the regional impacts analyses of climate change, IFRC suggests a larger emphasis on the projected climate related extreme weather events and increased climate variability. This information will certainly facilitate the collaboration of governments and international & regional organisations working for development. A programme of action as mentioned in 3.2. can play a catalytic role too. These paragraphs should emphasise the importance of partnerships involving regional organisations, and community-based organisations to gain a full understanding of local impacts.

Suggestions relating to the point 4:
IFRC is assuming that it will be decided that there will be an AR5. In that case, IPCC should more clearly plan for the inclusion of the regional impact of climate change in its AR5. IFRC suggests that this should include an analysis/assessment on weather extremes relating to climate change, and the future trends.

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.

International Strategy of Disaster Reduction (UN/ISDR)

Section 1
We agree that the IPCC process has been a great success and would venture that it is unprecedented as a global instrument for providing a sound scientific basis for global intergovernmental policy. This success arises from its capacity to mediate two complementary motivations - the need of Governments for a global consensus on the science of climate change in order to jointly deal with its profound consequences, and the need of the scientific community for sustained and coherent international support to address the complexities and global character of the scientific issues involved. In considering its future activities, the IPCC should be mindful of these underpinning drivers and should orient its work accordingly.

Section 2.1
We suggest that the three points on the changes in the policy community's needs should include reference to adaptation. Thus, points 2 and 3 could read: "(2) new perception on the impacts of climate change *and the need for specific urgent adaptation actions* and (3) new opportunities and changing costs of mitigation *and adaptation*."

Section 2.2
We agree that the IPCC principles and procedures should be respected, but at the same time suggest that these too should evolve according to changing policymaker requirements. In particular, where question at issue lies more in the realm of practice and less in science, as is the case for practical adaptation and mitigation activity, adjustments will need to be made to the rules in order to gain access to, and properly assess, gray literature and information, such as policies, procedures, organization reports, project designs, costings, trade literature, etc.

Section 3.1.1
Regarding the greater demand, we would suggest that the work of the IPCC is already at a very high level of policy relevance, and that the problem is rather that there are many matters of policy relevance that are not being addressed. This implies a need for better processes to formulate and choose the questions and topics for assessment. We suggest that the policy issues that are now highly relevant to Governments have moved from a sole focus on the scope of the problem toward a much greater focus on what to do about the problem.

Section 3.1.2
We support the proposed shift in the Working Groups' framework toward sustainable development. Among other reasons, weather and climate risks are important factors in sustainable development, but unfortunately are often neglected. Disaster risk reduction is needed to avoid reversals of development gains.

Section 3.1.3 and 4.1.4
We agree that much better information is required on the economic aspects of climate change. We suggest that this is part of the broader issue we now face of taking practical action on mitigation and adaptation, for which quantitative, evidence-based approaches are needed, for both policy-making and investment. The IPCC could play a valuable role in fostering the formulation of the appropriate policy-relevant questions. Before any assessment initiative were taken, however, it would be important to first consider the nature of the available information base and to consult with the leaders of related initiatives on the economics of climate change. In regard to economics, these include the study on the costs of adaptation being undertaken by the World Bank with support from United Kingdom and the Netherlands, and the parallel study on the economics of disaster risk reduction being undertaken jointly by the United Nations (through the ISDR) and the World Bank.

Section 3.2
We agree that locally relevant information is essential to the work of policy makers and practitioners but is often not available or accessible. In the case of disaster risks, the geographic areas of concern and specific hazard risks are critical to the design of adaptation responses. Climate model-based downscaling cannot provide all the desired types of answers, and it is necessary to develop more integrated approaches and to build capacities in these.

This need, and the other above on economics, raises the question as to how far the IPCC should go in leading the development of required policy-relevant information, as apposed to simply assessing available information. Our observation is that the IPCC processes have implicitly led some areas of knowledge development, particularly in stimulating gap-filling and greater coherency in the knowledge base. This is inevitable to some degree, since it is largely the same set of researchers who are involved in the design and writing of the IPCC reports. We consider this to be a positive outcome. However, the IPCC community needs to be careful not to confuse its mandate with those of operational research and capacity building programmes. The two primary tests here should be (i) the shared policy requirements and priorities of Governments and whether there is a "need of Governments for a consensus on [this

aspect] of climate change" (see note on Section 1 above), and (ii) the requirement for assessment rather than programmatic activity (research, capacity building, etc)

Section 4.1
We are satisfied with the functioning of the existing working group structure and the generation of comprehensive assessment reports every five years or so, and support the Chairman's proposal to continue in this way. Periodic comprehensive assessment reports play a critical milestone role in raising public awareness and motivating policy and political advances, and they should be continued in some form.

