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SIXTH ASSESSMENT REPORT (AR6) PRODUCTS

Special Reports

Commentary from the Co-chairs of Working Groups I, II and III on each of the proposals for Special Reports contained in document IPCC-XLIII/INF. 7

(Submitted by the Acting Secretary of the IPCC)

IPCC Secretariat

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SIXTH ASSESSMENT REPORT (AR6) PRODUCTS

Special Reports

Commentary from the Co-chairs of Working Groups I, II and III on each of the proposals for Special Reports contained in document IPCC-XLIII/INF. 7

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

In Decision IPCC/XLI-6 on Workshops and Special Reports (SRs), second paragraph, the Panel requested the IPCC Secretariat to invite Member States to submit views on potential themes for Special Reports during AR6 cycle and input from the Working Group Co-chairs, and agreed to further discuss the issue at the 43rd Session of the Panel.

At its 50th Session (Dubrovnik, Croatia, 9 October 2015) the IPCC Bureau considered the topic of Special Reports and agreed that this matter will be discussed and decided upon at the 43rd Session of the Panel. However, to assist the Panel in reaching an informed decision, it was agreed that:

- The Secretariat would prepare a document containing a synthesis of the proposals received for SRs clustering them by themes for submission to the 43rd Session of the Panel.
- The Co-chairs of each Working Group (WG), having consulted with their Vice-chairs and with the Co-chairs and Vice-chairs of the other WGs, will draft a commentary on the proposals for SRs taking into account the relevant guidance on scientific matters specified under the Decision Framework for Special Reports agreed at the 29th Session of the Panel (Geneva, Switzerland, 31 Aug. - 4 Sept. 2008) and later related decisions. These commentaries will be submitted for consideration by the IPCC Bureau at its next Session in 2016. The commentaries will not prioritize any individual proposal.

In following up to this mandate the Co-chairs of Working Groups I, II and III assigned each individual proposal to a cluster as shown in Annex 1. The Co-chairs also produced a commentary of proposals clustered by themes contained in document IPCC-XLIII/INF. 9.

The IPCC Secretariat invited a selected number of most relevant international organizations to provide information on the organization of possible workshops and reports or other products that each organization may intend to produce in relation to any of the topics included in Annex 1 on Proposed Themes of Special Reports.

The organizations which were invited are: FAO[1], Future Earth, ICAO[2], ICPO[3], IMO[4], IPBES[5], SCOR[6], SDSN[7], UNCCD[8], UNESCO[9], UNFCCC[10], UN-HABITAT[11], WHO[12] and WMO[13].

By the time of compiling this information document, responses had been received from FAO, ICAO, ICPO, SCOR, UNCCD, UNESCO,WMO, IPBES and IMO. The responses are collated in Annex 2.

[1] Food and Agriculture Organization of the United Nations
[2] International Civil Aviation Organization
[3] International CLIVAR Project Office
[4] International Maritime Organization
[5] Intergovernmental Platform on Biodiversity and Ecosystem Services
[6] Scientific Committee on Oceanic Research
[7] Sustainable Development Solutions Network
[8] United Nations Convention to Combat Desertification
[9] United Nations Educational, Scientific and Cultural Organization
[10] United Nations Framework Convention on Climate Change
[11] United Nations Human Settlements Programme
[12] World Health Organization
[13] World Meteorological Organization

ANNEX 1

IPCC Working Group Co-chairs' assignment of:
Proposals for Special Reports during the AR6 Cycle to different clusters

No	Country	Title	Assigned Cluster
1	Algeria	Climate Change and Desertification	A
2	China	Impact of Climate Change on the Cryosphere	B
3	China	Climate Change and Human Health	C
4	China	Climate Change and Ocean	B
5	Germany	Integrating adaptation and mitigation in comprehensive near term solutions to climate change	D
6	Ireland	Special Report on Climate Change, Food and Agriculture	A
7	Japan	Japan's view on potential themes for Special Reports	n/a
8	Monaco	Ocean and Climate Change	B
9	Netherlands	Carbon Pricing	E
10	Saudi Arabia	Special Report on Desertification with Regional Aspects	A
11	South Africa	Special Report on Adaptation Costs in Developing Countries	D
12	South Africa	Special Report on Antarctic/ Southern Ocean Region	B
13	South Africa	Special Report on Managing the Diversity and Contradictions of Climate Change Data and Information	G
14	Spain	Oceans and Climate Change: Special Report on the Evidences, Impacts and Adaptation to the Climate Change of the Oceans	B
15	UK	Update of key policy-relevant messages in AR5 in support of review and assessment procedures in new UNFCCC agreement	H
16	USA	Global and Regional Consequences of Changes to the Frozen World	B
17a	CAN International	Decarbonisation and low carbon development (incl. on 1.5°C-warming scenarios)	F
17b	CAN International	Food security and climate change	A
17c	CAN International	Sea level rise and glacial melting	B
18a	European Union	Special Report on Aviation and Maritime	D
18b	European Union	Special report on AFOLU	A
19	State of Palestine	The Impact of Climate Change on National, Regional and International Security	C
20	State of Palestine	Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation – Update	H
21	UNCCD	Climate Change and Land Degradation – An Assessment of the Inter-linkages and Integrated Strategies for Mitigation and Adaptation	A
22	UNEP	Global Adaptation Outlook	D
23	Norway	Mitigation, climate stabilization scenarios and sustainability	F
24a	IPCC Expert Meeting	Special Report on Scenarios	F

24b	IPCC Expert Meeting	The Interaction between Adaptation, Mitigation and Sustainable Development	D
25	South Africa	Special Report on Cities and Climate change	I
26	UNFCCC	Impacts of global warming of 1.5°C and related emission pathways	F
27	Switzerland on behalf of 10 parties	Climate Change and Mountains	A

CLUSTER A

Proposal 1: Climate change and desertification

This proposal is very similar to Proposals 10 and 21 and the commentary text is identical.

Is the topic relevant for more than one Working Group?

Yes

From a WG-I perspective, climate change and land surface conditions are closely linked. Climate change contributes to land degradation which in turn affects climate change. For WG-III, changes in CO_2 sources and sinks are a result of land degradation and have implications for climate change and the management of desertification.

Were there gaps in the AR5 on these topics?

Yes

WG-I made significant progress in AR5 regarding the inclusion of land use change associated with agriculture and deforestation. However, the links between land use change, climate change and desertification were not extensively covered and need to be further assessed. The AR5 WG-I report concluded that near-surface soil moisture is the net result of a suite of complex processes (e.g., precipitation evapotranspiration, drainage, overland flow, infiltration), and heterogeneous and difficult-to-characterize above-ground and below-ground system properties (e.g., slope, soil texture). As a result, regional to global-scale simulations of soil moisture and drought remain relatively uncertain. An analysis of CMIP3[14] and CMIP5 projections of soil moisture in five drought-prone regions indicates that the differences in future forcing scenarios are the largest source of uncertainty in such regions rather than differences between model responses.

In the AR5 WG-II report, the treatment of desertification was disconnected; it was mentioned only once in the Technical Summary– with respect to Central Asia. Where mentioned in WG-II chapters, it is primarily related to impacts on food production (i.e. Chapters 9, 22, 24). Similarly, land degradation was mentioned once in the Technical Summary linking water, energy and food security (also Chapters 3 and 4). Neither “desertification” nor “land degradation” was mentioned in the WG-II-SPM or the AR5 SYR[15].

WG-III did not cover this topic explicitly but only as a co-benefit around managing land degradation; there was no exploration of policies to combat desertification and how these could link with climate policies and policy mechanisms to realise co-benefits.

A clear definition of ‘degraded land’ (relevant also to proposal 21) would be extremely useful to assist in the quantification of the potential to sequester carbon in degraded lands, as definitions vary widely and the realistic potential to sequester carbon by restoring degraded lands depends strongly on the definition applied (e.g. where degraded lands are defined simply by their current stock carrying capacity, semi-arid regions are by definition ‘degraded’ but the ability to ‘restore’ them may be very limited, in contrast to regions where degradation occurred as a result of overstocking/overgrazing or other biomass removal and subsequent erosion).

Is the topic different from what is reported elsewhere?

Yes

Although there is important scattered information, little is known, in a comprehensive manner, about the impacts of climate change linked to land degradation and desertification over migration of human populations, health, human conflicts and water management. There is no known comprehensive report addressing globally the links between climate change and land degradation and their implications

WMO organized a high level meeting on drought in 2013. Some part of the output of that meeting may be relevant to this topic.

[14] Coupled Model Intercomparison Project Phase 3

[15] Synthesis Report

Are there sufficient new scientific findings that motivate a specific focus on these topics?

Both WCRP[16] and IGBP[17] focus some of their activities on the issue of climate change and land use (e.g. in programs like LUCID[18], LUCC[19], etc.) Even a focused treatment using existing information could be beneficial and add new information.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

From a WG-I perspective, the issue could deserve a special report which would be highly relevant for global decision making as well as being a very useful contribution to improve in the AR6 the assessment on related topics, in a similar way that SREX[20] contribution to AR5 was. The preparation of a special report on this topic would bring more WG-I experts on board rather than limit their availability for the AR6. This is a global issue especially in the sub-tropical areas. There are many areas which are affected by the issue, and therefore the special report could address what many people are awaiting for. People may ask whether the situation is curable and what is the long term relationship between the phenomenon and climate and vice versa.

A WG-III view is that this issue could be covered as a cross-cutting topic in AR6; there could be a dedicated section in an AFOLU[21] chapter to look at (and define) land degradation and desertification and discuss the issue in a way that integrates with WG-I and WG-II to get scenarios of land degradation/desertification. The main limitation of treating the issue as a cross-cutting topic in AR6 rather than a Special Report would be that it would not connect well to impacts of climate-change driven land degradation/desertification, and how countries most affected by desertification could most effectively respond in a way that manages and reduces impacts and delivers climate benefits to the atmosphere, and realizes co-benefits of such actions for biodiversity, food security, water regulation, etc.

The number of WG-III experts who can cover the links between land degradation/ desertification and implications for net CO_2 emissions and biodiversity/water co-benefits may be limited, and hence covering these issues in a Special Report could well limit their availability for the AR6 (in other words, having a Special Report may mean that the issue would not be covered again with a specific focus in the AR6, but that the AR6 would have to largely rely on the findings in the Special Report).

[16] World Climate Research Programme

[17] International Geosphere-Biosphere Programme

[18] Land Use and Climate: IDentification of robust impacts

[19] Land-Use Land-Cover Change

[20] Special Report Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation

[21] Agriculture, Forestry and Other Land Use

Proposal 6: Climate change, food and agriculture

Note this proposal has strong similarities with Proposal 17b and the same commentary text is presented.

Is the topic relevant for more than one Working Group?

Yes

The influence of food production activities in carbon and other biogeochemical cycles is very relevant for WG-I. Also, the assessment of the inter-links between climate change and land-use change (related with food production) is important and not well covered in the past ARs[22]. This is a hot issue topic. For its broad aspect, the impacts and feedback of climate change linked to agriculture, AFOLU and food security are also relevant beyond IPCC, considering that it is the base of solutions for very important global concerns expressed in the SDGs[23] (specially the number 1, 2 and 13). Topics within the WG-III scope include: emissions and mitigation options for agricultural production and consumption chains; implications of agricultural mitigation on other sectors to achieve overall mitigation goals; co-benefits and trade-offs between agriculture mitigation and food security, productivity, and policies to address such multiple objectives.

Were there gaps in the AR5 on these topics?

Yes

The WG-I AR5 report pointed out the need to refine estimates of the climate impacts of current emissions by sectors. Thus, a report like this one could help to make progress on that from the perspective of the food production sector. In addition, WG-I AR5 pointed out the uncertainties about the drivers in methane recent observed changes in which food production related activities might have a role. On the other hand, significant progress has been made in AR5 regarding the inclusion in the models of land-use change (e.g. associated with agriculture and deforestation). However, the links between land use change and climate change were not extensively covered and need to be further assessed.

In WG-II AR5, there was a very limited discussion about the impacts of climate change by agriculture sectors and scales (regional, national, local) as well as adaptation strategies and experiences from the local to global scale.

In WG-III, there was: very limited discussion of the importance of agriculture mitigation in achieving overall mitigation goals; limited discussion and quantification of the extent to which increasing productivity of agriculture can deliver on mitigation goals; very limited discussion of policies that would enable capturing climate benefits of increased productivity by linking land-use policies with agricultural productivity and mitigation goals.

Across AR5, there was no substantive discussion on the extent to which there could be synergies or trade-offs between policies that address food security from an impacts/adaptation or from a mitigation perspective (especially coming from a perspective of increasing productivity); no quantification of the mitigation benefits of agriculture adaptation (which would reduce food losses/waste and increase productivity); no integrated discussion of potential to achieve more sustainable trajectories of changing food demand.

Is the topic different from what is reported elsewhere?

While some of the above points have been addressed in reports, e.g. by the FAO, there is no report that has brought those points together. IPCC could address this topic differently from FAO by specifically pointing out the issue of adaptation and mitigation. The WG-I contribution would address the climate cause of the problem.

[22] Assessment Reports

[23] Sustainable Development Goals

Are there sufficient new scientific findings that motivate a specific focus on these topics?
Yes

In the WG-I arena, there have been many different international research projects addressing this issue during recent years, under the coordination for example of CCAFS[24], IGBP and regional agencies like IAI[25], APN[26], EU[27].

This proposal appears to focus mostly on impacts of climate change. The main engagement from WGIII would come in the form of managing potential trade-offs and synergies between changes in land-use to reduce emissions and food security, and the generic goal to produce food more sustainably. WG-III related projects have considered: implications of alternative agriculture mitigation scenarios for cumulative CO_2 emissions consistent with given mitigation goals; integration of policies to enhance food security and manage climate change from CCAFS and FAO; new research into novel mitigation options and timelines to commercial availability.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

From a WG-I perspective, the contributions of the outcomes of a special report like this one to the AR6 could be on different topics like on biogeochemical cycles, radiative forcing estimates and on the assessment of regional climate change. Experts from the WGI community dealing with climate and land use change or climate impact on agriculture are several around the globe.

The availability of WG-III experts to cover interactions between agriculture and other sectors is limited but could sustain both a Special Report and AR6. There is broad expertise on local-scale experience with mitigation, but a limited number of experts to provide integration. WG-III specific issues could be covered through dedicated attention across several WG-III AR6 chapters; but interactions and policy options to both manage climate change impacts, increase resilience and reduce effect of agriculture on climate, in the context of food security, could not be achieved credibly within the AR6 report structure.

A Special Report could address WG-II concerns by dealing with food and agriculture (including irrigation water and covering mitigation gaps), with a section specially focusing on areas exposed to desertification and land degradation.

This is an opportunity to explore deeply some topics that will not necessarily be covered in the AR6 (e.g. societal impacts, vulnerability and adaptation responses, integration of scales and regional aspects). It could also refer to advanced work about some basic science aspects (e.g. physical causes of the problem, biogeochemical cycles). A special report in these topics would not limit the availability of experts for the AR6, although some specialized sub-topics may be limited.

A report is very close to proposal 17b and could also incorporate relevant aspects of proposals 10, 18b and 21. It may be possible to integrate all of them into a single special report. Elements could include the physical basis of the causes and impacts of climate change on food security, including as “stations in the route”, food productivity (including marine food, livestock, etc.), AFOLU (including land degradation, desertification and water management) and opportunities for adaptation, mitigation and co-benefits.

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[24] Climate Change, Agriculture and Food Security
[25] Inter-American Institute for Global Change Research
[26] Agricultural Productivity and Nutrition
[27] European Union

Proposal 10: Special Report on Desertification with regional aspects

This proposal is very similar to Proposals 1 and 21 and the commentary text is identical.

Is the topic relevant for more than one Working Group?
Yes

From a WG-I perspective, climate change and land surface conditions are closely linked. Climate change contributes to land degradation which in turn affects climate change. For WG-III, changes in CO_2 sources and sinks as a result of land degradation and has implications for climate change and the management of desertification.

Were there gaps in the AR5 on these topics?
Yes

WG-I made significant progress in AR5 regarding the inclusion of land use change associated with agriculture and deforestation. However, the links between land use change, climate change and desertification were not extensively covered and need to be further assessed. The AR5 WG-I report concluded that near-surface soil moisture is the net result of a suite of complex processes (e.g., precipitation evapotranspiration, drainage, overland flow, infiltration), and heterogeneous and difficult-to-characterize above-ground and below-ground system properties (e.g., slope, soil texture). As a result, regional to global-scale simulations of soil moisture and drought remain relatively uncertain. An analysis of CMIP3 and CMIP5 projections of soil moisture in five drought-prone regions indicates that the differences in future forcing scenarios are the largest source of uncertainty in such regions rather than differences between model responses.

In the AR5 WG-II report, the treatment of desertification was disconnected; it was mentioned only once in the Technical Summary– with respect to Central Asia. Where mentioned in WG-II chapters, it is primarily related to impacts on food production (i.e. Chapters 9, 22, 24). Similarly, land degradation was mentioned once in the Technical Summary linking water, energy and food security (also Chapters 3 and 4). Neither “desertification” nor “land degradation” was mentioned in the WG-II-SPM or the AR5 SYR.

WG-III did not cover this topic explicitly but only as a co-benefit around managing land degradation; there was no exploration of policies to combat desertification and how these could link with climate policies and policy mechanisms to realise co-benefits

A clear definition of ‘degraded land’ (relevant also to proposal 21) would be extremely useful to assist in the quantification of the potential to sequester carbon in degraded lands, as definitions vary widely and the realistic potential to sequester carbon by restoring degraded lands depends strongly on the definition applied (e.g. where degraded lands are defined simply by their current stock carrying capacity, semi-arid regions are by definition ‘degraded’ but the ability to ‘restore’ them may be very limited, in contrast to regions where degradation occurred as a result of overstocking/overgrazing or other biomass removal and subsequent erosion).

Is the topic different from what is reported elsewhere?
Yes

Although there is important scattered information, little is known, in a comprehensive manner, about the impacts of climate change linked to land degradation and desertification over migration of human populations, health, human conflicts and water management. There is no known comprehensive report addressing globally the links between climate change and land degradation and their implications

WMO organized a high level meeting on drought in 2013. Some part of the output of that meeting may be relevant to this topic.

Are there sufficient new scientific findings that motivate a specific focus on these topics?

Both WCRP and IGBP focus some of their activities on the issue of climate change and land use (e.g. in programs like LUCID, LUCC, etc). Even a focused treatment using existing information could be beneficial and add new information.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

From a WG-I perspective, the issue could deserve a special report which would be highly relevant for global decision making as well as it will be a very useful contribution to improve in the AR6 the assessment on related topics, in a similar way that SREX contribution to AR5 was. The preparation of a special report on this topic would bring more WG-I experts on board rather than limit their availability for the AR6. This is a global issue especially in the sub-tropical areas. There are many areas which are affected by the issue, therefore the special report could address what many people are awaiting for. People may ask whether the situation is curable and what is the long term relationship between the phenomenon and climate and vice versa.

A WG-III view is that this issue could be covered as a cross-cutting topic in AR6; there could be a dedicated section in an AFOLU chapter to look at (and define) land degradation and desertification and discuss the issue in a way that integrates with WG-I and WG-II to get scenarios of land degradation/desertification. The main limitation of treating the issue as a cross-cutting topic in AR6 rather than a Special Report would be that it would not connect well to impacts of climate-change driven land degradation/desertification, and how countries most affected by desertification could most effectively respond in a way that manages and reduces impacts and delivers climate benefits to the atmosphere, and realizes co-benefits of such actions for biodiversity, food security, water regulation, etc.

The number of WG-III experts who can cover the links between land degradation/ desertification and implications for net CO2 emissions and biodiversity/water co-benefits may be limited, and hence covering these issues in a Special Report could well limit their availability for the AR6 (in other words, having a Special Report may mean that the issue would not be covered again with a specific focus in the AR6, but that the AR6 would have to largely rely on the findings in the Special Report).

Proposal 17b: Food security and climate change

Note that this proposal has strong similarities with Proposal 6 and the same commentary text is presented.

Is the topic relevant for more than one Working Group?

Yes

The influence of food production activities in carbon and other biogeochemical cycles is very relevant for WG-I. Also, the assessment of the inter-links between climate change and land-use change (related with food production) is important and not well covered in the past ARs. This is a hot issue topic. For its broad aspect, the impacts and feedback of climate change linked to agriculture, AFOLU and food security are also relevant beyond IPCC, considering that it is the base of solutions for very important global concerns expressed in the SDGs (specially the number 1, 2 and 13). Topics within the WG-III scope include: emissions and mitigation options for agricultural production and consumption chains; implications of agricultural mitigation on other sectors to achieve overall mitigation goals; co-benefits and trade-offs between agriculture mitigation and food security, productivity, and policies to address such multiple objectives.

Were there gaps in the AR5 on these topics?

Yes

The WG-I AR5 report pointed out the need to refine estimates of the climate impacts of current emissions by sectors. Thus, a report like this one could help to make progress on that from the perspective of the food production sector. In addition, WG-I AR5 pointed out the uncertainties about the drivers in methane recent observed changes in which food production related activities might have a role. On the other hand, significant progress has been made in AR5 regarding the inclusion in the models of land-use change (e.g. associated with agriculture and deforestation). However, the links between land use change and climate change were not extensively covered and need to be further assessed.

In WG-II AR5, there was a very limited discussion about the impacts of climate change by agriculture sectors and scales (regional, national, local) as well as adaptation strategies and experiences from the local to global scale.

In WG-III, there was: very limited discussion of the importance of agriculture mitigation in achieving overall mitigation goals; limited discussion and quantification of the extent to which increasing productivity of agriculture can deliver on mitigation goals; very limited discussion of policies that would enable capturing climate benefits of increased productivity by linking land-use policies with agricultural productivity and mitigation goals.

Across AR5, there was no substantive discussion on the extent to which there could be synergies or trade-offs between policies that address food security from an impacts/adaptation or from a mitigation perspective (especially coming from a perspective of increasing productivity); no quantification of the mitigation benefits of agriculture adaptation (which would reduce food losses/waste and increase productivity); no integrated discussion of potential to achieve more sustainable trajectories of changing food demand.

Is the topic different from what is reported elsewhere?

While some of the above points have been addressed in reports, e.g. by the FAO, there is no report that has brought those points together. IPCC could address this topic differently from FAO by specifically pointing out the issue of adaptation and mitigation. The WG-I contribution would address the climate cause of the problem.

Are there sufficient new scientific findings that motivate a specific focus on these topics?
Yes

In the WG-I arena, there have been many different international research projects addressing this issue during recent years, under the coordination for example of CCAFS, IGBP and regional agencies like IAI, APN, EU.

This proposal appears to focus mostly on impacts of climate change. The main engagement from WGIII would come in the form of managing potential trade-offs and synergies between changes in land-use to reduce emissions and food security, and the generic goal to produce food more sustainably. WG-III related projects have considered: implications of alternative agriculture mitigation scenarios for cumulative CO_2 emissions consistent with given mitigation goals; integration of policies to enhance food security and manage climate change from CCAFS and FAO; new research into novel mitigation options and timelines to commercial availability

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

From a WG-I perspective, the contributions of the outcomes of a special report like this one to the AR6 could be on different topics like on biogeochemical cycles, radiative forcing estimates and on the assessment of regional climate change. Experts from WGI community dealing with climate and land use change or climate impact on agriculture are several around the globe.

The availability of WG-III experts to cover interactions between agriculture and other sectors is limited but could sustain both a Special Report and AR6. There is broad expertise on local-scale experience with mitigation, but a limited number of experts to provide integration. WG-III specific issues could be covered through dedicated attention across several WG-III AR6 chapters; but interactions and policy options to both manage climate change impacts, increase resilience and reduce effect of agriculture on climate, in the context of food security, could not be achieved credibly within the AR6 report structure.

A Special Report could address WG-II concerns by dealing with food and agriculture (including irrigation water and covering mitigation gaps), with a section specially focusing on areas exposed to desertification and land degradation.

This is an opportunity to explore deeply some topics that will not necessarily be covered in the AR6 (e.g. societal impacts, vulnerability and adaptation responses, integration of scales and regional aspects). It could also refer to advanced work about some basic science aspects (e.g. physical causes of the problem, biogeochemical cycles). A special report in these topics would not limit the availability of experts for the AR6, although some specialized sub-topics may be limited.

A report is very close to proposal 6 and could also incorporate relevant aspects of proposals 10, 18b and 21. It may be possible to integrate all of them into a single special report. Elements could include the physical basis of the causes and impacts of climate change on food security, including as “stations in the route”, food productivity (including marine food, livestock, etc.), AFOLU (including land degradation, desertification and water management) and opportunities for adaptation, mitigation and co-benefits.

Proposal 18b: Special report on AFOLU

Is the topic relevant for more than one Working Group?

Yes

Key topics from a WG-III perspective include: emissions and mitigation options for AFOLU and food/wood consumption chains; implications of AFOLU mitigation on other sectors to achieve overall mitigation goals; co-benefits and trade-offs between agriculture mitigation and food security, productivity, and policies to address such multiple objectives; co-benefits and trade-offs between land-based mitigation via bioenergy (and CCS[28]) and other land-uses.

Were there gaps in the AR5 on these topics?

Across the WGs, there was no substantive discussion in AR5 on the extent to which there could be synergies or trade-offs between policies that address food security from an impacts/adaptation and from a mitigation perspective (especially coming from a perspective of increasing agricultural productivity, or diversification of land-uses, including ability to diversify local production); no quantification of the mitigation benefits of agriculture adaptation (which would reduce food losses/waste and increase productivity) or alternative scenarios of the use of woody biomass as a fuel or wood for construction; no integrated discussion of potential to achieve more sustainable trajectories of changing food demand.

The discussion in WG-III was limited in a number of relevant areas: the importance of agriculture mitigation on other sectors to achieve overall mitigation goals; quantification of the extent to which increasing productivity of agriculture can deliver on mitigation goals; policies that could link agriculture and other land-based mitigation to address energy, food security and biodiversity concerns. The energy-water-climate (and biodiversity) nexus is recognized increasingly but was only partially addressed in AR5.

Is the topic different from what is reported elsewhere?

The issues have been addressed partially, but there is no comprehensive report that integrates the different aspects.

Are there sufficient new scientific findings that motivate a specific focus on these topics?

Yes

In the WG-III domain, there are new findings that can be assessed: implications of alternative agriculture mitigation scenarios for cumulative CO_2 emissions consistent with given mitigation goals; integration of policies to enhance food security and manage climate change from CCAFS and FAO; new research into novel mitigation options and timelines to commercial availability; discussion of climate-energy-water nexus and viability of strong net negative emissions (and importance of net negative emissions for achieving UNFCCC climate goals)

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

The availability of experts to cover interactions between agriculture, forestry and other sectors is limited but could sustain both a Special Report and AR6. Expertise on local-scale experience with mitigation is broadly available, but there is a limited number of experts to provide integration. Interactions and policy options to both manage climate change impacts, increase resilience and reduce effect of AFOLU on climate, in the context of food security, water, biodiversity could not be achieved credibly within the AR6 report structure.

Links with other proposals: From the WG-I perspective, this proposal is closely related to proposals 6 and 17b.

[28] Carbon Dioxide Capture and Storage

Proposal 21: Climate Change and land degradation – an assessment of the inter-linkages and integrated strategies for mitigation and adaptation

This proposal is very similar to Proposals 1 and 10 and the commentary text is identical.

Is the topic relevant for more than one Working Group?

Yes

From a WG-I perspective, climate change and land surface conditions are closely linked. Climate change contributes to land degradation which in turn affects climate change. For WG-III, changes in CO_2 sources and sinks as a result of land degradation and has implications for climate change and the management of desertification.

Were there gaps in the AR5 on these topics?

Yes

WG-I made significant progress in AR5 regarding the inclusion of land use change associated with agriculture and deforestation. However, the links between land use change, climate change and desertification were not extensively covered and need to be further assessed. The AR5 WG-I report concluded that near-surface soil moisture is the net result of a suite of complex processes (e.g., precipitation evapotranspiration, drainage, overland flow, infiltration), and heterogeneous and difficult-to-characterize above-ground and below-ground system properties (e.g., slope, soil texture). As a result, regional to global-scale simulations of soil moisture and drought remain relatively uncertain. An analysis of CMIP3 and CMIP5 projections of soil moisture in five drought-prone regions indicates that the differences in future forcing scenarios are the largest source of uncertainty in such regions rather than differences between model responses.

In the AR5 WG-II report, the treatment of desertification was disconnected; it was mentioned only once in the Technical Summary– with respect to Central Asia. Where mentioned in WG-II chapters, it is primarily related to impacts on food production (i.e. Chapters 9, 22, 24). Similarly, land degradation was mentioned once in the Technical Summary linking water, energy and food security (also Chapters 3 and 4). Neither “desertification” nor “land degradation” was mentioned in the WG-II-SPM or the AR5 SYR.

WG-III did not cover this topic explicitly but only as a co-benefit around managing land degradation; there was no exploration of policies to combat desertification and how these could link with climate policies and policy mechanisms to realise co-benefits

A clear definition of ‘degraded land’ (relevant also to proposal 21) would be extremely useful to assist in the quantification of the potential to sequester carbon in degraded lands, as definitions vary widely and the realistic potential to sequester carbon by restoring degraded lands depends strongly on the definition applied (e.g. where degraded lands are defined simply by their current stock carrying capacity, semi-arid regions are by definition ‘degraded’ but the ability to ‘restore’ them may be very limited, in contrast to regions where degradation occurred as a result of overstocking/overgrazing or other biomass removal and subsequent erosion).

Is the topic different from what is reported elsewhere?

Yes

Although there is important scattered information, little is known, in a comprehensive manner, about the impacts of climate change linked to land degradation and desertification over migration of human populations, health, human conflicts and water management. There is no known comprehensive report addressing globally the links between climate change and land degradation and their implications

WMO organized a high level meeting on drought in 2013. Some part of the output of that meeting may be relevant to this topic.

Are there sufficient new scientific findings that motivate a specific focus on these topics?

Both WCRP and IGBP focus some of their activities on the issue of climate change and land use (e.g. in programs like LUCID, LUCC, etc). Even a focused treatment using existing information could be beneficial and add new information.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

From a WG-I perspective, the issue could deserve a special report which would be highly relevant for global decision making as well as it will be a very useful contribution to improve in the AR6 the assessment on related topics, in a similar way that SREX contribution to AR5 was. The preparation of a special report on this topic would bring more WG-I experts on board rather than limit their availability for the AR6. This is a global issue especially in the sub-tropical areas. There are many areas which are affected by the issue, therefore the special report could address what many people are awaiting for. People may ask whether the situation is curable and what is the long term relationship between the phenomenon and climate and vice versa.

A WG-III view is that this issue could be covered as a cross-cutting topic in AR6; there could be a dedicated section in an AFOLU chapter to look at (and define) land degradation and desertification and discuss the issue in a way that integrates with WG-I and WG-II to get scenarios of land degradation/desertification. The main limitation of treating the issue as a cross-cutting topic in AR6 rather than a Special Report would be that it would not connect well to impacts of climate-change driven land degradation/desertification, and how countries most affected by desertification could most effectively respond in a way that manages and reduces impacts and delivers climate benefits to the atmosphere, and realizes co-benefits of such actions for biodiversity, food security, water regulation, etc.

The number of WG-III experts who can cover the links between land degradation/ desertification and implications for net CO2 emissions and biodiversity/water co-benefits may be limited, and hence covering these issues in a Special Report could well limit their availability for the AR6 (in other words, having a Special Report may mean that the issue would not be covered again with a specific focus in the AR6, but that the AR6 would have to largely rely on the findings in the Special Report).

Proposal 27: Climate Change and Mountains

Is the topic relevant for more than one Working Group?

This proposal is relevant from a WG-I and WG-II perspective. The relevance for WG-III is less, being limited mostly to carbon stocks in mountain forests and soils and ability to sequester carbon, and role of mountains as sources for hydropower. The topics described in section 1) of the proposal key issues are all relevant, and some of them were not well or not extensively covered in previous assessment reports. This is an important topic for the landlocked countries and countries whose water inputs come from neighboring mountain areas.

Were there gaps in the AR5 on these topics?

Mountain-related issues were addressed in WG1 AR5 in a fragmented way and some of the very key topics (e.g. glaciers in mountain regions) were addressed in the FAQs. In WG-II AR5, the treatment of mountains was disconnected; briefly covering mountain farming systems, permafrost warming and thawing in mountain regions, ground instability, shrinking mountain glaciers in a few chapters (i.e. 9, 10, 18, 24).

Is the topic different from what is reported elsewhere?

There is no global report focusing on mountains and climate change in an integrated fashion, although there has been a small report on climate change and mountain area in the past. This focused more on the physical processes rather than the impact with adaptation and mitigation measures.

Are there sufficient new scientific findings that motivate a specific focus on these topics?

WCRP has been addressing the issue of climate and mountains in several of its programs which have resulted in many publications. In particular, the CLIC[29] program coordinates mountain cryospheric studies. Also, there have been many international research programs on specific mountain regions that delivered many publications. Bureau members are not aware of new scientific findings in the WG-II and WG-III spheres.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

From the WG-I perspective some of the topics that would be addressed in a mountain related special report are transversal to many topics that would be addressed in AR6 (e.g. projections of regional climate or extremes). Therefore it might limit the availability of WG-I experts for the AR6. On the other hand, it is believed that the availability of WG-II experts for the Assessment Report could be limited by this Special Report. However, the report would provide an opportunity to bring together experts from different Working Groups that that are focused on mountain regions, similar to the SREX. It is unlikely that mountains would make a meaningful focus in the WG-III contribution to AR6. Hence, if the topic is to be dealt with, it would be better dealt with in a Special Report than as a cross-cutting theme or dedicated sections. Also any discussion of policy approaches and co-benefits to address both adaptation and mitigation could only meaningfully be dealt with in a separate report than in individual sections in WG contributions to the AR6. An alternative could be a Technical Paper.