At the same time, we see the need for a greater volume of more tailored assessment work, in order to support the very specific and practical actions that Governments now need to take. It would be highly inefficient to have each Government separately assess policies and methodologies to deal with the numerous sectors, geographical circumstances and socio-economic settings they face. These assessments would need to be well focused and undertaken in a timely way.

Section 4.1.3
As noted above, we support the idea of undertaking IPCC special tailored assessments, whether as IPCC Special Reports or IPCC Technical papers. Further consideration may need to be given to the rules for such products, to ensure that they meet the growing demands for diverse types of assessments.

We particularly encourage IPCC members to consider undertaking an assessment on methods and capacities for managing the risks of extreme events, as a key element of climate change adaptation[2]. The assessment should be responsive to the guidance of the Hyogo Framework for Action[3] and ideally should draw on the assistance of the ISDR. It would:

- Identify information and reveal trends about socio-economic vulnerabilities and capacities, from sources specializing in disaster risk assessment.
- Identify statistical data and figures on disaster occurrence and losses from international, regional and national disaster risk management literature and databases.
- Assess, by sector, the success of current risk reduction practices to present-day climate risks, such as in food security, water management and the protection of critical infrastructure and energy investments.
- Examine and develop lessons learned from community-level risk reduction (good practices).
- Identify opportunities to build on existing adaptive successes.
- Provide an accurate baseline for worldwide adaptation efforts and identify needed adjustments for the increased hazard risk associated with climate change.
- Quantify the costs and benefits of specific measures to reduce climate-related risks and the costs of relief and recovery.
- Identify risk reduction efforts that have been "mainstreamed" into development and reveal opportunities to integrate adaptation, disaster risk reduction and sustainable development.

Section 5.1.3
If a more extensive programme of special reports and technical papers is to be undertaken, it would be necessary to appropriately increase the capacity of the IPCC Secretariat. Even if the reports are each supported by a dedicated donor-supported Technical Support Unit, as we assume would be the case, the IPCC Secretariat would still need to provide international coordination and oversight.

Section 6.2 (specially requested feedback)

6.2.1: See notes above under Section 4.1. Additionally, there may be virtue in seeking to link the IPCC work cycles to the timetable of UNFCCC processes. The release of the Fourth Assessment in the months before the Bali Climate Conference played a key role in accelerating informed action at the Conference.

6.2.2: In various points above, it is suggested that a higher volume of targeted special assessments is desirable; if so, some review and change may be required in order to properly formulate, guide and support these assessments.

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[2] This proposal was submitted to the IPCC secretariat and tabled at the 27th Session of the IPCC, Valencia, 12-17 November, 2007. See proposal document at http://www.unisdr.org/eng/risk-reduction/climate-change/docs/ISDR-Proposal-for-IPCC-study.pdf

[3] Outcome document of World Conference on Disaster Reduction, Kobe, January, 2005; endorsed by the UN General Assembly. See http://www.unisdr.org/eng/hfa/hfa.htm

The World Conservation Union (IUCN)

IUCN would like to propose the following recommendations:

1. A comprehensive assessment should be produced every 5-6 year cycle rather than every 10- 12 year cycles, as the science is still growing rapidly (note the increased information on polar ice since the (IPCC 4th report). Maintaining the current cycle would also help to identify acceleration in rates of change, should they occur. Special reports could be issued on an ad hoc basis as they are required.

2. Much greater attention now needs to be given to adaptation, especially because mitigation measures have proven so inadequate to date. As IPCC 4 pointed out, climate change is inevitable and little evidence indicates a slowing of the rate of change. Hence adaptation measures need to be identified, ideally relevant to the various major ecosystem types throughout the world.

3. IPCC should give considerably greater attention to other environmental impacts of climate change, (including on forests, biodiversity, and water. While these topics have been covered previously, much more information is becoming available and regular synthesis of this information is essential to enable appropriate responses to be designed and implemented.

I UCN greatly values the work of I PCC and looks forward to opportunities for our experts and Commission Members to contribute further.

START Scientific Steering Committee (SSC)

Thank you for the opportunity to comment of the discussion paper "Some Issues Related to the Future of the IPCC". Our organization, the global change SysTem for Analysis, Research and Training (START), agrees with the IPCC Chair that this moment, shortly after the completion of the 4th Assessment Report, is an opportune time to reflect on the processes and structure of the IPCC and to consider if and how these can be improved. Many of the participants in START's network will no doubt contribute their comments on the various issues raised in the paper, both as individuals and jointly with other groupings of scientists and interested stakeholders.