[29] Climate and Cryosphere

CLUSTER B

Proposal 2: "**Impact of Climate Change on the Cryosphere"**

Is the topic relevant for more than one Working Group?	With the focus on impact, vulnerabilities and adaptation measures, this proposal is primarily within the remit of WG-II. However there are links to WG-I.
Were there gaps in the AR5 on these topics?	There are some gaps in the AR5 on the cryosphere relating to a poor understanding of how biogeophysical processes of cryosphere affect the socioeconomic systems within impacted communities and vulnerable ecosystems. This is in spite of the significant time and effort employed in addressing the subject of climate change and the Cryosphere in AR5. WGI AR5 Chapter 04 - Observations: Cryosphere (65 pages) WGII AR5 Chapter 28 - Polar Regions (47 pages)
Is the topic different from what is reported elsewhere?	Yes. Although the broader theme of changes in the cryosphere at the regional and global scales is covered elsewhere in scientific journal and research papers. However, the specific focus of this proposal is unique as it relates to how these changes are affecting local communities and their socio-economic systems.
Are there sufficient new scientific findings that motivate a specific focus on these topics?	Brief literature survey and visit to a number of websites yielded rather few new scientific literature published on the subject matter after 2012 and assessed using the IPCC established procedures.
What would be the implications of Special Report on the topic for AR6? /How could these special topics be specifically handled in AR6?	If literature is matured within the next two years, a special report could contribute to AR6 assessment, since it would be completed before AR6 is published.
Would preparation of the report limit the availability of experts for the Assessment Report?	It is likely that there would be some overlap between the experts required for the proposed Special Report and the AR6 report.
Links to other Special Report proposals	There are linkages between this and three other proposals in cluster B, namely **12** *Antarctic/Southern ocean region,* **16***, Global and regional consequences of changes to the frozen world and to* ***17c*** *as it relates to glacial melting.*

Proposal 4 Climate Change and Ocean

Is the topic relevant for more than one Working Group?	The primary emphasis of the proposal is on impacts and adaptation measures, and it thus relevant to the work of WG-II. However there are linkages to the work of WGI and WGIII
Were there gaps in the AR5 on these topics?	There are some gaps in AR5 related to limited understanding of how climate variability and change is altering the timing and duration of phytoplankton production. There is also the need to better understand how iron fertilization of the oceans can enhance algal bloom and slow down global warming through enhanced carbon sequestration. The attribution of climate change impacts on the oceans as they relate the provision of cultural services such as aesthetic values and tourism requires further studies due to the lack of long time-series data, and confounding human impacts. However AR5 has adequately addressed the issue of climate change and oceans in WGI (chapter 3 on observations and discussions in other chapters e.g. biogeochemical cycles chapter 5, sea level chapter 13, projections chapter 12), in WGII with dedicated chapters on coastal systems and low-lying areas [WGII, chapter 05 - Coastal systems and Low-lying areas (49 pages) and the Ocean systems (chapter 6) - 74 pages]. WGIII of AR5 makes more than 50 direct references to ocean(s) in its chapters 4, 6, 7, 11 and 13.
Is the topic different from what is reported elsewhere?	Yes. The subject of how climate change impacts the marine ecosystems and marine biodiversity is covered elsewhere in scientific journals and research papers. The key focus of the proposal to provide relevant information to support decision making relating to how these impacts affect socioeconomic activities at multiscale/multilevel is not addressed elsewhere.
Are there sufficient new scientific findings that motivate a specific focus on these topics?	A cursory survey of literature reveals that some new scientific literature are published after 2012 and these have to be assessed using the well established procedures of the IPCC to evaluate the state of knowledge on this subject.
What would be the implications of Special Report on the topic for AR6? /How could these special topics be specifically handled in AR6?	If literature is matured in good time to merit a special report, it could contribute to AR6 assessment.
Would preparation of the report limit the availability of experts for the Assessment Report?	There is likely to be some overlap between the experts required for the proposed Special Report and the AR6 report

Links to other Special Report proposals	The proposal is linked to others outlined in cluster B, namely **8** *Ocean and Climate Change (same topic)* and **14***, Evidences, Impacts and Adaptation to the Climate Change of the Oceans*. It also has links to 12, *Antarctic/Southern Ocean Region*, 16, *Global and regional consequences of changes to the frozen world and to 17c as it relates to sea level rise.*

Proposal 8: Ocean and Climate Change

Is the topic relevant for more than one Working Group?	The proposal seeks to address a wide range of issues ranging from assessments of global aspects of ecosystem services and economic sectors associated with the oceans to the legislative and adaptation policy challenges of Island nations and developing countries with low lying coastal areas. The proposal is relevant to Working Group II but has linkages with the work of WGI and WGIII.
Were there gaps in the AR5 on these topics?	There are some gaps in the AR5 on the oceans. These include a poor understanding of the capacity of ocean flora and fauna to cope with the rate of thermal change of the oceans. The limited amount of literature on global net primary production within the continental shelf and coastal regions makes it difficult to make better projections for net primary productions for near-shore waters that support the livelihoods of many coastal communities in developing countries. The health impacts of projected sea level rise on coastal communities as well on the impacts of sea level rise on harbour facilities are poorly understood.
Is the topic different from what is reported elsewhere?	Several national research institutions and international and intergovernmental organisations are working and reporting on different aspects of the topic – ocean and climate change. However the multifaceted dimensions of the focus of the proposal makes it unique.
Are there sufficient new scientific findings that motivate a specific focus on these topics?	A rather limited survey of scientific literature generated some new scientific literature which must be assessed using the IPCC established procedures to indicate how they contribute to knowledge on the subject.
How could these special topics be specifically handled in AR6?	The principal focus of this proposal is on adaptation, but with some linkages to mitigation. An important consideration would be how these adaptation measures could be linked to SDGs in particular its goals 13 and 14. Waiting for the AR6 report may allow time for the literature to significantly mature.
Would preparation of the report limit the availability of experts for the Assessment Report?	It is likely that some experts required for the proposed Special Report may overlap those needed of the AR6 report
Links to other Special Report proposals	The proposal bears the same title as proposal 4. It also has linkages with other proposals in cluster B, namely, **12**, *Antarctic/southern ocean region,* **14***, Evidences, Impacts and Adaptation to the Climate Change of the Oceans and to* **17c** *as it relates to sea level rise*.

Proposal 12: Special Report on Antarctic/ Southern Ocean Region

Is the topic relevant for more than one Working Group?	The proposal addresses the issue of improvements to the climate observing system and reducing uncertainties in climate change projections for the Antarctic region. It is primarily within the remit of WG-I, however there is a link to WG-II.
Were there gaps in the AR5 on these topics?	There are some gaps in the AR5 relating to our understanding of the biogeophysical processes of the Antarctic/South Ocean Region. The effects of changes in precipitation on Antarctic sea ice thickness and volume is an area of further research and the overall changes in Antarctic sea ice and their causes thus require additional investigations. There is also the need to better understand the socio-economic and environmental impacts of human activities on the Southern ocean as a result of a warming climate.
Is the topic different from what is reported elsewhere?	The subject of the impact of changes in sea ice and terrestrial ice on the Antarctic region is covered elsewhere.
Are there sufficient new scientific findings that motivate a specific focus on these topics?	Within the limited time available, very little new scientific literature was found. More new literature may be found as the literature matures and should be subjected to the IPCC assessment procedures.
What would be the implications of Special Report on the topic for AR6? /How could these special topics be specifically handled in AR6?	Any work done on this special topic can contribute to AR6.
Would preparation of the report limit the availability of experts for the Assessment Report?	Some overlap of experts required for the proposed Special Report and the AR6 report may occur.
Links to other Special Report proposals	There is a link between this and other proposals in cluster B, namely, 2 *Impact of Climate Change on the Cryosphere*, 4 *Climate Change* and *Ocean,* 8 *Ocean and Climate Change,* 14*, Evidences, Impacts and Adaptation to the Climate Change of the Oceans,* 16, *Global and Regional Consequences of Changes to the Frozen World*; *and to 17c as it relates to sea level rise.*

Proposal 14: The Evidences, Impacts and Adaptation to the Climate Change of the Oceans

Is the topic relevant for more than one Working Group?	The topic primarily addresses the issue of impacts, vulnerabilities and adaptation strategies as they relate to sustainability of the ecology of marine species and ecosystems and thus relevant to Working Group II. It also has significant linkages with the work of WGIII as it relates to oceans ability for greenhouse gases uptake. The linkage with WGI relates to ocean acidification.
Were there gaps in the AR5 on these topics?	There are gaps in the AR5 on the oceans. There is an incomplete understanding of the ability of ocean flora and fauna and their ecosystems to cope with increasing uptake of GHGs and ocean acidification as well as the critical thresholds. AR5 well addressed the issue climate change on coastal systems and low-lying areas [WGII, chapter 05 - Coastal systems and Low-lying areas (49 pages) and the Ocean systems (chapter 6) - 74 pages]. WGI covered the issue in chapters 3 – Oceans (61 pages) and chapter 13 – Sea Level Rise (78 pages).
Is the topic different from what is reported elsewhere?	Some research institutions and international/intergovernmental organisations are working on some aspects of the topic.
Are there sufficient new scientific findings that motivate a specific focus on these topics?	Very scanty new scientific literature was noted due to lack of time for literature search, however some work needs to be done to address research gaps identified in AR5.
How could these special topics be specifically handled in AR6?	The principal focus of this proposal is on adaptation, not forgetting important linkages with mitigation. An important consideration would be how these adaptation measures could link to SDGs in particular its goals 13 and 14.
Would preparation of the report limit the availability of experts for the Assessment Report?	Overlap between the experts required for the proposed Special Report and the AR6 report is likely.
Links to other Special Report proposals	There is a link between this and other proposals in cluster B, namely, **4** *Climate Change* and *Ocean, and* **8** *Ocean and Climate Change, and to* **17c** *as it relates to sea level rise*

Proposal 16: Global and Regional Consequences of Changes to the Frozen World

Is the topic relevant for more than one Working Group?	The principal focus of the proposal is impacts and vulnerabilities arising from changes in the biogeochemical processes of cryosphere due to the loss of sea ice and land ice, reductions in snow cover, and the warming and thawing of permafrost. The proposal is therefore within the remit of WG-II. However there are links to WG-I since the thawing of the permafrost threatens the release of massive amounts of carbon dioxide and methane into the atmosphere. There are some implications for transformation pathways, energy systems and agriculture (i.e., WGIII).
Were there gaps in the AR5 on these topics?	There are gaps in our understanding of the changes in the cryosphere and what they mean for socioeconomic development activities of affected peoples, communities as well as vulnerable ecosystems.
Is the topic different from what is reported elsewhere?	Yes. Changes in the frozen world (cryosphere) at the regional and global scales is a subject of study by research institutions and professional associations, and their findings are reported in scientific journals and research papers. However the specific focus of this proposal as it relates to how these changes are affecting local communities and their socio-economic systems is unique.
Are there sufficient new scientific findings that motivate a specific focus on these topics?	Cursory search of websites, etc. for new scientific literature did not reveal much new published scientific paper since AR5, however a rigour literature review may reveal that some new published works are available. Any new scientific findings needs be assessed through the IPCC due process.
What would be the implications of Special Report on the topic for AR6? /How could these special topics be specifically handled in AR6?	If sufficient literature is found to merit the preparation of this special report, it could contribute to AR6 assessment process.
Would preparation of the report limit the availability of experts for the Assessment Report?	The experts required for the preparation of proposed Special Report and those for the AR6 report may overlap
Links to other Special Report proposals	There is a link between this and other proposals in cluster B, namely, **2** *Impact of Climate Change on the Cryosphere*, and **12**, *Antarctic/Southern Ocean Region*,

Proposal 17c: Sea level rise and glacial melting

Is the topic relevant for more than one Working Group?	The proposal is focussed on impacts and vulnerabilities arising from sea level rise and glacial melting. It is therefore within the scope of work of WG-II. However there are links to WG-I since the melting of glaciers could lead to the release of GHGs into the atmosphere.
Were there gaps in the AR5 on these topics?	There are gaps in our understanding of how glacial melt resulting in sea level rise could affect socioeconomic of local communities as well as vulnerable coastal ecosystems. This is particularly so as it relates to the question of attribution. A significant amount of work has been on the cryosphere in AR5. See WGIAR5 Chapter 04 - Observations: Cryosphere (65 pages) WGIIAR5 Chapter 28 - Polar Regions (47 pages)
Is the topic different from what is reported elsewhere?	Yes. Changes in the frozen world (cryosphere) at the regional and global scales is a subject of study by research institutions and professional associations, and their findings are reported in scientific journals and research papers. However the vulnerabilities of local communities and their socio-economic systems due to glacial melt and its sea level rise and the associated impacts is unique.
Are there sufficient new scientific findings that motivate a specific focus on these topics?	Due to time constraints, not much focussed literature could be identified on this subject.
How could these special topics be specifically handled in AR6?	Waiting for the AR6 report would allow time for the literature to significantly mature.
Would preparation of the report limit the availability of experts for the Assessment Report?	There is likely to be some overlap between the experts required for the proposed Special Report and the AR6 report.
Links to other Special Report proposals	There is a link between this and proposal 16 of cluster B namely - *Global and Regional Consequences of Changes to the Frozen World*.

CLUSTER C

Proposal 3: Climate Change and Human Health

1) ***Is the topic relevant for more than one Working Group***?

The topic is mainly within the scope of the IPCC WGII, while WGI is expected to provide information and understanding on observed and projected climate changes (both in averages and extremes) against which effects on human health will be analyzed. In particular, this topic provides an excellent opportunity for a joint work of experts from both WGI and WGII in assessing the impact of observed and projected climate changes on human health and its vulnerability.

2) ***Were there gaps in the AR5 on the topic***?

The human health chapter of AR5 (chapter 11) has summarized major results on the 'climate change – human health' problem published in special scientific literature by 2013-2014. The authors of chapter 11 introduced some innovative approaches to the problem, e.g., gender aspects, cost-benefit issues, mental health, synergy between climate change and air pollution. No substantial gaps can be noted against literature available by that time.

As it happened in previous special reports like SREX, a special report related to health issues provides the opportunity, in particular for WGI, to deliver an assessment of observed and projected changes on both climate means and extremes oriented to needs of the health sector. This might imply a need to assess changes in combined extreme conditions (e.g., cold waves and extreme moist conditions) which are relevant for specific diseases but not addressed in IPCC ARs.

3) ***Is the proposed topic different from what is reported elsewhere***?

No, the topic is traditional for the IPCC assessments and for some other international and national assessment documents, e.g., 'Second Assessment Report on Climate Change and Its Consequences in the Russian Federation' (2014) and new AMAP[30] Arctic report (under preparation). Nevertheless, the WGI-WGII integrated assessment can provide a different and innovative perspective of this topic.

3) ***Are there sufficient new scientific findings that motivate a specific focus on the topic***?

There are some new research outcomes since IPCC AR5. However, they mainly concern the situation in concrete countries.

4) ***What would be the implications of a Special Report on the topic for the AR6? Or alternatively, how could the topic be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report***?

The best way to handle the topic is to prepare a special chapter in the WGII contribution to the IPCC AR6 on climate change effects on human health in the preparation of which some experts from WGI will be involved. New literature will undoubtedly appear. The problem should be considered both globally, regionally and sub-regionally. Actually, the number of experts is rather limited.

Conclusion

This topic can be addressed through the AR6 WG-II report.

[30] Arctic Monitoring and Assessment Programme

Proposal 19: '**The Impact of Climate Change on National, Regional and International Security**

1) ***Is the topic relevant for more than one Working Group***?

The topic is mainly within the scope of the IPCC WGII. WGI experts might collaborate with WGII experts on assessing the key climate change related phenomena threatening regional and international security.

2) ***Were there gaps in the AR5 on the topic***?

The human security issues are considered in chapter 12 of WGII AR5. Coverage is rather complete. However, great changes associated with the extension of areas of conflicts in the world have happened since the publication of AR5. They are not directly due to climate change, but some indirect links warrant certain discussion.

3) ***Is the proposed topic different from what is reported elsewhere***?

Some country level assessment documents exist, but no global assessment has been accomplished.

4) ***Are there sufficient new scientific findings that motivate a specific focus on the topic***?

The amount and quality of scientific publications on the topic is not evident at the moment. An IPCC *ad hoc* expert meeting can help obtain such information.

4) ***What would be the implications of a Special Report on the topic for the AR6? Or alternatively, how could the topic be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report***?

Human security chapter in the IPCC AR6 will be extremely desirable. The above mentioned expert meeting would be very helpful in the determination of new angles for consideration of the problem. In particular, it could be relevant if one considers all geopolitical conflicts in the world due to the shortage of resources exacerbated due to climate change. The massive migration encountered nowadays is also somehow linked to those conflicts.

Conclusion

This topic could be considered for a Special Report within the IPCC AR6 cycle.

CLUSTER D

Proposal 5: Integrating adaptation and mitigation in comprehensive near term solutions to climate change

The main goal of this proposal is to provide "a scientific assessment of the climate policy options and experiences available for implementing solutions that include both adaptation and mitigation in the next decades and that correspond to the ultimate objective of the UNFCCC and the long term global goal specified by the Paris Agreement". It seeks to "provide information on how to create synergies between adaptation and mitigation measures, and on how to avoid tradeoffs and conflicts between them". The proposal emphasizes the need to improve the integrative perspective of AR6 cycle, regarding the climate change response options, on the light of AR5 results. The proposed integrative assessment is conceived in the context of sustainable development, including regional, sectoral and human dimensions, technological options, uncertainty and risks considerations, among other areas of assessment.

Is the topic relevant for more than one Working Group?

This topic is particularly relevant for WGII and WGIII, and would contribute to a better articulation of climate change response options in the context of IPCC AR6. A Special Report as suggested would need input from WGI on physical changes in the climate system, as basis for evaluation of adaptation possibilities. The proposal also lists understanding mitigation and adaptation experiences, which would require input on observed physical changes. Additionally, the effectiveness of associated mitigation measures would feed back to the degree of climate change that may occur.

Were there gaps in the AR5 on these topics?

There was considerable improvement in integrating WGII and WGIII findings in the respective WG contributions to AR5, and particularly in the AR5 Synthesis Report. However, there is still a huge potential for joint and integrative assessment for those WGs, in key areas such as treatment of scenarios and drivers, costs, regional and sectoral perspectives, technological options and impacts, among others, with a strong focus on the near-term perspective.

Is the topic different from what is reported elsewhere?

Numerous institutions and authors, including previous IPCC assessment reports and recent intergovernmental agreements, refer to the need to treat adaptation and mitigation in an integrative way, as the two key aspects of climate change response strategies. Various recent publications analyse the interaction between adaptation and mitigation. As indicated before, there is still room for considerably contributing in that direction in the new IPCC products.

Are there sufficient new scientific findings that motivate a specific focus on these topics?

In the context of the multilateral negotiations for the Agenda Post 2015 and the Sustainable Development Objectives (adopted in September 2015) and the Paris Agreement (December 2015), a significant amount of literature has been published with focus on the integration between adaptation and mitigation in the context of sustainable development. The key challenge here is the adoption of an appropriate integrative approach within the IPCC work to properly assess the existing literature, and to present the findings effectively considering the policy relevance of this topic.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

Considering that preparing an IPCC SR is always a time and resource demanding exercise, competing with the parallel IPCC main AR, the German proposal should be examined in the context of other SR proposals that also refer to interactions between adaptation and mitigation (e.g.: SR on the Interaction between Adaptation, Mitigation and Sustainable Development (24b), SR on Scenarios (24a), SR on Climate Change, Food and Agriculture (6), among others. Then, the choice may be between:

- a SR dealing in general with the adaptation & mitigation interactions (German proposal);
- treating those interactions with a more focused perspective (other A-M proposals) but ensuring adequate coverage of this topic within the AR6, or
- a combination of them.

Conclusion

There could be some advantages by having a proposal that combines the broad objective of "integrating adaptation and mitigation" (German proposal) including its focus on near term actions and solutions with some of the more focused proposals for dealing with A-M interactions, as mentioned before.

Having "Adaptation, Mitigation and Sustainable Development" as a cross-cutting theme for the whole cycle, was already explored in AR5, with limited results. This could be improved within the framework of AR6 if this theme is adequately scoped and covered from the start of the process.

Proposal 11: Special Report on Adaptation Costs in Developing Countries

The proposal states that in order to sustain and facilitate economic growth in developing countries, estimates of the costs for their economies related to adapting to climate change and from the direct impacts of extreme weather events are needed. These combined costs are referred to as "adaptation costs". The key issues in the suggested special report are i) a systematic analysis of projected changes in extreme and high impact weather events in developing countries, ii) a systematic description of methods for calculating adaptation costs and analysis of present day costs, iii) probability estimates of future adaptation costs for developing countries for the latest projected changes for various scenarios (1, 2, 3, and 4 °C worlds), iv) analysis of the projected costs in terms of adaptation gap, and v) improvement of guidelines for transparency of adaptation support. The proposal emphasizes the importance of estimates for adaptation costs for identifying adaptation gap and for obtaining the required international funding to implement adequate adaptation strategies, and furthermore that this is central to the LTGG[31] and Global Goal on Adaptation (GGA) and of direct relevance for a realistic formulation of the Adaptation component of the INDC[32] (A-INDC) for developing countries.

Is the topic relevant for more than one Working Group?

Yes, this will need input from WGI (current and future climate), adaptation and cost estimates (WGII). WGIII may contribute on methodologies for quantification of costs, integrated assessment modeling and evaluation of alternative schemes for supporting developing countries.

Were there gaps in the AR5 on these topics?

In section 3.3 of AR5 Synthesis Report (SYR) it is stated that "There are many studies on local and sectoral adaptation costs and benefits, but few global analyses and very low confidence in their results." In section 4.4 of SYR it is stated that "There is a need for better assessment of global adaptation costs, funding and investment. Studies estimating the global cost of adaptation are characterized by shortcomings in data, methods and coverage (high confidence)." WGII, chapter 17, writes "There has been a limited number of global and regional adaptation cost assessments over the last few years (Stern, 2006; World Bank, 2006, 2010a; Oxfam, 2007; UNDP, 2007; UNFCCC, 2007, 2008). These estimates exhibit a large range and have been completed mostly for developing countries. The most recent and most comprehensive to date global adaptation costs range from US$70 to more than US$100 billion annually by 2050 (World Bank, 2010a; see Table 17-2)." Thus, there are gaps, limitations and large uncertainties in the current knowledge on adaptation costs.

Is the topic different from what is reported elsewhere?
Several organizations and bodies may perform similar or partly overlapping studies, but an IPCC assessment would probably be broader and more thorough given the established process and infrastructure for this.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

These topics could be handled in the WGII assessment report of AR6. The proposal points to the urgency of these issues since developing countries need plausible cost estimates to identify

[31] Long-term Global Goal
[32] Intended Nationally Determined Contribution

adaptation gaps and to obtain international funding for the implementation of adequate adaptation strategies. The proposal also refers to the relevance for the adaptation element in the INDCs. These points are presented as arguments for a special report. Preparation of a special report may limit the availability of experts for the Assessment Report.

Links to other Special Report proposals

There are strong links to other proposals, mainly the proposals 5, 20, 22, 23, and 24b.

Conclusion

There are limitations and gaps in the current knowledge about the costs of adaptation on local, regional and global scales. The proposed special report on adaptation costs in developing countries seeks to improve the methods, the estimates and the application of this knowledge. Thus, the proposal is very ambitious and broad and represent large challenges for the research community, which need to publish studies in time for the assessment. Thus, it may be argued that the scope of the proposal is too comprehensive and broad for the format and timescale of a special report. However, some elements of the proposal can be seen in relation to other proposals and assessment on these issues may be combined.

Proposal 18a: Special report on aviation and maritime

The proposal points to the scientific development since the Special Report on Aviation and the Global Atmosphere that was published by the IPCC in 1999. The proposal also suggests that a special report could be expanded to maritime, since there are analogies and interconnections between sectors, and both are sectors where not all emissions are attributed to specific countries but rather categorized under international bunkers. The proposal points to the expected strong growth in these two sectors and to the need for updated insight on emission profiles, impacts of non-CO_2 components, mitigation options, development of new technologies and assessment of types of polices that can achieve the mitigation potentials.

Is the topic relevant for more than one Working Group?

The topic is relevant for WGI and WGIII. (WGII would be involved if the perspective were expanded to consider the effects of climate change on the activities and operations in these sectors; which is an issue that has not received much attention so far).

Were there gaps in the AR5 on these topics?

Yes, there are gaps in AR5 WGI and WGIII on these topics. **WGI**: Section 7.2.7.1 Contrails and Contrail-Induced Cirrus gives a short but good overview of recent developments. In Chapter 8 the climate impacts (across several components) were estimated and metric values (GWP[33] and GTP[34]) from the literature were presented very briefly (and in the Supplementary Material). Chapter 12 on scenarios does not address these two sectors (although they are included in the total emissions used as input for scenario studies). **WGIII:** Chapter 6 on scenarios does not discuss aviation and shipping. Chapter 5 on trends include Aviation and Maritime while Chapter 8 on transport assesses mitigation options in the two sectors. A gap may be that the non-CO_2 effects (some of which are very uncertain) are not included in calculations and assessment in a way that is consistent with results from WGI. The aviation and shipping sectors are also discussed in the final Chapters on policy development; i.e., chapters 13 and 15 (and very briefly in 16).

Is the topic different from what is reported elsewhere?

Recently, two short assessments of aviation have been finalized (Brasseur et al., 2015; BAMS) and a recent ICAO White Paper. These papers address the natural science aspects (the various climate forcing mechanisms) and not the mitigation potential and policy design options. Thus, a special report as suggested would be broader than these two assessments. The climate impacts of both sectors were assessed in the EU funded project ATTICA which produced review papers of the various transport sectors (Lee et al., 2010 on aviation and Eyring et al., 2010 on shipping). A special report would be different from the short assessments mentioned above as well as from the assessments in WGI and WGIII in earlier IPCC reports.

Are there sufficient new scientific findings that motivate a specific focus on these topics?

There is a large body of research on climate impacts of aviation since the 1999 Special Report on Aviation. This is only to a limited extent taken into account in the various assessment reports since that time. There has also been scientific progress on the understanding of climate impacts of maritime emissions and the policy options in the shipping sector. The volume of the research activity here is

[33] Global Warming Potential
[34] Global Temperature Potential

smaller than for aviation, and the scientific findings are only to a limited extent reflected in the various assessment reports. The new scientific findings for both sectors are related to the improved understanding and quantification of impacts of non-CO_2 components and calculation of emission metrics for these components that can be used in assessments and development of mitigation policies.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

The aviation and shipping sectors are not included (nor mentioned) in the Paris Agreement. As pointed out in the proposal for a special report, growth in activity and emission is expected. With a global temperature target of 2 or 1.5 °C, these two sectors would also need to be considered as parts of the global mitigation strategy. The two sectors are characterized by several potentially strong non-CO_2 effects, which make design of mitigation strategies complicated. There are large uncertainties connected to the quantification of non-CO_2 impacts, in particular the effects on clouds. Since large parts of the emissions from these two sectors are not attributed to specific countries there are also several issues related to how these sectors can be included in global mitigation strategies and policy regimes. Thus, a special report on aviation and maritime would need close collaboration between WGI and WGIII. Since there is overlap between the communities studying climate impacts of aviation/shipping and climate change in general, a special report could to some extent limit the availability of experts for the assessment report.

Links to other Special Report proposals

The proposal is linked to the proposals on scenarios in cluster F; i.e., proposal 17a, 23, 24a and 26.

Conclusion

While there are several important science and policy issues related to aviation and shipping, a special report on these two sectors alone may not be of the highest priority. The issues and motivations for a SR could instead be followed up by a more holistic and thorough approach to the transportation sectors by including these sectors in the assessment in WGI and secure a consistent treatment in the scenario and mitigation assessment in WGIII. It is also important that these sectors are included in the IPCC assessments since strong growth in emissions is expected while these sectors are not included in the Paris Agreement. A Special Report on 1.5 °C would need to include these sectors in the scenario analyses.

Proposal 22: UNEP Proposal: Global Adaptation Outlook

The proposal points out that in order to understand and address the risks and opportunities associated with impacts on society and natural systems, governments and other stakeholders need clear understanding of the current situation and what they can expect in the future. The suggested adaptation outlook, which should be a global integrated assessment of the issue, should combine robust science with explicit consideration of adaptation options and "adaptation trajectories" depending on the emissions trajectories. Analysis of knowledge gaps in adaptation science should also be included in the suggested assessment.

Is the topic relevant for more than one Working Group?
The assessment need input from WGI on physical changes in the climate system for different scenarios. (The proposal mention global mean temperature change levels of 1.5, 2 and 4 deg C). The proposed special report will require most activity from the WGII on several adaptation issues listed. WGIII may also be involved because of the link between mitigation (emission pathways) and adaptation.

Were there gaps in the AR5 on these topics?
This is a field under development which means that there may be several topics and issues where there is scientific progress that can form input to such an assessment.

Is the topic different from what is reported elsewhere?
The suggested special report may be seen as a follow up to the Adaptation Gap Report 2014 by UNEP (which was produced to complement information presented in the emissions gap reports UNEP). The UNEP Adaptation Gap Report was presented as a preliminary assessment of adaptation gaps.

Are there sufficient new scientific findings that motivate a specific focus on these topics?
The Adaptation Gap Report 2014. United Nations Environment Programme (UNEP) was published after the last cut-off date for literature available for AR5.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?
The key issues listed in the proposal can be treated in the full AR6 WGII assessment which may also provide input to any follow up to the UNEP Adaptation Gap report. Preparation of a special report may limit the availability of experts for the Assessment Report.

Links to other Special Report proposals
There are strong links to other proposals, mainly the proposal 5, 11, 20, 21, 23 and 24b. However, the suggested report seems to be meant more as a follow up to the UNEP Adaptation report.

Conclusion
It is not obvious that a Global Adaptation Outlook report is in line with the mandate of IPCC. But the IPCC assessment report may provide input to a Global Adaptation Outlook or Adaptation Gap report produced by other organizations. Several issues and topics listed will probably be included in the assessment report or covered by other special report proposals.

Proposal 24b: The Interaction between Adaptation, Mitigation and Sustainable Development

This proposal has the integration of scenario-based evidence across all three IPCC Working Groups at its core. It has some links with Proposal 5, but implicitly focuses on longer-term perspectives whilst Proposal 5 addresses the near-term. This proposal emerged from the 2015 IPCC Expert Meeting on Scenarios and is also closely associated with Proposal 24a that emerged from the same meeting, and with other proposals in Cluster F. A full separate commentary has not been developed.

CLUSTER E

Proposal 9: Carbon Pricing

The main goal of this proposal is to provide an analysis of the feasibility and effectiveness of the introduction of carbon pricing in developed, emerging and less developed economies. Carbon pricing would be provide five main benefits: (i) it would price the damage coming from GHG emitters, by applying the polluter pays principle; (ii) it would correct the price distortions coming from the lower costs borne by more polluting firms; (iii) it would provide investors with the right price signal for long term investments in low carbon technologies, infrastructures and businesses; (iv) it would collect an extremely relevant amount of resources to cover the costs of mitigation and adaptation policies; (v) it would induce more efficient (cost-effective) mitigation policies worldwide. It is therefore very important to provide a careful quantitative assessment of these benefits and of the related costs (both the economic and social costs of pricing carbon).

Is the topic relevant for more than one Working Group?
This proposal falls primarily within the remit of WG-III. There are links to WG-I in terms of climate stabilization scenarios, which are necessary to identify the targets to be achieved by carbon pricing, and to WG-II in terms of co-benefits and the pursuit of the SDGs.

Were there gaps in the AR5 on these topics?
The issue of carbon pricing belongs to the tradition of the WGIII AR. Chapters devoted to GHG taxation and to emission trading or other measures of pricing carbon are important components of all ARs. In addition, AR5 contained a new chapter (chapter 16 of the WG-III report) on climate finance with important information also for carbon pricing. However, we still miss a comprehensive analysis of (i) what measures are most appropriate in different countries/regions, (ii) different ways of implementing carbon pricing and recycling the related revenues, (iii) links between different carbon pricing schemes and (iv) above all the costs and benefits of partial, non-homogenous, and/or second best, pricing schemes in different countries/ regions.

Is the topic different from what is reported elsewhere?
The broad theme of carbon pricing is covered extensively elsewhere. The novelty may lie in the analysis of the effectiveness and costs of schemes implemented at different levels (countries, regions, cities and companies). And in the other aforementioned implementation issues:

- Political feasibility, distributional effects and functionality;
- Impacts of various forms of carbon pricing on sustainable development, technology transfer and transformational change; and
- Linking and harmonisation of carbon pricing schemes.

Are there sufficient new scientific findings that motivate a specific focus on these topics?
A significant amount of literature has been published on carbon pricing. The issue is vast and has been a major focus of economic analysis in the last 25 years. Recent literature focuses mostly of political economy and social aspects.

What would be the implications of special reports on these topics for the AR6? Alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?
Waiting for the AR6 report would also allow time for the literature to mature between now and 2020. With a Special Report, literature would need to be in place by 2018/19. If approved, the Report would therefore be a more different way to assess literature already assessed in the past, rather than an assessment of new literature. There is also likely to be considerable overlap between the experts required for the proposed Special Report and the WG-III AR6 report. Nevertheless, carbon pricing is an issue of extreme policy relevance. It is missing from the Paris agreement. Countries need scientific and technical support for future negotiations on the implementation of carbon pricing to achieve the Paris agreement objectives.

Conclusion
The concise responses to the IPCC guidelines relating to Special Reports and Methodological Reports are as follows:

- Enough information available to provide an authoritative scientific/technical assessment on the topic, which is different from that presented elsewhere (e.g., in an earlier IPCC reports)?

  Yes, enough information is available, even though most of the report would re-consider and re-organise information already assessed in previous ARs.

- Subject is directly relevant to the understanding of climate change

  No, the subject is mostly a policy one. It concerns the optimal strategy to mitigate GHG emissions and to provide financial support to adaptation.

- Considers issues that require input from more than one Working Group of the IPCC?

  The Report would mostly concern WG III.

- Relevance of the subject for policy considerations including methodologies and other inputs for decision-making?

  Yes, the subject is very relevant for climate policy and for future implementation of the Paris agreement.

- Availability of experts
  Yes, a large number of experts would be available.

- Preparation of this report would not limit the availability of experts for the Assessment Report?

  A large overlapping with AR6 is likely. Therefore, the report would limit the availability of experts for AR6.

- Timeliness of, and financial and personnel resources required for, preparation of the report, especially if the subject of the report is relevant to Assessment Report?

  The Report on carbon pricing would be equally effective if included in AR6. Costs to prepare it before AR6 would be limited, but the number of experts required to cover all dimensions of the Report would be large.

In conclusion, despite the importance of carbon price for future climate policy, the assessment of the literature on carbon pricing can be an important component of AR6 rather than a special report.

CLUSTER F

Proposal 17a Decarbonisation and low carbon development (incl. on 1.5°C warming scenarios)

The proposal rests on the recognition that global temperature rise should be limited before the end of the century to below 2°C (compared to pre-industrial levels) and preferably 1.5°C as corroborated by the Structured Expert Dialogue organized by the UNFCCC. The proposal also recognizes that the scenarios in literature limiting the warming to 2°C or below necessarily call for decarbonisation of economies at a significant rate and that numerous countries including the G7 have therefore committed to decarbonize own economies as well as the global economy over the course of the century to address climate change.

The main objective of the proposal therefore is to demonstrate the pathways available to achieving such ambitious emissions reductions towards accelerated decarbonisation while simultaneously promoting sustainable development.

Is the topic relevant for more than one Working Group?
The emphasis on low carbon development and deep decarbonisation renders the scope of this proposal primarily to within the remit of WG-III. The WGIII will need to carry out new comparative assessment studies using Integrated Assessment Model (IAM) to delineate pathways corresponding to 2°C and 1.5 °C warming scenarios.

WG-I has strong link in terms of climate stabilisation scenarios with low warming target, especially 1.5°C. WG-I contributions would include climate sensitivity, radiative forcing of gases and aerosols, physical impacts of bioenergy and negative emissions. WGI will have to provide further analysis on CMIP5 results with respect to scenario analysis for a set of scenarios that can keep global mean warming e.g. *likely* below 1.5 °C above pre-industrial levels vs. those that keep it below the 2 °C limit, including physical impacts such as sea level rise, changes in the cryosphere and in extreme events as they relate to differing global warming scenarios including of course an assessment of the considerable associated uncertainties. Moreover, if possible preliminary results from CMIP6 work may need to be provided for this report as much as possible.

WG-II will have minor, though important role, to assess relative co-benefits (co-costs and risks) of climate impacts and adaptation for the pathways corresponding low carbon scenarios.

Were there gaps in the AR5 on these topics?
The rapidly changing technological landscape, e.g. recent advances in renewable technologies, would make a difference to the feasibility of low carbon scenarios, e.g. 2°C warming or below. The assessment of low temperature scenarios was very limited in AR5. Besides, AR5 assessment primarily used IAM scenarios which took a top-down view of sectoral technologies. This hindered the two-way flow of insights between the top-down and the bottom-up sectoral assessments. The IAM scenarios literature available for AR5 was weak on finding explicit links (i.e. co-benefits, co-costs and risks) between sustainable development, climate mitigation and adaptation actions.

The proposal points to the urgency of closing these gaps before the window of opportunity for limiting global warming closes completely, especially in the case of 1.5°C warming target.