But there is one issue that we wish to comment on in our capacities as members of the Scientific Steering Committee of START. This is the issue raised in paragraph 3.2 on the need for an initiative to promote more focused research on the impacts of climate change in specific regions of the world, particularly the developing countries, similar to the work initiated under the project Assessments of Impacts and Adaptation to Climate Change (AIACC). We wholeheartedly agree that there is a great need for such a program.

Significant strides have been made since the first assessment of the IPCC to increase the engagement of developing country scientists and institutions in the scientific investigation of climate change, its consequences, and feasible responses. This engagement has contributed to important advances in the understanding of climate change and climate change impacts, vulnerability, adaptation and mitigation in the developing regions of the world. One of the catalysts for the advances, we submit, has been START's nearly two decades of effort to support global change science in developing country regions. Most conspicuous are the accomplishments of AIACC, a project sponsored by the IPCC with funding from the GEF and jointly managed by START and The Academy of Sciences for the Developing World. These accomplishments include increased scientific capacity for multidisciplinary work and stronger links among scientific institutions and between science and policy communities. The project advanced scientific knowledge with more than 200 publications, more than 100 of which are published in the peer-reviewed literature and many of which are cited in the IPCC AR4. The publications from the AIACC project have also influenced national communications to the UNFCCC, NAPAs, and other policy planning processes.

However, despite the important strides, critical gaps remain: in our knowledge about climate change processes, trends, projections, vulnerability, impacts, adaptation and mitigation at regional and finer spatial scales; in the extent of involvement of the science communities of developing countries; and in the capacities of many developing countries to fully engage in the advancement of the science and its application in decision-making. For many developing countries there is insufficient place-based research and existing place-based research is often not in the peer-reviewed literature or is not otherwise readily accessible to potential users. Too often these gaps have necessitated conclusions being drawn

for developing countries that are inferred from findings that derive from global scale research or from research conducted in other countries or regions of the world.

START programs and projects such as AIACC, as well as those of other organizations, have amply demonstrated that investments in developing country science can yield high payoffs in terms of scientific capacity, productivity and place-based research that is relevant to the decision-making needs of developing countries. We believe that further investments in developing countries to advance scientific capacity for research and assessment at regional and finer scales -- including social, biological and physical sciences, and most particularly science that integrates across these domains -- are critically needed and will continue to yield high rewards. As the climate changes, climate-related hazards will play an ever-increasing role, impacting on all countries but more so on developing countries. It is important that climate change adaptation initiatives be linked with disaster reduction strategies and that, correspondingly, the scientific capacity to address these coupled issues be developed in a more cohesive fashion. START and partners have moved in this direction.

The IPCC Chair suggests in his paper that the IPCC convene an expert meeting to develop the outlines of a new program to advance the research needs of different parts of the world. We encourage the IPCC to move forward with such a meeting and stand ready to offer the benefit of our experience with the AIACC and other science capacity building projects. Many lessons have been learned from previous programs that can guide development of an IPCC inspired initiative. Among these are (1) the great synergistic benefits that can be achieved by regional processes and structures that bring together persons from multiple countries; (2) the importance of strengthening institutions that are indigenous to developing countries for participating in, supporting and leading regional science initiatives; (3) the necessity of a broadly multidisciplinary approach; and (4) the value of engaging a broad range of persons from science, government, private sector, civil society and at-risk groups in science assessment planning and implementation.

We are strongly of the opinion that a program to build upon and extend the achievements of AIACC, and with similar design to AIACC, is very much needed. START is willing and eager to collaborate with the IPCC once again in such an initiative.

United Nations Convention to Combat Desertification (UNCCD)

1. Comments on comprehensive assessment during each cycle vs. special reports on a regular basis and a comprehensive assessment every two cycles.

Need for change

In the opinion of the UNCCD, there is need for the IPCC to change its modus eperendi, to concentrate more on special reports, particularly in the light of changes in the global regime for tackling the challenge of new opportunities and changing costs of mitigation, as well as adaptation to climate change. IPCC has also already established a record of producing special reports, methodology reports and technical papers, which focus on some specific aspects of climate change and related areas (e.g. biodiversity and climate change). However, the imperatives of sustainable development will require further work on focus areas. The work of Working Groups II (which assesses the scientific, technical, environmental, economic and social aspects of the impacts of climate change, the vulnerability of various natural and human systems to these impacts and adaptation to climate change) and III (which assesses all aspects of mitigation of climate change), could focus on issues such as climate change and soil quality.

This need has already been manifested by International Forum on Soils, Society and Global Change, held in Selfos, Iceland from 31 August to 4 September 2007. At this Forum, a joint mechanism amongst the Rio Conventions to be initiated by the UNCCD was recommended, in order to operationalize synergies in implementation of the MEAs. This will begin with a request to the IPPC to develop a Special Report on Land Degradation and Climate Change (as done previously for the CBD with respect to biodiversity).

In this respect, there has already been communication between the UNCCD and the IPCC, as per attached correspondence:

2. As far as the organizational issues and the structure of the Bureau as well as changes in procedures and practices in the functioning of the Panel are concerned, we would very much encourage the IPCC, in those special reports that are related to land degradation, to closely associate the UNCCD scientific subsidiary body, through its Chair.

United Nations Environment Programme (UNEP)

UNEP warmly welcomes the paper seeking to outline a "Future of the IPCC". The possible interventions contained therein suggest a more robust and effective IPCC in the years to come.

UNEP would like to add its voice to that of several others and emphasize the need for more work to be done on the connection between climate change and sustainable development. There is no doubt that the two are linked in an intricate and interdependent manner and it would be invaluable to bring this out clearly for the benefit of policy makers, the rest of the scientific community and the public at large.

Greater economic analysis of the impacts of climate change would help assist in putting into proper perspective the real price of carbon and facilitate the development of appropriate polices and measures to curb increased emissions of greenhouse gases. IPCC engagement on this aspect would be of particular value in those geographical regions where basic data and research are scarce.

Closely linked to this is the need to better link the science and empirical aspects of the work of the IPCC to the political negotiation process in particular that undertaken by the United Nations Framework Convention on Climate Change (UNFCCC) through the recently concluded Climate Change Conference in Bali, and the issues highlighted in the Bali Roadmap adopted at the end of the conference.

Lastly, with reference to the recent public debate proposing that the IPCC continue to work within proper parameters and without losing the scientific neutrality that has been the hallmark of work of IPCC thus far and *"learn to actively frame information to make it relevant for different audiences"* UNEP agrees that the work of IPCC be transmitted beyond those formulating scientific assessments and policy options to the public at large in ways which are easily comprehensible and effectively send the climate change message to a wider society.

Once again UNEP encourages and supports you in this endeavour and looks forward to an even stronger and more effective IPCC in the years to come.

WCRP

The WMO/ICSU/IOC World Climate Research Programme (WCRP) welcomes this opportunity to comment on the future of the IPCC and commends IPCC on this initiative. The IPCC has been remarkably successful and has had a huge impact. Continuing to examine its evolving role will ensure that success continues.

The WCRP occupies a unique position with respect to IPCC and much of the international science assessed by Working Group I is actually conducted/coordinated by WCRP Projects and activities. This includes much of the basic science, including, for example studies of changes in extreme events and filling gaps on key uncertainties. Perhaps the highest profile contribution from the WCRP is the coordination of the model experiments which together with observations form the basis of the detection and attribution of anthropogenic climate change and are the basis of the projection of future climate change which permeates the Assessments of all three Working Groups and the Synthesis Report.

How future IPCC Assessments might be completed and how WCRP might optimally contribute are of course a subject of ongoing discussion within WCRP. These issues were also discussed at the Sydney Workshop "Future Climate Change Research and Observations: GCOS, WCRP and IGBP Learning from the IPCC Fourth Assessment Report", and at an Aspen Global Change Institute workshop jointly organized by WGCM (WCRP) and AIMES (IGBP) in 2006. At this latter workshop, the foundations were laid for the current planning of the next round of coordinated climate change experiments that led directly to the IPCC Expert Meeting on New Scenarios, 19-21 September 2007, Noordwijkerhout, The Netherlands. This process is intended to keep assessment separate from research. As a scientific research community, we are planning climate model experiments in concert with the scientists who generate the scenarios required for those experiments. This takes the scenario specification function that IPCC formerly assumed, and puts it into the hands of the scientists who formulate and use the scenarios. WCRP views this as a major step forward following directly from the AR4 experience.

Of course it needs to be recognized that now that warming is unequivocal, adaptation to climate change, which mostly occurs at the regional and local scale, will be essential. This will require significantly improved understanding of the climate system, ongoing coherent in situ and satellite global observing systems as well as model predictions/projections of the climate system over the full range of time scales. This will require continued investment by nations.

There are of course a range of views within WCRP. However, one common thread to these views is strong support for the ongoing role of IPCC and a wish for WCRP to contribute as effectively as possible. Suggestions from WCRP for the future of IPCC include:

• There is a need for ongoing comprehensive Assessments. However, these should not be too frequent, and certainly not more frequent then every six years. On the other hand ten years is probably too long a period between assessments. Perhaps every seven or eight years would be appropriate. There is a huge effort from the research community in doing the WCRP research and completing the modeling studies that are central to Working Group I and underpin Working Groups II and III. More frequent Assessments will limit the progress of the science that is so central to IPCC.