Is the topic different from what is reported elsewhere?
The theme of low carbon development is widely covered in the literature. AR5 also assessed, though thinly, the pathways towards 2°C warming target. In comparison, this proposal differs on two counts: i) emphasis on assessing literature to demonstrate pathways for 1.5°C target while simultaneously promoting sustainable development and the focus on recent technology development and ii) delineation of a roadmap of evidence-based effective mitigation and adaptation measures.

Are there sufficient new scientific findings that motivate a specific focus on these topics?
There is moderately adequate new scientific literature on pathways for 2°C target. There are ample new scientific findings which shed light as well as raise caution about the need to address the sensitive issues in AR5 like achieving negative emissions during the second half of the century using unproven and contentious technologies like Biomass Energy with Carbon Capture and Storage (BECCS).

The scientific literature on pathways for 1.5°C target is thin. The proposal observes that: 'If the IPCC were to announce a Special Report which pays particular attention to this theme, in the context of decarbonization analyses, the necessary research would surely continue and intensify'. This was the case for the evolution of new scientific literature on pathways for 2°C target during the AR5 cycle.

The new scientific findings on technological advances (e.g. renewable energy technologies), global convergence UN SDGs and recognition of urgency to limit warming to the desired levels are ready motivations for focusing on deep decarbonisation the low carbon development.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?
This proposal is essentially about mitigation. A core challenge is the links between integrated approaches and sectoral measures; besides linking to the SDGs which also form organising principles for the full WG-III AR6 report. Waiting for the AR6 report would allow time for the literature to mature between now and 2020. With a Special Report, literature would need to be in place by 2018/19. There is likely to be some overlap between the experts required for the proposed Special Report and the WG-III AR6 report.

Links to other Special Report proposals
There are strong links between this and other proposals in Cluster F, namely 23 Mitigation, climate stabilization scenarios and sustainability, 24a Special Report on Scenarios (integrated scenario development) and 26 Impacts of global warming of 1.5°C and related emission pathways (which similarly looks for links between integrated scenarios and more specific sectoral consequences, and also more on the impacts/WGII side).

There are also links with some of the proposals in Cluster A: 6 Special Report on Climate Change, Food and Agriculture; 17b Food security and climate change; and 18b Special report on AFOLU. This is in respect of the contribution of bioenergy and BECCS suggested in many integrated scenarios.

Conclusion
This proposal directly links to the key policy concern about immediacy of low carbon development actions linked to limit warming within 1.5°C and delineating related pathways using integrated assessment modelling that also keep in view the need to meet SDGs. The proposal lies mainly, but not exclusively, in the WG-III sphere. The WGI modelling studies shall provide necessary emissions pathways that limit warming to below 1.5°C. The WG-II will have relatively lesser role that is limited to assessing co-benefits from reduced climate impacts and adaptation. WGIII shall have the key role to assess IAM studies as well as the sectoral mitigation literature and provide timely insights on early actions towards low carbon development pathways prior to deeper assessment in WG-III AR6 report.

Proposal 23: Mitigation, climate stabilization scenarios and sustainability

The main goal of this proposal is to provide an integrated scientific assessment of policy options for meeting both medium- and long-term climate goals. The primary focus is on mitigation efforts, with the aim of linking high-level stabilisation targets with sectoral considerations, more specific technology and policy measures and their feasibility. Linking mitigation efforts to co-benefits, including health and human welfare, and the sustainable development goals (SDGs) is central to this proposal.

Is the topic relevant for more than one Working Group?
With the emphasis on mitigation, this proposal falls primarily within the remit of WG-III. However there are links to WG-I in terms of climate stabilisation scenarios [the nexus between integrated assessment modelling (IAM) and climate models] and to WG-II in terms of co-benefits and the pursuit of the SDGs.

Were there gaps in the AR5 on these topics?
The link between top-down stabilisation pathways and specific sectoral measures was recognized in AR5 through chapter sections on "sectoral implications of transformation pathways and sustainable development". However, the emphasis was on interpreting IAM scenarios at the sectoral level rather than a two-way flow of insights between the top-down and the bottom-up. The proposed Special Report extends this perspective and reinforces the link between emission reductions and specific technology and policy measures. It also adds the perspective of "feasibility" which would need treated carefully if the assessment were to remain scientifically grounded and avoid any element of policy prescription.

The proposal specifically mentions the link between bioenergy with CCS (BECCS), which featured prominently in parts of the AR5 report, and food security, water availability and biodiversity. This is an undoubted gap.

The consideration of links between mitigation and the SDGs, which were agreed subsequent to AR5, is also novel.

Is the topic different from what is reported elsewhere?
The broad theme of mitigation is obviously covered extensively elsewhere. The novelty lies with the link between integrated scenarios and specific measures, and the link to the SDGs. This may require significant additions to the existing literature (see below).

Are there sufficient new scientific findings that motivate a specific focus on these topics?
There is literature on the integration between adaptation and mitigation in the context of sustainable development. The availability of literature linking integrated scenarios with specific sectoral, technology and policy measures remains however scarce. Much of the emerging literature addresses the "infeasibility" of published integrated scenarios rather than building bridges between top-down and bottom-up approaches.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?
This proposal is essentially about mitigation. The core challenges - links between integrated approaches and sectoral measures and links to the SDGs - could also form organising principles for the full WG-III AR6 report. Waiting for the AR6 report would also allow time for the literature to mature between now and 2020. With a Special Report, literature would need to be in place by 2018/19. There is likely to be considerable overlap between the experts required for the proposed Special Report and the WG-III AR6 report.

Links to other Special Report proposals

There are strong links between this and other proposals in Cluster F, namely 17a *Decarbonisation and low carbon development* (SDG links), 24a *Special Report on Scenarios* (integrated scenario development) and 26 Imp*acts of global warming of 1.5°C and related emission pathways* (which similarly looks for links between integrated scenarios and more specific sectoral consequences, but more on the impacts/WGII side).

There are also links with some of the proposals in Cluster A: 6 *Special Report on Climate Change, Food and Agriculture*; 17b *Food security and climate change*; and 18b *Special report on AFOLU*. This is in respect to the contribution of bioenergy and BECCS as suggested in many integrated scenarios.

Conclusion

This proposal hits on a key concern about links between integrated scenarios and specific sectors and measures, and links with the SDGs. The proposal lies mainly, but not exclusively, in the WG-III sphere and could overlap considerably with the WG-III AR6 report in terms of both content and author engagement.

Proposal 24a: Special Report on Scenarios

The IPCC Expert meeting on Scenarios (May 2015) produced a set of recommendations to the IPCC. One specific recommendation is a Special Report on Scenarios "assessing the literature on socio-economic pathways to emissions, climate change, impacts, including sustainable development linkages". It is pointed out that a Special Report on the integrative use of scenarios across all three Working Groups could ensure a cohesive assessment of the relationship between mitigation, adaptation, and residual impacts from climate change in AR6 that would go beyond the work done in AR5.

Is the topic relevant for more than one Working Group?
This proposal is relevant for all three WGs as scenarios serve as the basis for evaluating future climate changes, potential climate change impacts as well as socio-economic mitigation and adaptation pathways. The WGs will have to work in close collaboration and take an integrated approach across several disciplines. The proposal also recommends establishing an "Author Scenario Group" in order to enhance integration of the scientific knowledge across WGs. The group would coordinate the work throughout the AR6 process and secure close interaction on critical issues.

Were there gaps in the AR5 on these topics?
As discussed at the Expert Meeting at IIASA, there are several areas and topics with potential for improvements; especially regarding a more dynamic interaction between the WGs, but also between chapters within the individual WG reports. In addition, the Shared Socio-economic Pathways (SSPs) were not published in time for inclusion in AR5. The RCPs were completed and climate projections were developed in the multi-model project CMIP5 and assessed in the AR5 WGI. After that a new scenario framework was designed and the main characteristics of the SSPs were identified. The new scenario framework has been established and published, and various streams of activities are underway to provide qualitative and quantitative information on the SSPs. In addition, the development of Integrated Assessment Model (IAM) scenarios based on the SSPs is being completed. But despite efforts and significant progress in the development of new scenarios, the objective of using the scenarios as an integrating element of the three WGI reports was not fully realized. While the RCPs were produced in time for use in projections assessed by WGI, the associated socio-economic scenarios were published too late for inclusion in AR5.

A Special Report on Scenarios would also represent a possibility to explore in more detail the lower scenarios; i.e., 2 °C and below. As stated in AR5, very few studies were available for assessment of scenarios below 2 °C. A Special Report could potentially fill this gap, both with respect to emission pathways and impacts at various levels of climate change.

Is the topic different from what is reported elsewhere?
IPCC is the only process that can assess and report such a broad and comprehensive activity. The IPCC approach is also unique in terms of contributions by researchers from different geographical regions and from various disciplines. No other similar IPCC special report has recently been published or is in preparation. The Meeting Report on the IPCC Expert Meeting on Assessing and Combining Multi Model Climate Projections from 2010 played an important role for integration among WGs. Such an approach should have again a similarly positive effect on the AR6 assessment cycle, however a SR would not necessarily be needed to achieve these objectives.

Are there sufficient new scientific findings that motivate a specific focus on these topics?
A new round of scenario studies is prepared, as presented at the Expert Meeting at IIASA. There will be a large amount of new scenario results available presented in a new framework that was not finalized in time for AR5. In addition, several new and relevant studies have been published after AR5

on analysis of the existing scenarios in the WGIII Scenario database, but very few on new scenarios beyond the AR5 scenarios. A special report on scenarios would also need to consider the increased ambition in the Paris Agreement and include and assess studies that consider scenarios relevant for stabilization levels below 2 °C.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?
A Special Report as suggested would be relevant for the further UNFCCC process after COP21, but this proposal is too narrow to meet all of those needs in terms of inputs and updates, in particular since it misses out on impacts. It would need to be carefully coordinated with the main AR6 report with respect to timing and selection of authors and availability of scenarios. Notably CMIP6 scenarios, in particular the new RCP2.0, will become available only rather late and their incorporation into this Special Report would then risk to interfere with the preparation of AR6.

Links to other Special Report proposals
A Special Report on scenarios could be an effective way to keep the UNFCCC updated on scenario developments. The proposal should be seen in relation to the invitation from the UNFCCC to write a special report on 1.5 °C impacts and associated emission pathways (proposal 26). The proposal is also related to proposals 6, 15, 18b and 23.

Conclusion
Scenarios of future societal development, climate change, and other environmental changes are an essential ingredient to IPCC reports. They serve as the basis for evaluating future climate changes, potential climate change impacts as well as socio-economic mitigation and adaptation pathways. As pointed out in the conclusions from the Expert Meeting on Scenarios, there is both a need and substantial room for deepening scenario integration in AR6 across the model chain. The work in the AR5 cycle suffered particularly at the WG interfaces from the incomplete scenario process. These had a series of consequences, but above all the impossibility of directly closing the model chain and achieving a more consistent scenario-based assessment.

A Special Report could give an opportunity for improvements on the scenario work itself and also give more room for new issues to be studied (negative emissions, land use, etc). However, the timeframe for a Special Report would be a problem. As pointed out at the Expert Meeting, there are many issues that need to be improved and it would be difficult to achieve this within the timescale of a Special Report. The improvements recommended by the Expert Meeting would be better followed up by the work of the full AR6 report. Some of the issues and interests as expressed in the proposal may also be well covered by SR proposal 26.

While there are several publications assessing the existing AR5 scenarios, the amount of new literature on new scenarios is limited. Waiting for the full AR6 assessment report would allow time for more studies to be published. Furthermore, there is likely to be overlap between the experts required for the proposed Special Report and the full AR6 report.

Proposal 26: Impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways

The Structured Expert Dialogue (SED) identified some gaps in AR5 and showed that some new scientific findings, partly pertaining to the scope of this special report, and also based on existing scenarios and previous analysis, have emerged since AR5. The UNFCCC secretariat previously invited IPCC to consider preparing special reports that would provide a solid scientific foundation for policy making, also with some particular emphasis on the global stocktake.

Is the topic relevant for more than one Working Group?
The topic is clearly relevant for all three Working Groups.

WGI needs to provide further analysis on CMIP5 results with respect to scenario analysis for a set of scenarios that can keep global mean warming e.g. *likely* below 1.5 °C above pre-industrial levels vs. those that keep it below the 2 °C limit, including updated knowledge on climate sensitivity, role of various forcing agents, temperature overshooting and negative emissions. Time horizons, i.e. near-term, 21st century, vs. long-term, need also to be worked out to frame such a scenario analysis properly. WGI needs also to assess physical impacts such as sea level rise, changes in the cryosphere and in extreme events as they all relate to scenarios, which keep global warming below 1.5 °C or 2 °C including of course an assessment of the considerable associated uncertainties of all these assessments. Moreover, if possible preliminary results from CMIP6 work may need to be provided for this report as much as possible.

WGII needs to analyse further all other impacts of 1.5 °C vs. 2 °C warming including possible trade-offs between adaptation and mitigation, e.g. inasmuch the latter may create conflicting goals, e.g. among goals such as food production vs. agricultural mitigation measures, poverty eradication, sustainable development, and biodiversity risks from land-use change, notably BECCS among others. SDGs may also need to be considered in this context.

WGIII needs to assess emission pathways consistent with keeping mean global temperatures below 1.5°C vs. 2 °C with various probabilities, associated mitigation costs and co-benefits, technological needs including sectorial feasibility studies.

All this work needs to be done in a fully integrated manner, in particular also with respect to current knowledge limits and uncertainties, requiring strong cooperation among all three working groups similar to what was done in the AR5 SYR using the latter as a starting point.

Were there gaps in the AR5 on these topics?
Yes, there were gaps in the AR5. E.g. climate scenarios and related impacts and mitigation pathways were consistently analysed with a focus on near term and end of century time frames (RCP2.6 to RCP8.5). WGII focused on those two “time slices” and the impacts avoidable without a detailed in depth assessment of the impacts, which could be avoided when global warming would not be limited to only 2 °C but also to 1.5 °C. Moreover, the impact community was not able to make full use of the CMIP5 scenarios during the AR5 assessment. Neither were adaptation nor mitigation aspects (WGIII), including their risks explicitly analysed for a 1.5 °C vs. a 2 °C limit.

Is the topic different from what is reported elsewhere?
Yes, since no other proposal emphasizes to the same degree in its scope the nature of a “1.5 °C world” and possible pathways to get there (low emission pathways) as well as how these compare to

other possible worlds as much as this proposal. The scope of this SR needs to make a special effort to complement AR5 by analysing the difference in terms of impacts, adaptation needs, limits of adaptation, as well as emission pathways and mitigation including risks and possible conflicts in objectives between warming limits of 1.5 °C vs. 2 °C as this was the case for the corresponding difference between the 2 °C and 4 °C limits. The report needs also to make substantive efforts on addressing and quantifying the considerable uncertainties including limits of knowledge associated with such an analysis, since policy-making needs to be well informed on those.

Are there sufficient new scientific findings that motivate a specific focus on these topics?
Needed research fields, e.g. IAM scenario analysis based on existing data bases, CCS/BECCS, or the role of agriculture and land-use in general, including SDGs, are only emerging. Yet several highly relevant research findings have already been published in 2014 and 2015, partly building on AR5, that specifically pertain to the scope of this. Notably the time frame to complete this SR by the end of 2018 poses a particular challenge, yet once a varied scientific community is fully involved many more research findings are expected to become available until the end of 2017 or latest very early 2018. To this end organizing an IPCC Workshop in the 2nd half of 2016 may well help to inform and engage a broad scientific community and to involve research entities early on and sufficiently in time for the preparation of this SR.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?
The difference between this SR and AR6 is largely given by the difference in the timing (and as a consequence also the levels of comprehensiveness of the assessment) than in the topic itself. While the core of the topic of this SR is to be fully covered as much as possible in AR6 too, however, it is very unlikely that CMIP6 will be able to provide soon enough the new scenario RCP2.0, which is needed for a broad, fully comprehensive assessment including also all other scenarios. Since the full new scenario range needs to be computed in a consistent manner allowing in-depth comparisons among various degrees of warming including their associated impacts and emission pathways, this can only be done in the time frame AR6 has available. Therefore this SR would be more restricted to analysing existing scenarios and data bases in a new manner complemented by latest scientific findings particularly pertaining to the main scope of this SR, while AR6 would then be able to fully treat this topic to maximal comprehensiveness, in particular by using also the new RCP2.0 scenario.

Despite the absence of an explicit 1.5°C scenario in the existing CMIP5 database, the RCP2.6°C data could be used in an earlier time period (e.g., 2060-2081) when the warming reaches 1.5°C. Such an approach is better than scaling the climate signal and introduces a small bias that is negligible compared to the climate model uncertainty.

The overlap in terms of experts would be considerable, yet this constitutes also an advantage because of the similarity of the scope, which means a smooth progress from what this SR can accomplish without having RCP2.0 available and what AR6 can accomplish having the latter scenarios handy and being able to analyse the full scenario range. Given the urgency of the climate change problem, e.g. considering current mitigation and adaptation gaps, and the will of UNFCCC to address these (e.g. 1/CP.21 and Paris Agreement) justify the preparation of this SR.

Conclusion

This special report could be prepared with a somewhat expanded scope. While it is to be noted that its scope is at this stage not fully defined, this introduces also flexibility to incorporate other needs as

expressed in other similar proposals (notably SR proposals 17a, 23, 24a but also others e.g. 15, 18b, 20, 21, or 24b), e.g. on relationship between mitigation and adaptation or particular emission pathways, not only low emission pathways. However, its emphasis on the 1.5 °C limit sets it apart from other proposed SRs. The challenge, in particular for the scientific community, is considerable, notably since UNFCCC wishes to have the report by end of 2018 (COP24), yet the approach as sketched above is feasible, if the IPCC supports the scientific community with appropriate measures such as timely and apt workshops involving broadly all relevant scientific disciplines from 2016 onwards.

CLUSTER G

Proposal 13: Special report on managing the diversity and contradictions of climate change data and information

The main goal of this proposal is to explore the usability of climate data and information existing in some countries, for the availability internationally, incorporated into national/regional development planning or in disaster reduction strategies. This proposal points out the critical need especially for developing country's interests, which is in relation to the specific scales of decision making, risk management, and impact, adaptation and vulnerability assessment.