• The timing of reports is an important issue for efficient use of scientists' time and resources and the quality of the assessments. For example dovetailing with other reports such as the WMO/UNEP Ozone Assessment should be considered.

• There is strong support for the rigorous review process with the assessment based on peer-reviewed literature. This is believed to be critical in giving the report undeniable credibility.

• There is support for completion of synthesis reports.

• On the modeling side, there is a need to make sure that optimum value is obtained from the huge investment involved. This means there needs to be active participation from scientists from all three Working Groups. The ground work has been laid for this to happen through the Aspen and Netherlands workshops mentioned above where scientists from the three Working Groups have worked together to formulate climate change experiments and the scenarios to drive them. This is a significant change from how this process worked in the past. Formerly, IPCC played a much more active role in structuring the research required. However, the IPCC should do assessments, not formulate research. With this new process in place, the science is more in the hands of the scientists. This ensures continuity from one set of experiments (and assessment) to the next that is consistent with new science questions that arise as a natural part of the process.

• Following from the major point above, it is recognized that physical climate science coordinated by WCRP and IGBP represented in IPCC WG1, and the new Scenarios Consortium representing IPCC WG3, provide major points of organization and coordination among those communities, thus facilitating the formulation of such large international scientific research agenda. However, what is currently missing is a community interface group or organization representing the climate impacts (IPCC WG2) community. There are currently efforts underway to better organize that community at an international level to give them a more active representation and participation role, but for now this remains an obstacle for interaction and coordination with the impacts, adaptation and vulnerability (IAV) community (or communities). To recognize the newly emerging interaction and coordination among these communities, WCRP suggest IPCC could help bring these communities closer together, possibly through sponsoring/organizing a workshop in the first instance. The Earth System Science Partnership would have a critical role in such a workshop.

• It is agreed that there is a need for a greater focus on regional climate change issues. Progress on this front is severely limited by lack of resources (eg observations are lacking in many regions), lack of scientific infrastructure, gaps in our understanding of climate science and our ability to predict high resolution climate change with confidence. However, there is a revolution that has begun in the modeling and prediction of climate change to address this issue. As part of the international planning process mentioned above, modeling groups are targeting two classes of models for two types of science questions. One is long term climate change (100 years and beyond) using emerging Earth System Models incorporating mitigation scenarios agreed upon by scientists in WG1 and WG3. This requires unprecedented collaboration among WCRP and IGBP scientists to produce credible Earth System Models that include carbon cycle and other elements of biogeochemistry, as well as cooperation with integrated assessment modelers to produce mitigation scenarios to run in the Earth System Models. The second is focusing on short term climate prediction, or so-called "decadal prediction". This brings together for the first time WCRP scientists who work on prediction on timescales from daily to seasonal to interannual to decadal, recognizing that a common goal is to provide climate predictions starting with a credible observed state of the climate system. WCRP, together with the World Weather Research Programme and the International Geosphere-Biosphere Programme are holding a Modeling Summit in May 2008 to foster this revolution and provide vision regarding how this new way of doing climate predictions should evolve. New observational capabilities, vastly improved computer resources as well as improved scientific understanding should lead to significant improvement in our capability to predict regional climate change and to assess the accuracy of these predictions.

• These developments and others associated with improved understanding and observations are leading towards the vision of a climate information system that will provide ongoing assessment and predictions of future climate on multiple time scales thus allowing more effective adaptation and policy decisions. This vision is in an early stage of development and requires ongoing investment.

• Realization of these benefits depend critically on improving the basic understanding of the climate system so that weaknesses in model representation of key processes (e.g., convection, aerosol-cloud-precipitation, ocean mixing, understanding ice sheet flow, etc.) can be improved. This in turn depends critically on improved global and regional data sets. These studies are essential underpinning of the modeling activities. IPCC has a role to encourage nations to continue the investment in these research and observational programmes to allow continued improvement of the models and delivery of results adequate for adaptation purposes.

• Many hold the view that there is a need for a more integrated approach to assessments and IPCC has to find ways to improve the connections/linkages between working groups. There are a number of different aspects to this including ensuring greater linkages between the Working Groups that has already started at the level of the research scientists as indicated by the planning process currently underway (mentioned above). Another suggestion is for the formation of the

Synthesis writing team earlier so there can be more two way interaction, possibly initiated at least in part by the Synthesis team. Yet another is cross working group authors and review editors. There also needs to be uniformity in the procedures, rules, policies, language and rigour across the working groups.
• There is a need for risk analyses more closely linked to Working Group I projections and possibly for Working Group I to take a more risk analysis approach, at least for some issues.
• There is support for the idea of special reports which could be shorter, more focused and more easily completed. Obvious areas for such reports are ice sheets and sea level, and carbon-cycle feedbacks. There could be different ways of approaching these reports, perhaps with a more bottom up element and perhaps even groups like WCRP initiating special reviews which would be published in the peer reviewed literature and could then feed into the broader IPCC assessments. However, since the entire climate system is affected by changes in external forcing, and there are multiple feedbacks among all elements of that system, special focused reports should be no substitute for the more rigorous assessments of climate science where the participation of climate scientists from all areas of our field bring together an assessment of the current state of human knowledge of climate variability and change. The fact that very extensive and resource-intensive climate model simulations underpin much of what we know about present and future climate change, a general assessment dependent on those simulations coordinated across the working groups, done no more frequently than every 6 years (perhaps every 7 or 8 years), is still essential to provide policy makers the best information on climate change.
• There is support for the need to connect more effectively with the economic aspects of climate change and WCRP is keen to pursue that within available resources. Similarly the connection with sustainable development issues are critical.

The World Climate Research Programme will continue to strive to progress the science essential for the success of IPCC, including continued coordination of scientific research and the projections of future climate. WCRP and IPCC need to continue and indeed strengthen our existing partnership for effective delivery to nations. Surprisingly, at this time when climate change is such a high priority world wide, WCRP's ability to continue to foster and coordinate the science that underpins IPCC is severely resource limited.

World Health Organization (WHO)

We greatly appreciate the opportunity to comment. The work of the Panel in reviewing and assessing the published literature on climate change is very important to the work of WHO, and to the health community. For example, in January 2008 the Executive Board of WHO passed a strong resolution on climate change and health with overwhelming support. The comments of many of the WHO Member States, and the resolution itself, referred specifically to the work of the IPCC.
In response to the specific points raised in the discussion paper:

Under Item 3:
We would like to agree with, and reinforce, the point made under item 3.1.1., which recognizes "a greater demand for a higher level of policy relevance in the work of the IPCC". We believe that the IPCC reports present important information for policy makers, clearly stating the reality of climate change and the connections to public health. However, this is relatively superficial in terms of informing the selection of policy options (which reflects the state of the underlying literature). Now that the efforts for recognition of the problem have been fruitful, we see selection and implementation of policy as the main strategic priority.

We would also endorse the proposal to pay greater attention to the points raised under 3.1.2 (sustainable development) and 3.1.3 (economics). Much of the constraints on improving adaptive capacity to protect health from climate change relate to the degree of emphasis that is placed on sustainable development and the reduction of environmental risks to health. They also relate to economics, particularly lack of definition and prioritization of investments that would protect health from climate change, and lack of quantification of the economic benefits from the direct health co-benefits of climate change mitigation measures. In brief, we would like to see health more strongly represented under Working Group III, as well as under Working Group II.

Under 3.2. We would also endorse a greater emphasis on regional assessments, in the field of health protection from climate change/adaptation. In this, we would propose that the IPCC does not act alone. In many cases there is a need to stimulate new research, which is beyond the traditional "review and assess" mandate of IPCC. If the IPCC extends its mandate to direct and stimulate new research, we believe that should be done in consultation with agencies that are already active and have an existing mandate for guiding new research (e.g. WHO in the case of health).

Under Item 4. We would endorse your own proposal, for completion of the comprehensive assessment reports within the 5-6 year cycle, and any specialist reports to be completed within 3 years at the beginning of the cycle. A cycle of 10-12 years would be too slow to react to the rapidly changing state of climate change science, and especially policy. We have no comments on any of the other points raised under this item.

Under Item 5. We have no comments on any proposed changes for organizational policy. However, WHO would like to stress the need for the stated process for the nomination of experts and the selection of authors for the different chapters to be followed very closely and documented for any future reference. We also believe that it will be important to follow past practice of reviewing the list of experts to be invited to join the teams as well as the chairs, vice chairs and co-chairs, as this important process allows for a proper cross fertilization between the IPCC and the broader scientific community. A transparent and documented process which build upon the past very positive experience would further enhance the credibility of the IPCC and of the whole UN system.

If you have any questions regarding WHO's contribution, please contact Dr. Maria Neira, Director of the Department of the Protection of the Human Environment at +41 22 791 5526 and neiram@who.int

Thank you in advance for your consideration of our comments, and with my best wishes for the future development of the important work of the IPCC.

World Bank

We congratulate the IPCC for its excellent work in delivering such an authoritative and compelling assessment of the current understanding of climate change. The award of the Nobel Prize is fitting recognition for the IPCC's efforts over almost two decades.