Is the topic relevant for more than one Working Group?
Yes, this topic is relevant for WG1 and WG2. With an emphasis on climate change data, this proposal is more relevant for Working Group-I.

Were there gaps in the AR5 on these topics?
In assessment reports, issues related to diversity and contradictions of datasets are systematically considered, on the basis of the published literature. From the perspective of understanding change in the climate system, uncertainties still exist in changes in many essential climate variables except for surface air temperature. Knowledge is still limited about change in weather and climate extremes, especially small-scale extremes, due to limitation of consistent long-term data sets. Climate change impact data and information from various sectors are especially crucial from WGII. However, such type of data and information is not systematically accessible for the scientific community. Thus, gaps exist in climate data for applications to climate change adaptation for issues such as food security, risk management and challenges in biodiversity and natural resources.

Is the topic different from what is reported elsewhere?
Although this topic is broad and relevant to almost most chapters in WG1 and WG2, climate data and information is primarily a basic source for climate change research. Further, this topic has no significant difference from what are reported by many other IPCC and international bodies such as TGICA[35], GCOS[36] and GFCS[37].

TGICA attempts to identify information needs in support of IPCC work, facilitate research on climate impacts, adaptation, and mitigation, and formulate recommendations on cross-cutting issues. GCOS addresses the total climate system including physical, chemical and biological properties, and atmospheric, oceanic, terrestrial, hydrologic, and cryospheric components. It is intended to be a long-term, user-driven operational system capable of providing the comprehensive observations required for monitoring the climate system, detecting and attributing climate change, assessing impacts of, and supporting adaptation to, climate variability and change, application to national economic development, and research to improve understanding, modelling and prediction of the climate system. GFCS is to enable better management of the risks of climate variability and change and adaptation to climate change, through the development and incorporation of science-based climate information and prediction into planning, policy and practice on the global, regional and national scale.

The novelty of this proposal is to explore existing climate data and information in some countries to improve policy for climate change adaptation.

Are there sufficient new scientific findings that motivate a specific focus on these topics?

[35] Task Group on Scenarios for Climate and Impact Assessment
[36] Global Climate Observing System
[37] Global Framework for Climate Services

All the published literature on observed facts and future projections of climate change and related impacts is based on climate data and information. However, direct new scientific findings specially focused on managing the diversity and contradictions of climate change data and information is very limited. Improving resources in producing, analyzing and interpreting and disseminating climate data is crucial to enhance climate change scientific research, but not explicitly the mandate of IPCC.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?

The topic about climate change data and information lacks sufficient literature support for the assessment required within a special report. Rather, this topic may be covered during the writing process of AR6 by increasing the regional diversity of scientists and by strengthening the regional assessment of the literature on observed changes from the diversity of climate data and information. In parallel, other international bodies such as GCOS, WCRP, and GFCS may focus on collecting such data and information as capacity building for climate change assessments.

Links to other Special Report proposals

The topic on managing climate change data and information links to most of proposed topics, especially Integrated Adaptation and Mitigation, Human Health, Food Security, National, Regional and International Security, Adaptation to Extreme Events and Disasters.

Conclusion

The diversity and contradictions in climate data and information is crucial to support climate change research on which IPCC assessments rely based on the published literature. The lack of literature on this topic is a strong limitation for a dedicated SR.

CLUSTER H

Proposal 15: Update of key policy-relevant messages in AR5 in support of review and assessment procedures in new UNFCCC agreement

The suggested report should provide the latest scientific knowledge on a range of cross-cutting, policy-relevant issues, based on competence from all WGs to provide an update to the key messages presented in the AR5 SYR. The report would be self-contained and short (max 20 pages) and should focus on updates where new information takes the science forward without repeating existing messages.

Is the topic relevant for more than one Working Group?
Yes, it will need input from all three WGs in close collaboration. The proposed report can be seen as an update of the SYR SPM and would require a highly integrated approach across all WGs.

Were there gaps in the AR5 on these topics?
Not gaps, but there has been scientific development in several areas since the cut-off dates for use of literature for the assessments done in AR5. This is the basis for the suggested Special Report.

Is the topic different from what is reported elsewhere?
Yes, different, in the sense that it would be updated from AR5 WG reports and the SYR. And there is probably no other assessment process as comprehensive and thorough as the IPCC process that can provide a similar assessment of new policy relevant knowledge.

Are there sufficient new scientific findings that motivate a specific focus on these topics?
Several relevant studies have been published after AR5 on the following topics: emission trends, temperature trends (including "hiatus", El Nino…), SLR[38], carbon budget/cumulative emissions, bioenergy, negative emissions/BECCS, the role of non-CO_2 for the carbon budget, scenarios consistent with a 1.5 °C target (only very few on this topic), impacts, food production, climate impact analyses of the INDCs. A Special Report as suggested by UK could also consider the increased ambition in the Paris Agreement.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?
A Special Report as suggested would be highly relevant for the further UNFCCC process after the Paris meeting. As pointed out, the AR5 results will be old in 2020 when the parties will meet again to update the Paris Agreement and the suggested Special Report could provide the scientific update for this meeting.

A Special Report as suggested would need to be carefully coordinated with main AR6 report to avoid a real or perceived circumvention of the AR6 review process and possible conflicts in detail with the AR6 when that is finalized. It also has the potential to divert effort of AR6 authors. But UK points out that the report should be key part of the delivery of the 6th Assessment Report, integrated into the development of Working Group Reports, not additional to them.

A special report as suggested could benefit from the experiences achieved by the Core Writing Team (CWT) of SYR. During that process, the authors developed a fruitful collaboration and understanding across WGs and disciplines. A sub-set of the CWT could build on this experience and write such an update report effectively with less start-up costs compared to a new author team.

Links to other Special Report proposals
Due to the broad perspective of the suggested report there are several potential links to other proposals on their respective topics. In particular there are links to the Special Report on 1.5 °C asked for in the Paris Agreement (proposal 26) as well as proposals 17a and 24b.

[38] Sea-level rise

Conclusion

The scope of this SR proposal is similar to the scope of a full assessment report and is not focused on a specific issue but rather on the main key policy relevant messages in a SPM format. The proposed Special Report could be an effective way to keep the UNFCCC updated on science developments after AR5, but closer considerations of the timelines for the UNFCCC process and the proposed SR, as well as the full AR6 report, is needed to assess its potential as a useful report for the UNFCCC process. One main element in such a report would be an assessment of the possibilities for holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and lower towards 1.5 °C. Thus, this proposal should be seen in relation to the invitation in the Paris Agreement to write a special report on 1.5 °C and could be combined with this. A Special Report as suggested could build on competence and experience gained by the SyR CWT but would need careful coordination with the following main AR6 reports.

Proposal 20: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation – Update

Relevant for more than one Working Group?

Changes in extremes are one of the most serious challenges facing societies with substantial and widespread impacts and consequences. Managing the risks of extreme events and disasters to advance climate change adaptation is then an important aspect that the IPCC, through at least two WGs (WGI and WGII) can help by providing the updated and relevant information through the assessments and SRs. This topic is, in fact, relevant to WGI as it requires, among others, inputs from WGI regarding observed changes in extremes, their attribution, the future changes and from WGII regarding risks and impacts on human systems and ecosystems as well as potential and required adaptation.

Coverage of the topic in AR5 or other assessment reports

The AR5 WGI report synthesizes the observed and future changes of a quite long list of extreme weather and climate events related, for example, to temperature (like warm and cold days and nights, warm and cold spells / waves), precipitation (like high precipitation events, …), drought, tropical/extratropical cyclone activity and sea level. It also provides comparisons/updates (where applicable) from the SREX report (and AR4). This gives a good coverage and update of the topic until the AR5 date. Although there is not a compelling gap from AR5 regarding the topic, there is still room for better coverage when considering: the regional and local coverage of extremes which is highly dependent of data availability and accessibility, the short duration events (sub-daily extremes) aspect and other range of extremes like the sector oriented ones.

New Scientific information?

Since the AR5, there have been different works and studies published related to extremes but mainly on regional and national levels. These cover a range of aspects: detection, attribution, future changes, impacts and consequences (i.e. temperature extremes at global and regional scales, climate extremes and the carbon cycle, Arctic temperature extremes, ecosystem responses to climate extremes, extra tropical storms, winds, and waves, extremes and hydroclimatic regimes, Arctic sea ice loss and regional climate extremes, community resilience to climate extremes). Also different coordinated efforts/initiatives have been done or are underway in order to allow a better coverage of the world and a better data quality and accessibility (data rescue, homogeneity works, international commitments toward a better accessibility of data). International activities and programs are also underway in order to help dealing with weather and climate extremes challenges as well as high impact weather. However, and considering the update done by the AR5, it is not sure that we will have shortly enough new observed data / data basis to allow new/ updated scientific information regarding for example observed changes and observed impacts in the range of two years or so. Also, having enough new findings relatively to future changes of extremes is not guaranteed although different studies have been published yet; this is depending on the availability of additional studies based on high resolution models at least at regional scales. The introduction of a longer set of extremes could also be an important enhancement but still need more works and coordination (on both definition and time and spatial scales sides).

Conclusion

Having a new SREX (at least from the climate side) report sufficiently before the production of AR6 could be difficult taking into account the availability of enough new observed data and enough new scientific findings since AR5.

However, due to the great importance of such a topic (and also the great interest from a large community including decision makers) it is suitable that the AR6 dedicates larger place (more than the previous reports) to the extremes aspect. An annex part/document can also be joined to the report (AR6) to facilitate the access of information/findings to a larger community.

CLUSTER I

Proposal 25: Cities and Climate change (SRCC)

Is the topic relevant for more than one Working Group?
The topic is clearly relevant for Working Groups II and III – with WGII assessing the special urban impacts (such as the impact of CC combined with urban heat island effect), vulnerabilities, resilience and adaptation options, and WGIII assessing mitigation opportunities at the city level, as well as linkages with many other urban processes and priorities to which both mitigation and adaptation actions can be integrated or linked.

Were there gaps in the AR5 on these topics?
Yes, there were. While AR5 was the first AR in which the urban scale has been addressed as an important unit of analysis, many gaps remained. First, the AR5 WG-III report used the sectoral approach as the main analytical framework, this logic does not work so easily for assessing the literature related to urban processes and opportunities. There are many integrative approaches at the urban scale that result in more than the sums of sectoral options. As such may not be ideal analytical frameworks for an entire assessment report, a special report on cities may much better be able to capture and portray the adaptation and mitigation opportunities through using a better tailored analytical framework than will be possible in AR6. Second, as the proposal well elaborates, there is a broad spectrum of related issues that are very relevant and where the literature and action has been burgeoning, and single chapters in each WG reports can barely scratch the surface of these issues. Thirdly, and perhaps most importantly, integration between adaptation and mitigation at the urban scale is crucial in order to avoid counter-acting actions and utilize synergistic opportunities, and addressing the urban scale in separate volumes will not be able to play this pivotal integrative role.

Is the topic different from what is reported elsewhere?
Yes. Although there are recent assessments on cities, none of them has addressed the cross-section of cities and climate change in a comprehensive manner that is required for the key target audiences of IPCC.

Are there sufficient new scientific findings that motivate a specific focus on these topics?
Yes. There is an increasing recognition in recent years that cities often offer opportunities for more flexible and faster action on climate change than national governments, and thus both action at this level as well as the literature analyzing these actions have been burgeoning.

What would be the implications of special reports on these topics for the AR6? Or alternatively, how could these special topics be specifically handled in AR6? Would preparation of the report limit the availability of experts for the Assessment Report?
While the AR6 will be well able to tap into the SR on cities, the SR will also ideally be complementing the AR6 in that it is likely to offer a different analytical framework, and therefore a different lens, for assessing urban climate change impacts and opportunities for action. This will provide the IPCC audience with different insights for catalysing different types of climate action, also likely targeting slightly different audiences. Furthermore, by already having a detailed assessment of the urban scale, the pressure on AR6 to be balanced AND comprehensive related to cities will be lower and thus will allow a less superficial treatment of the relevant key issues.

There is unlikely to be a compromise in the availability of authors for AR6 due to the SR. The topic is so broad and scholarship is so rapidly increasing in the area that there is no shortage of highly qualified experts for both an SR and an AR; in this topic it is likely that even developing country authors can be easily identified in large numbers.

Conclusion
Given the burgeoning literature on and the so far limited attention given by IPCC to the urban scale, combined with the increasing attention to city-level climate action, the subject of this proposed SR is topical and an assessment is highly needed. The urban scale also offers perhaps the most important

arena for integration of adaptation and mitigation[39], therefore the SR will also serve as a key bridge between WGs II and III, through integration in almost all aspects of their work. As the IPCC has already started the process by an expert meeting in Kolkata in 2013, it could root the new efforts into the outcomes of this event, and could also team up efforts with other UN bodies such as UN Habitat.

[39] Among the most important due to the following facts: up to two-thirds of the world's population will live in urban areas by 2050; every day, an 80 sq.km area of the planet becomes urban; annual urban infrastructure investments will rise to more than $20 trillion by 2025; and cities account for over 70% of fossil fuel-related greenhouse gas emissions. Only 600 cities produce 60% of global GDP, yet, many of these lie in climate hot spots, including low-elevation coastal zones. Cities encompass most of the infrastructure (transport and buildings) that can cause the largest lock-in; while they suffer from less of the paralising legislative and political structures that jeopardise climate action in many nations and federations.

ANNEX 2

FAO

منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Продовольственная и сельскохозяйственная организация Объединенных Наций | Organización de las Naciones Unidas para la Alimentación y la Agricultura

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Our Ref.: Your Ref.: 5103-16/IPCC/GEN

27 January 2016

Dear Mr. Sivakumar,

Many thanks for sharing with us the proposed themes for the 6th Assessment Report cycle of the IPCC. I am pleased to respond on behalf of the Director-General.

FAO in particular welcomes the proposal to issue a *Special Report on Climate Change, Food and Agriculture*. FAO considers that in responding to climate change, the agricultural sectors have a unique opportunity to simultaneously address some of the core concerns of the 21st century. In addition to meeting the imperatives to adapt and mitigate, action in the agricultural sectors can also increase food and water security, help eliminate poverty, promote gender equality and provide ecosystem services. This unique potential of the agricultural sectors is also recognized in Parties' INDC submissions: almost 90 percent of all countries include agriculture in their INDCs, and agriculture is the foremost priority cited for adaptation action. We therefore hope that the IPCC Bureau will identify the *Special Report on Climate Change, Food and Agriculture* as a priority during its February session, and look forward to contributing FAO's technical expertise to its preparation.

Please find attached the requested summary of recent and upcoming FAO workshops, reports and other products which relate to the topic of climate change, food security and agriculture, as well as some of the other, related themes proposed. I would in particular like to draw your attention to the fact that FAO's annual flagship publication, *The State of Food and Agriculture* (SOFA) is dedicated to *Climate Change, Food Security and Agriculture* this year, and that 2016 World Food Day celebrations (16 October) will also share this same theme. Collaboration with the IPCC on this topic would therefore be timely and opportune.

We look forward to hearing the outcome of the IPCC Bureau's 43rd Session.

Yours sincerely,

Dr. Martin Frick
Director
Climate and Environment Division

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ATTACHMENT to 5103-16/IPCC/GEN

ATTACHMENT to 5103-16/IPCC/GEN

Recent and upcoming FAO workshops, reports and other products relating to proposed themes for the IPCC 6th Assessment Report Cycle

*FAO strongly supports the proposal to undertake a S*pecial Report on Climate Change, Food and Agriculture*. As FAO is also conducting work of relevance to other proposed themes, recent and upcoming activities and products are listed according to the most relevant theme. In many instances however, activities and products contribute to multiple themes. The below list does not represent an exhaustive inventory of FAO's work on the respective themes, but rather aims to provide a brief insight into the kind of work FAO would draw on to contribute to the IPCC's 6th Assessment Report cycle.*

Special Report on Climate Change, Food and Agriculture

Upcoming publications and submissions

FAO, 2016. *The State of Food and Agriculture* (SOFA) - *Climate Change, Food Security and Agriculture*. The 2016 edition of FAO's annual flagship report will review the evidence on the impacts, current and projected, of climate change on agriculture (crops, livestock, fisheries, aquaculture and forestry) and related implications for food security. A particular focus will be given to the impact on vulnerable regions, systems and populations. The report will analyse how the agricultural sectors can meet the challenges of climate change and build resilience towards ensuring food security, through adaptation as well as contributing to mitigation where possible.

Submission to support the work of the UNFCCC under the technical examination process on adaptation to identify concrete opportunities for strengthening resilience, reducing vulnerabilities and increasing the understanding and implementation of adaptation action, as specified in Section IV of the COP21 decision text (by 3 February 2016).

Submissions to support the work of the Subsidiary Body for Scientific and Technological Advice on *Issues Related to Agriculture* (by 9 March 2016):

- Identification of adaptation measures, taking into account the diversity of the agricultural systems, indigenous knowledge systems and the differences in scale as well as possible co-benefits and sharing experiences in research and development and on the ground activities, including socioeconomic, environmental and gender aspects.
- Identification and assessment of agricultural practices and technologies to enhance productivity in a sustainable manner, food security and resilience, considering the differences in agroecological zones and farming systems, such as different grassland and cropland practices and systems.

Reports on *Impacts of climate change on agriculture and food security, and characterization of vulnerability at the household level*. Reports from the Assessments of Climate Change Impacts and Mapping of Vulnerability to Food Insecurity under Climate Change to Strengthen Household Food Security with Livelihoods' Adaptation Approaches (AMICAF) project and FAO modelling system to assess climate change impacts on agriculture at national level (MOSCAICC) work in the Philippines and Peru, designed to inform national policy processes.