We welcome your thoughtful consideration of the IPCC, describing it as having distinguished itself as a unique scientific enterprise spanning the universe of scientific excellence and influence of knowledge on public policy. We agree that this is an appropriate time to consider the future structure and outputs of the IPCC, and appreciate your framing of the paper; asking if change is necessary, what will be the future drivers of any required change, what future outputs of the IPCC would be envisioned, organizational issues related to the functioning of the next Bureau, and finally next steps.

We fully support the need for the IPCC to focus in more concrete ways on aspects of sustainable development and in particular in the developing countries. There has not been adequate engagement in the IPCC process by sustainable development experts working directly in development practice in the major development and international financial agencies. There is also the challenge of ensuring that the work on sustainable development receives effective peer review. We agree that the subject deserves further attention (para 3.1.2) and would be happy to cooperate if requested.

Similarly, we agree that the treatment of the economics of climate change has not been dealt with adequately in IPCC Assessments. The operational methods of the Working Groups and the review process appears to be less attractive to economists and we agree that it would be valuable to have a small group not only assess where the previous work could be stronger (para 3.1.3) but also how to engage economic expertise more effectively.

The paucity of climate relevant research in many parts of the developing world is definitely a problem. Even the greater engagement of developing country authors that you have fostered cannot make up for a lack of published research results. If there were to be an expert meeting on this issue (para 3.2), it is important that it should not only focus on identifying gaps and funding opportunities but also on ensuring that work that is carried out, for example in relation to development planning, is carried through to the peer review literature (or equivalent) and not left in relatively inaccessible reports.

We support, and find hugely valuable, the approximately five year cycles of the IPCC Assessments with the Synthesis as an essential component. The Assessments are sufficiently far apart to provide a significant update in our understanding of climate issues and step forward in policy thinking. We expect them to continue to do so in the future, especially as the content of the assessments shifts to match the changing public awareness and attitudes to climate change. We feel that a 10 to 12 year cycle is too long and would break the sense of continuity and progress in understanding that the current cycle has engendered.

WWF International

Some very short comments as feedback on our views on the future of the IPCC, its structure, work programme and main products:

1 - More outreach and interpretation of the latest IPCC outcomes
2 - That the IPCC report is updated based on current science more often
3 - That the IPCC produces regional level studies that drill down into more depth of regional impacts

4 - That there the Assessment Report include a chapter or Working Group on the especially vulnerable countries, focussing on people and sectors. For instance, to cover Small Islands Developing states and Least Developed Countries

WWF sincerely appreciates the IPCC's transparency and openness for feedback.

***** End Organizations Comments*****

BUREAU MEMBERS COMMENTS

Susan Solomon and Qin Dahe, co-chairs of IPCC Working Group 1

WG1 would like to thank the Chair for his paper about the future of the IPCC, and offer the following major comments at this time:

1) It is important to articulate that WG1's contributions to the understanding required to inform future policy decisions are virtually certain to grow in the future. Among key needs for WG1 assessment are information on climate variables other than temperature, e.g., the influence of the range of human activities on precipitation, heat waves, sea level rise, ice sheet changes, drought, hurricanes, typhoons, and other storms; sea ice and related polar climate changes; the understanding of the carbon cycle, rates of change of observed carbon dioxide and other forcing agents, etc. In a broad sense, the WG1 AR4 points forward to a much greater need for understanding the full climate system, which will require a balanced examination in the form of a fifth comprehensive assessment. There is also a clear policy need for more regional information. It is clear that progress is being made in many of these areas, and that a strong WG1 AR5 could be anticipated to address these and other issues in about 5-7 years. While special reports can be useful, they cannot substitute for the balance across climate system variables and spatial scales that is clearly needed and that a comprehensive fifth assessment would provide.

2) IPCC principles and procedures make clear that the production, leadership, and SPM approval process for the Working Group contributions to IPCC's comprehensive assessment reports and special reports are the responsibility of the WG co-chairs and the WG Bureaux. The suggestion that vice-chairs of the IPCC and Task Groups might take on roles in the work of these reports raises a conflict with our procedures and would appear to compromise the well-established leadership roles of WG Co-chairs. A more effective way of dealing with cross WG issues, and one more in keeping with our procedures, would be through regular meetings or teleconferences of the Chair and WG Co-chairs where any issues could be discussed and dealt with directly.

3) The proposal to institute a Task Group on Economics will overlap with the responsibilities of the incoming co-chairs of WG2 and WG3. The Panel may wish to consider delaying the formation of such a Task Group until IPCC XXIX, when the new co-chairs of the WGs will have been chosen, so that these individuals can be fully engaged as appropriate in the formulation and work of any such Task Group.