Upcoming workshops and events

March 2016, Santiago, Chile: Segundo diálogo de negociadores Latinoamericanos sobre temas agrícolas y forestales en la Convención Marco de las Naciones Unidas sobre Cambio Climático (FAO/CEPAL partnership). A 2-day workshop for agriculture and forestry negotiators from 11 Latin American and Caribbean countries, to enable better understanding and leveraging of the UNFCCC framework and processes, so as to improve domestic policy formulation, better respond to international developments, and engage in technical discussions on the land sector, MRV and INDCs.

April 2016, Nairobi, Kenya (tbc): Regional workshop on agriculture, food security and climate change (FAO/COMESA partnership). A 2-day workshop for representatives from 19 COMESA states (one each from Ministry of Agriculture and Environment) to enhance COMESA countries' understanding of agriculture, food security and climate linkages within the evolving climate regime and allow them to better leverage the UNFCCC framework and related processes to deliver climate-smart agriculture development.

5-7 April 2016, Rome, Italy: Global Capacity-development Workshop on Integrating Agriculture and Food Security in National Adaptation Plans (NAPs) (UNDP/FAO partnership).

16 October 2016, Rome, Italy: World Food Day 2016. World Food Day 2016 will focus on climate change and food security. Additional activities dedicated to climate change and food security will be held during the side event programme of the 43rd sessions of the Committee on World Food Security (17-22 October 2016).

Relevant data, methods and tools

Database on GHG emissions from the agriculture, forestry and other land use sectors: http://faostat3.fao.org/browse/G1/*/E. A global inventory of GHG emissions from all agricultural activities, including crop production, livestock and forestry and land use changes.

Livestock Environment Assessment and Performance (LEAP): http://www.fao.org/partnerships/leap/en/**.** This partnership develops common metrics and methodologies to define and measure environmental performance and GHG emissions in livestock supply chains, and has implemented the "Reducing enteric methane for improving food security and livelihoods" project with the Climate and Clean Air Coalition.

The Ex-Ante Carbon-balance Tool (EX-ACT): http://www.fao.org/tc/exact/ex-act-home/en/. This system provides *ex-ante* estimates of the impact of agriculture and forestry development projects, programmes and policies on the carbon-balance.

MOdelling System for Agricultural Impacts of Climate Change (MOSAICC): http://www.fao.org/climatechange/mosaicc/en/**.** This system of models and utilities was designed to carry out inter-disciplinary climate change impact assessment on agriculture through simulations. This model will allow better integration of scientific information in the design of agricultural development projects and decision-making or policy formulation**.**

Agricultural Stress Index System:

http://www.fao.org/giews/english/shortnews/20150429asis.htm. FAO's Agricultural Stress Index System (ASIS) monitors vegetation indices and detects hotspots where crops may be affected by

drought, using data on vegetation and land surface temperature. The system contributes greatly to the food security monitoring work of Global Information and Early Warning System on Food and Agriculture (GIEWS).

Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists (SHARP): http://www.fao.org/climate-change/programmes-and-projects/detail/en/c/328911/. This tool helps farmers and pastoralists assess and prioritize resilience aspects of their livelihoods in a participatory manner. The survey is paper and Android-tablet-based and assesses governance, environment, social, economic and agricultural practices using a combination of self-assessment and academic review of livelihood components.

Assessment tool for the potential impact of climate change on breed distribution: http://www.fao.org/climate-change-breed-distribution/**.** The current geographic distributions (available at least at country level and in some cases at subnational level) of about 8800 livestock breeds, as recorded in the Domestic Animal Diversity Information system (DAD-IS), are being used to model currently suitable areas to which these breeds are adapted, taking several temperature and humidity parameters into account, and areas suitable under future conditions. Analyses of this kind can potentially contribute to more informed decision-making on breed management in a changing climate and hence strengthen the capacity of national governments, livestock keepers and farmers to protect and enhance food security and manage their animal genetic resources sustainably.

Assessments of Climate Change Impacts and Mapping of Vulnerability to Food Insecurity under Climate Change: http://www.fao.org/climatechange/amicaf/en/**.** The Assessment is aimed at strengthening household food security through livelihood adaptation approaches. It is currently being implemented in the Philippines and Peru and is funded by the Ministry of Agriculture, Forestry and Fisheries of Japan. The main objective of the project is to bridge climate change impact assessment, food insecurity vulnerability analysis and livelihood adaptation approaches.

FAO's Emergency Prevention System (EMPRES): http://www.fao.org/food-chain-crisis/home/en/. EMPRES provides timely support to at risk countries to heighten their level of surveillance for animal and human disease threats, increase their level of preparedness, and implement targeted and timely control interventions. Three major initiatives in recent years have been active in developing and disseminating early warning messages about the risk of occurrence climate sensitive diseases.

FAO/OIE/WHO - Global Early Warning System (GLEWS). This joint platform integrates data from different sources and conducts disease intelligence and epidemiological analysis to provide warning messages and a basis for more accurate risk assessments to be conducted by the international scientific community, with the ultimate goal of contributing to the forecasting of disease patterns.

Climate-based forecasting models and early warning systems (EWS). The aim of such EWSs is to monitor the first signals of a possible increase in vector abundance and associated disease risks and provide information for prevention and risk mitigation. FAO along with relevant technical partners have been monitoring climatic conditions to predict the risk of RVF vector amplification in East Africa for the past several years using appropriate modelling tools and approaches.

Global Animal Disease Information System (EMPRES-i): http://www.fao.org/ag/againfo/home/en/news_archive/AGA_in_action/empres-i.html. This FAO developed global web-based information system deployed to provide reliable disease information for early warning and response to major animal diseases and zoonoses. This system goes beyond but takes advantage of the official reports submitted by countries to other international organizations.

Recent publications

FAO, 2016. ***Climate Change and Food Security: Risks and Responses,*** http://www.fao.org/3/a-i5188e.pdf. Following COP 21, the FAO report "Climate Change and Food Security: Risks and Responses" brings together evidence from the Intergovernmental Panel on Climate Change (IPCC), updated by the latest evidence and scientific findings as well as by results from experience on the ground, on the impacts of climate change on food security and nutrition. It shows how a cascade of impacts from ecosystems to livelihoods interacts with a series of vulnerabilities, undermining food security and nutrition, especially of the most vulnerable populations. The report presents ways to adapt, to reduce vulnerabilities and to build resilience to adapt to climate change, to ensure food security and good nutrition under climate change. This FAO report is geared towards action and is intended to support preparation of adaptation measures in the agricultural sectors and towards food security and nutrition.

FAO, 2015. ***FAO's Work on Climate Change – United Nations Climate Change Conference 2015*****,** http://www.fao.org/documents/card/en/c/4b3e0c8a-118e-4835-a8da-0f53d3625d99**.** This booklet presents the key messages of FAO on climate change and food security. It includes a synthesis of the most recent support provided by FAO to countries to face the impacts of climate change. It also brings together the most relevant knowledge on climate change including tools and methodologies FAO can offer to countries to report on their greenhouse gas emissions coming from the agriculture, livestock and forestry.

FAO submissions to the UNFCCC: www.fao.org/climate-change/international-fora/submissions/2015/en/

Special Report on Agriculture, Forestry and Land Use (AFOLU)

Ongoing activities and existing data sources

FAO, as a **UN-REDD Programme** partner, is providing support (e.g. through country-level workshops) to 64 member countries on:

- The articulation of REDD+ strategies for interventions to the forestry and agriculture (and sometimes beyond) sectors to reduce emissions;
- Capacity for countries to implement REDD+ Measurement, Reporting and Verification (MRV) following the modalities of the UNFCCC;
- Capacity for countries to report on their LULUCF sector emissions, and increasingly support to broader AFOLU emission reporting.

Global Forest Resources Assessments (FRA): http://www.fao.org/forest-resources-assessment/en/
The FRA examines the current status and recent trends for about 90 variables covering the extent, condition, uses and values of forests and other wooded land. Its aim is to assess all benefits stemming from forest resources.

Upcoming publication

FAO, 2016. Module on 'Climate-Smart Forestry' for *Climate-Smart Agriculture Sourcebook*. Existing *CSA Sourcebook*: http://www.fao.org/docrep/018/i3325e/i3325e.pdf

Recent publications

Learning tool on Nationally Appropriate Mitigation Actions (NAMAs) in the agriculture, forestry and other land use sector: http://bit.ly/fao-nama-afolu-tool**.** Through this tool, FAO supports the efforts of developing countries in the identification, development and implementation of country specific mitigation actions in the context of national sustainable development.

Also see www.fao.org/forestry/fma/88744/en

Special Report on Climate Change and Desertification and Special Report on Climate Change and Land Degradation – An Assessment of the Inter-linkages and Integrated Strategies for Mitigation and Adaptation

FAO plans extensive activities in the near future to improve the knowledge and data basis of soil carbon (dynamics) in agriculture, and to develop guidance for integrating and disseminating new knowledge about sustainable land and soil management, among other threats, particularly under climate change.

Upcoming processes and data products

ITPS, 2016. *Voluntary Guidelines for Sustainable Soil Management.* Soil organic matter and soil carbon are key indicators which will be promoted in these guidelines.

Contributing to SDG indicator 15.3 (area of degraded land). This may include the assessment of land productivity and soil carbon. FAO will work with member states and existing data exchange mechanisms, which FAO intends to extend for soils and degraded land.

Work on agro-environmental indicators and GHG data for soil carbon. The Global Soil Partnership will be looking for synergies and feedback with data reported to FAO Statistics, and will provide experiences and knowledge through the global soil information system, which is currently being established.

Effects from FAO land cover mapping. Various technical actions which may improve the land matrix approach for land use change including degraded land (especially based on remote sensing) are being explored, and are of particular importance for countries with poor statistics.

Soil Research: Pillar 3 of the Global Soil Partnership. In 2016, Pillar 3 will bring together leading national soil research institutions to discuss issues such as indicator mapping and soil research challenges (including soil carbon and GHGs from soils). Cooperation with the French government regarding the 4 pour 1000 initiative on soil carbon is being explored.

Recent publications

In the context of the Global Soil Partnership (GSP), FAO facilitates and hosts the International Technical Panel on Soils (ITPS), which has prepared and is preparing reference materials, among others, also important for issues related to climate change.

FAO/ITPS, 2015: First report of the Status of the World Soil Resources, http://www.fao.org/documents/card/en/c/c6814873-efc3-41db-b7d3-2081a10ede50/. This report

includes a chapter on soil organic matter. To improve and continue tracking changes for soil organic matter and other soil threats, a global soil monitoring system including soil carbon and the harmonization with land use data is being conceptualized.

FAO/ITPS, 2015. Revised World Soil Charter,
http://www.fao.org/fileadmin/user_upload/GSP/docs/ITPS_Pillars/annexVII_WSC.pdf

Special Report on Climate Change and Mountains

Mountains and mountain peoples are heavily affected by climate change and the impact goes well beyond mountain areas, as mountains provide between 60 and 80 percent of the fresh water used globally. Mountains have been often neglected in the official Climate Change processes, including recently at COP21. A Special Report on Climate Change and Mountains would be of high importance.

Recent publications

The Mountain Partnership, 2015. ***Mapping the vulnerability of mountain peoples to food insecurity,*** *http://www.mountainpartnership.org/publications/publication-detail/en/c/357944/*

The Mountain Partnership, 2014. ***Mountains and Climate Change - A global concern*****,** http://www.mountainpartnership.org/publications/publication-detail/en/c/271250/

The Mountain Partnership, 2009. ***Mountains and Climate Change, from Understanding to Action*****,** http://www.mountainpartnership.org/publications/publication-detail/en/c/142497/http:/www.mountainpartnership.org/publications/publication-detail/en/c/142497/

Special Report on Climate Change and Ocean

Upcoming workshops and reports

- **8-10 August 2016, Bangkok, Thailand: Global Conference including proceedings on Climate Change Adaptation in Fisheries and Aquaculture - Sharing Experiences on the Ground**
- **Timing TBC: Workshop and *report* on aquaculture mitigation options.**
- **Timing TBC: Technical workshop and *technical paper* on ocean acidification and food security.**
- **Timing TBC: Technical Workshop and Update the *Technical Paper on Climate Change Implications for Fisheries and Aquaculture***. Existing paper: http://www.fao.org/docrep/012/i0994e/i0994e00.htm
- ***Report on piloting of energy efficiency improvements in Thailand.***
- ***Reports on applications of vulnerability assessments within fisheries and aquaculture around the globe.***

Ongoing activities

Global assessment of fisheries and aquaculture compliance with the Code of Conduct for Responsible fisheries (CCRF): http://www.fao.org/fishery/code/en. The implementation of the Code is monitored by the Committee on Fisheries (COFI) through global questionnaires, covering each

Article of the Code. A progress report, comprising statistical results compiled from the received responses, is prepared for each session of COFI. This global assessment can also be used by member countries to review and improve fisheries and aquaculture performance. Preparedness and adaptation to climate change is also being addressed by the instrument.

In collaboration with the Global Partnership on Climate, Fisheries and Aquaculture (PaCFA), FAO has developed FishAdapt – a climate change adaptation programme to support member states and partners to understand and adapt to the impacts of climate change for fisheries, aquaculture and aquatic ecosystems.

Recent publications and reports

http://www.fao.org/fishery/publications/en

International Civil Aviation Organization | Organisation de l'aviation civile internationale | Organización de Aviación Civil Internacional | Международная организация гражданской авиации | منظمة الطيران المدني الدولي | 国际民用航空组织

THE SECRETARY GENERAL

Ref.: E 3/13.7

3 February 2016

Mr. Mannava Sivakumar
Acting Secretary of the IPCC
IPCC Secretariat
7 bis, Avenue de la Paix
C.P. 2300
CH-1211 Geneva 2
Switzerland

Dear Mr. Sivakumar,

I wish to refer to your letter dated 19 January 2016, reference 5103-16/IPCC/GEN, regarding the organization of workshops and reports by ICAO that may pertain to the topics included the attachment to your letter.

In reference to the attached list of proposed topics submitted by IPCC Member States and observer organizations, there is a proposal included from the European Union to produce a joint Aviation and Maritime Special Report. ICAO does not see a scientific rationale for linking these two topics in a single report, as the sectors do not share relevant technological, operational and scientific aspects. In addition, since the 1999 IPCC *Special Report on Aviation and the Global Atmosphere* already exists, it would not be relevant to produce a joint report. As such, we expect that the process for updating information related to aviation would be different from that required for the development of a full new report. Thus, ICAO would prefer to continue to have separate reports prepared, one on aviation and one on maritime.

In terms of possible ICAO workshops and reports or other products that may support the development of a report, a list of pertinent materials is enclosed.

I look forward to continuing to work together with the IPCC to advance our shared environmental objectives.

Yours sincerely,

Fang Liu

Enclosure:
List of relevant ICAO meetings and reports

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ATTACHMENT

LIST OF RELEVANT ICAO MEETINGS AND REPORTS

ICAO Publications

1. Report of the tenth meeting of the ICAO Committee on Aviation Environmental Protection (expected publication June 2016)
2. Report of the ICAO High-level Meeting on a Global Market-based Measure Scheme (expected publication June 2016)
3. ICAO Environmental Report, 2016 (expected publication July/August 2016)

ICAO Seminars and Meetings

1. Tenth meeting of the ICAO Committee on Aviation Environmental Protection, Montréal, Canada, 1 to 12 February 2016
2. ICAO Global Aviation Dialogues on Market-based Measures (GLADs), various regions, 20 March to 8 April 2016
3. ICAO High-level Meeting on a Global Market-based Measure Scheme, Montréal, Canada, 11 to 13 May 2016
4. ICAO Alternative Fuels Seminar, Montréal, Canada, 2017

— END —

ICPO

From: Valery Detemmerman <valery.detemmerman@clivar.org>
Date: Thu, Jan 21, 2016 at 7:50 AM
Subject: Re: ICPO activities relevant for the IPCC
To: IPCC-Sec IPCC-Sec <ipcc-sec@wmo.int>

Thanks Joelle - CLIVAR already responded to this request through WCRP/David Carlson. i hope you are doing well and enjoying a good start to 2016 with new faces. best, Valery

PRESIDENT: Professor Peter Burkill
SECRETARY: Dr. Corina Brussaard
EXECUTIVE DIRECTOR: Dr. Edward R. Urban Jr.

Secretariat: College of Earth, Ocean, and Environment
Robinson Hall
University of Delaware
Newark, DE 19716 USA

3 February 2016

Dr. Mannava Sivakumar
Acting Secretary of the IPCC
IPCC Secretariat
clo WMO
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C.P: 2300
CH-1211 Geneva 2 ·
Switzerland

Dear Dr. Sivakumar:

Thank you for your letter of 19 January 2016 inquiring about activities of the Scientific Committee on Oceanic Research (SCOR) that might be relevant to proposed IPCC special reports. I reviewed the list and there are two areas in which SCOR is working that are relevant: climate change and the ocean, and polar oceans.

SCOR sponsors two research projects that are specifically related to understanding the role of the ocean in climate change and the effects of climate change on the ocean. These projects are the Surface Ocean – Lower Atmosphere Study (SOLAS) and the Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) project. Information about these projects, including their meetings and plans, can be found at http://www.solas-int.org/ and http://www.imber.info/, respectively.

In terms of polar science, the main SCOR activity is a joint project with the Scientific Committee on Antarctic Research (SCAR). This project is called the Southern Ocean Observing System (SOOS). It is intended to help design and bring together physical, chemical, and biological observations of the Southern Ocean. The SOOS Web site is at http://www.soos.aq/. The most recent SOOS-sponsored activity was a workshop on Southern Ocean Air-Sea Fluxes, held on 21-23 September 2015 in Frascati, Italy. Information about the workshop can be found at http://www.soos.aq/science/air-sea-fluxes/flux-products.

SCOR supports many working groups that are focused on topics relevant to global change and the ocean, but mostly in the area of observation techniques and specific science questions. The list of SCOR working groups can be found at http://www.scor-int.org/SCOR_WGs.htm. One of the new SCOR Working Groups is WG 149 on Changing Ocean Biological Systems (COBS): how will biota respond to a changing ocean? This group will seek to improve our understanding about how multiple global change factors (pH, temperature, oxygen, nutrients, etc.) interact to affect marine organisms.