Geoff Love - Member of the IPCC Bureau Working Group II

General

We note that there is continual pressure upon the IPCC to be more responsive and provide updated assessments on widening range of specific scientific topics and for specific regions. This pressure is problematic in several ways. Firstly, the pre-eminent scientists tasked with the assessment process are generally themselves heavily committed on the research agenda required to progress the science. Secondly, the very nature of the IPCC process that gives it such credibility, namely a rigorous review process, means that the timeframe for generating its assessment material is long. Comprehensive reviews do not lend themselves to a dynamic, responsive provision of information.

2 The question remains, however, whether IPCC can achieve a better balance between meeting society's need for up-to-date information whilst maintaining a rigorous, trusted approach. Suggestions have been offered in the paper such as utilising the first three years of an IPCC Bureau cycle to focus attention on specific topics. Deciding on topics to be assessed in this way will require *inter alia* consideration of the body of scientific literature available to justify the extra

assessment as well as the ongoing issue of further burdening the research community. Expecting scientists to come offline from their research to carry out a special report or other assessment may be counter-productive if the value of them doing so is not clear and well articulated.

3 On the question of economic analysis it is generally recognised that there are specific policy-relevant scientific issues that would benefit from an accompanying economic assessment to determine the costs and benefits of particular responses to climate change. We consider the IPCC's reputation to have been established on the strength of its scientific analysis, and while we recognise the need to strengthen its ability to integrate the economic and scientific perspectives, would caution against any proposals that might weaken its ability to deliver science-based assessments. In Dr Pachauri's paper economic studies are proposed that would have the aim of elucidating the costs of inaction in dealing with climate change. We consider that these might be better handled by a parallel process in which well reputed economists conduct the research and set in place a different set of protocols and procedures for carrying out the ensuing assessments. This point is further elaborated below.

Specific

- A continuation of the assessment cycle consistent with that so far adopted by the IPCC is strongly supported, which would see an AR5 delivered around 2014.
- Whether or not there is additional emphasis given to Special Reports, it is critical that the IPCC continues to produce a broad assessment of the physical, scientific basis of climate change in every cycle.
- It is worth re-emphasising the key role played by National Meteorological and Hydrological Services (NMHSs) in monitoring and documenting climate variability and change, as well as their capacity to contribute to regional climate change impact assessment and adaptation strategy development. The latter potential is largely untapped and the IPCC should be encouraged to support an expanded role for NMHSs in its work.
- The cross cutting nature of climate change and its intrinsic links with sustainable development need to be handled more rigorously. A Special Report on this issue would assist Parties to respond appropriately.
- There is little doubt of the importance of assessing the economic implications of climate change and how best to go about the task is a central issue for governments. There have been criticisms of the quality of the economic assessments in both IPCC reports and reports commissioned by individual governments. The strength of the IPCC lies in the rigour of its scientific assessments and nothing should be done that dilutes this core function. Serious consideration needs to be given, for example, to determining whether or not the current IPCC process is suited to the idiosyncrasies of economic analysis and assessment. There may indeed be value in starting with a 'clean slate' on which to develop a specific process for dealing with economic issues given the greater inherent difficulties in separating what is policy relevant from what might be perceived as policy prescriptive in certain contexts. The establishment of a parallel and separate process for such assessments, rather than incorporating them under the existing IPCC umbrella would need careful consideration.
- There are certain regions of the globe, mostly coincide with developing countries where climate change research is lacking due predominantly to a lack of resources to support the required infrastructure and human capital. In particular, research into adaptation strategies consistent with sustainable development, requires adequate local data, and too often the systems for generating, collecting and processing the data do not exist. The IPCC must use what it has learned from the AR4 to urge Parties to remedy the deficiencies in these areas using the capabilities of the WMO, UNEP and other international bodies so as to fill the critical research gaps.
- NMHSs also have a key role in strengthening the capacity within country to respond to extreme events/natural disasters. There are emerging relationships between global warming and changes in the frequencies and intensities of a range of natural disasters, for instance drought, bushfire, heatwaves and storms. Accordingly, there would be value in a Special Report addressing these issues, which would draw on the special capabilities of knowledge of NMHSs, with WMO playing a coordination role.
- Dr Pachauri's recommendation to retain the Synthesis Report for future assessments is supported, as it has become the most prominent product of the IPCC assessment cycle. Its value lies in its conciseness, its non-technical treatment of critical concepts and the clarity of its conclusions. Continued vigilance will be essential to ensure that it remains a policy relevant document without straying across the policy prescriptive line. Notwithstanding, the Synthesis Report should continue to strive to highlight the areas of assessment that are likely to have the greatest impact on policy formulation as well as identifying to the extent possible the uncertainties of the science along with the scientific conclusions that can be drawn with high confidence.

***** End Bureau members Comments*****