I’m sorry my response missed the deadline, but I hope it will still be useful.

Best regards,

Edward R. Urban Jr.
SCOR Executive Director

United Nations Convention to Combat Desertification

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Postal Address: PO Box 260129, 53153 Bonn, Germany
Tel. +49 (0) 228 815 2800 Fax: +49 (0) 228 815 2898/99
E-mail: secretariat@unccd.int Web-site: www.unccd.int

Date: 26 January 2016
Ref.: KMST/-002
cc: mbt,

Dear Dr. Sivakumar,

Subject: Relevant UNCCD activities in relation to the themes proposed for IPCC Special Reports

In relation to the theme of climate change and land degradation/desertification/drought, which has been proposed as a topic for an IPCC Special Report by Algeria, Saudi-Arabia and UNCCD, the UNCCD is undertaking, or plans to undertake, following initiatives, workshops and/or reports:

- **Land Degradation Neutrality (LDN) Target Setting Programme:** The twelfth Conference of Parties (COP) to the UNCCD decided to make the sustainable development target on LDN (SDG 15.3) the guiding principle for implementing the Convention. Parties were invited to set voluntary LDN targets which will be monitored by a small set of indicators including "trends in carbon stocks above and below ground". This indicator reflects the direct linkage between land degradation processes and climate change and allows countries to better link LDN activities with land-based climate action. The UNCCD secretariat recently initiated a LDN target-setting programme that will support around 60 countries in setting voluntary LDN targets over the next two years.
- **Indicator for SDG 15.3 on LDN:** The same monitoring approach including "trends in carbon stocks above and below ground" is being proposed by the UNCCD secretariat as an official indicator for SDG target 15.3. A workshop on refining the proposed monitoring methodology in collaboration with scientific experts and other International Organizations (UNFCCC, CBD, FAO) will take place on 25 and 26 February 2016 in Washington DC.
- **LDN Conceptual Framework:** As part of its Work Programme 2016-2017 the Science-Policy Interface (SPI) of the UNCCD is developing a report on a conceptual framework on LDN which will take into account linkages between LDN and climate change. A corresponding workshop will take place on 22 and 23 February 2016 in Washington DC.
- **Report on sustainable land management (SLM) and climate change:** Further, the SPI will develop a report on the potential of SLM practices to contribute to climate change adaptation and mitigation. An associated workshop is planned to take place late 2016.
- **Global Land Outlook (GLO):** The 1st edition of the GLO, the UNCCD's new strategic communications flagship product, will be released in early 2017. It will include sections on land-based climate adaptation and mitigation.

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- **The Great Green Wall (GGW) for the Sahara and the Sahel Initiative** is a pan-African programme launched in 2007 by the African Union and supported by the UNCCD. It´s goal is to address land degradation and desertification in the Sahel and Sahara, boost food security, and support communities to adapt to climate change.
- **African Drought Policy Conference** in Windhoek, Namibia, August 2016 in cooperation with the Government of Namibia.
- **Workshop on National Drought Policies** in Windhoek, Namibia, August 2016 in cooperation with WMO, FAO and CBD.
- **Expert workshop on dust and sand storm** envisaged to take place mid-2016. A report entitled "Rapid Global Assessment of Sand and Dust Storm" will be published by May 2016, in partnership with UNEP and WMO.
- **Climate Risk Nexus Initiative:** addressing water scarcity and social vulnerability in the league of Arab states.

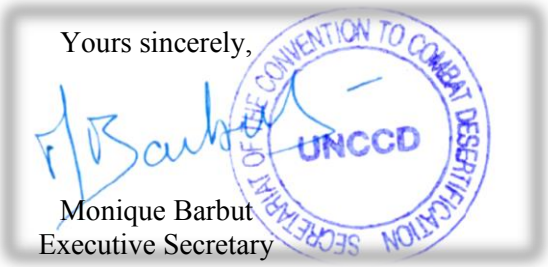
Relevant UNCCD reports and documents published in 2015:

- **Outcomes and policy-oriented recommendations from the UNCCD 3rd Scientific Conference (UNCCD ICCD/COP(12)/CST/2):** "Proposal 1: The UNCCD encourages the Intergovernmental Panel on Climate Change (IPCC) to investigate the interlinkages between desertification/land degradation and climate change and their effects on human well-being. The Science-Policy Interface (SPI) is also encouraged to initiate and coordinate interactions on these issues with the IPCC."
- **"Land Matters for Climate".** Publication on the interlinkages between land degradation and climate change adaptation and mitigation published in preparation of UNFCCC COP 21.
- **"Climate change and desertification: Anticipating, assessing & adapting to future change in drylands".** Impulse Report for the UNCCD 3rd Scientific Conference.
- **"Climate change and land degradation: Bridging knowledge and stakeholders".** Outcomes from the UNCCD 3rd Scientific Conference.
- **"Pivotal Soil Carbon".** Science-Policy Brief published by the UNCCD SPI.

In case the proposal for an IPCC Special Report on climate change and land degradation is accepted, there would be the possibility to organize special events or dialogue sessions in the context of an official session of the UNCCD´s Committee on Science and Technology (CST), e.g. CST 13 in late 2017.

I thank you for your consideration and I look forward to further discuss the possibility of an IPCC Special Report on climate change and land degradation.

Yours sincerely,



Monique Barbut
Executive Secretary

United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation,
la science et la culture

Organización
de las Naciones Unidas
para la Educación,
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования,
науки и культуры

منظمة الأمم المتحدة
للتربية والعلم والثقافة

联合国教育、
科学及文化组织

The Director-General

Dr Mannava Sivakumar
Acting Secretary-General
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Ref.: DG 2.1/16/0579

3 FEV. 2016

Dear Dr Sivakumar,

Thank you for your letter of 19 January last, requesting information on activities UNESCO will hold this year and that may be relevant to the topics the IPCC's Special Reports will cover.

Please find herewith an overview of planed UNESCO activities, which I hope will be useful both for your deliberations in the process to decide the final list of topics for the Reports, as well as for the Reports themselves.

Thanking you for your commitment to working with UNESCO, I remain.

Yours sincerely,

Irina Bokova

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Workshop /meeting	Topic	Venue	Date	Organizer (Sector and major partners)	Relevance to Proposal SR No.
GOSR workshop	Ocean science assessment	UNESCO HQ, Paris, France	March 2016	IOC	4, 8, 12, 14, 16
GOA-ON workshop	Ocean Acidification	Hobart, Australia	8-10 May 2016	Co-organized by IOC, NOAA, different Universities, IOCCP	4, 8, 12, 14, 16
GO2NE workshop	Deoxygenation of the open ocean and coastal regions	UNESCO HQ, Paris, France	TBD (most probably 7-9 September 2016)	IOC	4, 8, 12, 14, 16
Global meeting	"Water and sustainable development for arid region river basins"	Beijing, China	28-30 Sept 2016 (tbc)	UNESCO-IHP, Chinese Academy of Sciences	1 and 10, Climate Change and Desertification - 21, Climate Change and Land Degradation – An Assessment of the Inter-linkages and Integrated Strategies for Mitigation and Adaptation
GOSR workshop	Ocean science assessment	TBD	September 2016	IOC	4, 8, 12, 14, 16
Blue Carbon Initiative	Coastal Blue Carbon Ecosystems	Indonesia	September 2016	IOC	4, 8, 12, 14, 16
Understanding Sea Level Rise and Variability II	Sea Level	New York	July 10 – 14 2017	WCRP, IOC	4, 7, 14
Report/publications	Title	Author(s)	Expected to be published by:	Partners (if relevant)	Relevance to Proposal SR No.

UNESCO-IHP Policy brief on groundwater and climate change	Groundwater and climate change: Mitigating the Global Groundwater Crisis and Adapting to Climate Change	Various authors	2015		1 and 10 (Climate Change and Desertification) + 5, 6, 17, 19, 20, 21
IGMETS report	TBD 'Marine Ecological Time Series – a global assessment'	IGMETS experts, IOC	March 2016		4, 8, 12, 14, 16
GO2NE technical Brief on deoxygenation	TBD 'Deoxygenation in the open ocean, estuaries, and coastal areas'	GO2NE members, IOC	June 2016		4, 8, 12, 14, 16
GOSR	Global Ocean Science Report	IOC and partners	November 2016		4, 8, 12, 14, 16
An overview Paper-UNESCO-IHP	Mountain Ecosystem Services and Climate Change	Martin Price, Paul Egan	2016	TBC	27. Special Report on Climate Change and Mountains
Policy brief and background paper-UNESCO-IHP	Glacier Melt Impact on Water Resources of Andean Countries	Various authors	2016	TBC	2. Impact of Climate Change on the Cryosphere
UNESCO-IHP technical report on groundwater and climate change on SIDS: current state, potential impacts and adaptation strategies	Groundwater and climate change on SIDS: current state, potential impacts and adaptation strategies	Various authors	2016	UNESCO-IHP, San Francisco State University, Simon Fraser University	4, 8, 14, 17 (Climate Change and Ocean)
Monographs of 12 to 15 Megacities following the	Water, Megacities and Global Change:	Various authors	2016	ARCEAU-IdF association	25. Special Report on Cities and Climate Change (SRCC)

International conference at UNESCO-HQ, 1-4 December 2015, on "Water, Megacities and Global Change"	Portraits of Main Cities of the World				
GHSR Report	Global HAB Status Report	IOC and partners	January 2017	IAEA, ICES, PICES, ISSHA	4, 8, 12, 14, 16

WMO

In its response WMO indicated the following overview of potential contributions:

- Joint Commission on Marine Meteorology – contributions to proposals 4, 8, 12, 14, 17, 18 (points of contact: president, JCOMM, Johan Stander, and Edgar Cabrera, WMO)
- World Climate Research Programme (WCRP) – contributions by topic area; see attached analysis and correspondence (points of contact chairperson, Joint Scientific Committee, Guy Brasseur, and David Carlson, WMO)
- Commission for Agricultural Meteorology – contributions to proposals 1, 5, 6, 10, 17, 18, 21, 24b (points of contact: president, CAgM, Byong Lee, and Robert Stefanski, WMO)
- Global Atmosphere Watch, Integrated Global Greenhouse Gas Information System IG3IS) – contributions to proposals 5, 9 and 15 (points of contact: Deon Terblanche and Oksana Tarasova, WMO)

An additional report topic was also proposed by the co-chairperson of the PROVIA Scientific Steering Committee, on ecosystem-based adaptation. The International Institute for Environment and Development (IIED) has an-on-going project that could contribute in this area (points of contact: chairperson, PROVIA Scientific Steering Committee, Saleemul Huq, research associate, IIED, Hannah Reid, and Amir Delju, WMO).

Attachments:
Letter and analysis from WCRP

World Climate Research Programme
c/o World Meteorological Organization
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David Carlson, Director WCRP
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email: DCarlson@wmo.int

Friday 15 January 2016

Dr Valérie Masson-Delmotte
Prof Panmao Zhai
Co-Chairs, Working Group I
IPCC Sixth Assessment Report

Dear Valérie and Panmao,

WCRP welcomes this opportunity to contribute to the discussion of AR6 Special Reports.

This request elicited a strong response from the WCRP leadership community. Twenty-six (of roughly 40) people responded. Several consulted other colleagues. The respondees cover the full range of climate science: atmosphere, land, ocean and ice, observations and modelling. Our evaluation followed six questions posed by WG I co-Chairs.

At least three members of the WCRP group evaluated 16 of the 20 proposals. Four proposals received one or zero evaluations: Health, Carbon Pricing, Adaption Costs in Developing Countries, and National, Regional and International Security. Of the 16 proposals that did receive attention, eight received 10 or more (up to 20) evaluations. The summary table (separate attachment) lists all proposals considered, their connections to chapters in AR5 WG I and WG II, their evaluation scores, and key comments for most proposals.

The WCRP evaluation produced no clear preference for any single proposal. From the list of Special Report proposals as provided, this community does not identify a compelling gap from AR5 nor a unique new issue demanding attention through a Special Report.

Four proposals - Cryosphere, Oceans, Cities and Land Degradation/Desertification - received highest WCRP interest. A Special Report on Cryosphere or Oceans (or Sea Level) would elicit strong participation from the WCRP community but many respondents considered those issues already well-covered in the usual Assessment Report process. The Land Degradation/ Desertification proposal seemed too narrow as presented. The Cities proposal seemed interesting but slightly outside of WCRP usual purview. Although WCRP leadership demonstrated interest in the other Special Report proposals, none of those individual proposals elicited a strongly positive response in this evaluation. In a few cases WCRP suggests revision or combination of proposals.

WCRP gave careful consideration to the Low-Emissions Scenario proposal. Our evaluation suggests a benefit to combining the Low-Emissions Scenario proposal with the more general Scenarios proposal. Although plans to address low-emissions (1.5°C) pathways exist within the CMIP6 ScenarioMIP, those plans will not result in new CMIP6 runs before 2018 at the earliest. The WCRP community identifies very useful information related to low emissions and 1.5°C in the openly-available RCP2.6 outputs from CMIP5.

In general, as the Special Report definition and selection process proceeds, WCRP recommends that any Special Report as designed and implemented should meet four criteria (we note that these recommendations echo similar comments from Japan):

- Tractable (i.e. research exists to support the assessment, the topic does not demand new research)
- Novelty - to avoid rehashing old topics
- Across working groups - in view of comprehensive nature of AR5, opportunities probably lie at the intersections of the WGs
- Capacity - the WCRP community must devote the majority of its time and energy to developing new science that will inform AR6; a Special Report should build on and complement these efforts.

In terms of overall schedule, WCRP knows enough about the CMIP6 process - with forcing data sets available and initial model runs starting soon (April 2016) - to project that new science from the CMIP6 runs will emerge in the 2018 to 2020 time period. AR6 schedules must recognise this effort and the time needed for useful outcomes.

WCRP remains strongly committed to the IPCC Assessment process and always at the service of the WG I co-chairs. Please do not hesitate to call on us for additional contributions.

Very cordially,

David Carlson

Guy Brasseur, Chair
WCRP Joint Scientific Committee

Proposed Special Report Topic:	AR5 WGI Chapter	AR5 WGII Chapter	Evaluations	Score (numeric)	Score (%)	Key Comments
Cryosphere (includes Sea Level)	Chapters 4, 13		20	149	48%	Science evolving quickly; already in AR process; cross-cutting?; combine with Southern Ocean?; focus on sea level?
Oceans	Chapter 3	Chapters 6, 30	20	130	42%	Already in AR process; must cross WG; needs focus; needs inclusivity; led by WG II?
Cities		Chapter 8	11	95	30%	Relevant, but perhaps a minor role for WCRP?
Land Degradation (includes desertification)			13	94	30%	Too narrow; should cover broader land use land change issues
Managing Climate Change Information			10	69	22%	Opportunity for WG I and WG II connections; meets criteria for Special Report?
Scenarios			9	59	19%	Combine with low-emissions proposal
Equilibrium Climate Sensitivity	Chapter 9		15	49	16%	Covered by GC Clouds; combine with mitigation impacts?
Key updates to AR5 messages			13	44	14%	How to select key topics?; disruptive to AR6 schedule?; revives discussion of shorter more frequent reports.
Integrated Adaptation and Mitigation		Chapter 20	5	38	12%	Fit with WCRP science?; make this a centrepiece for adaptation focus?;
Low-Emissions Scenarios	Chapter 12		8	35	11%	Political impetus; new runs not available for 2018 SR; useful information from CMIP5 RCP 2.6
Mountains		Chapter 4	11	29	9%	Not sufficient as separate SR?; combine with with Cryosphere?
Marine and Aviation Emissions			4	29	9%	Relevant for mitigation and adaptation?
Food Security		Chapter 7	3	24	8%	Broaden it to include climate impacts on agriculture, water?; good basis for cross-cutting approach?
Adaptation to Extreme Events and Disasters		Chapter 15 (& SREX)	3	17	5%	Narrow?
Adaptation Trajectories		Chapters 14-17	3	15	5%	
Human Health		Chapter 11	1	10	3%	Health data harder, weaker than climate data
Mitigation, Stabilization and Sustainability		Chapter 20	3	9	3%	Value only if crosses WGs
Carbon Pricing			0	0	0%	
Adaptation Costs in Developing Countries		Chapter 17	0	0	0%	
National, Regional and International Security		Chapter 12	0	0	0%	

Bonn, 10 March 2016

Mr Mannava Sivakumar
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msivakumar@wmo.int

Dear Mr Mannava Sivakumar

I would like to thank you for your letter dated 29 January 2016, asking for a list of IPBES workshops, reports or other products which might relate to the proposals listed in the attachment to your letter.

Let me first apologise for the delay in responding to you, which was due to the full mobilization of our team for the 4th session of the Plenary of IPBES which just took place in Kuala Lumpur. Let me also thank IPCC for consulting IPBES on this very important matter.

IPBES is currently working on the production of an assessment of land degradation and restoration, which would have relevance and some overlap with the proposals listed under number **1**, **10** and **21**. Climate change is not the focus of this IPBES assessment, and is considered as one among several direct drivers of changes in biodiversity and ecosystem services, which also include land use change, exploitation of resources or invasive species. This assessment started in 2015 and will end early 2018. (Please see IPBES/4/INF/11, attached).

IPBES is currently performing regional assessments of biodiversity and ecosystem services in 4 regions: Europe and Central Asia, Asia and the Pacific, the Americas, and Africa (Please see IPBES/4/INF/10, attached). These assessments include terrestrial and coastal marine areas and exclude open oceans. They will be released early 2018. In addition, the fourth session of the IPBES Plenary launched two weeks ago the global assessment of IPBES, which will be initiated this year, and released mid-2019 (Please see scoping report for this global assessment, attached). This global assessment will include open oceans. These IPBES regional and global assessments have relevance and some overlap with the proposals related to climate change, food and agriculture (proposals **6** and **17**, related to food security, and **18** on AFOLU). The global assessment will have some overlap with the three proposals related to climate change and oceans (proposals **4**, **8** and **14**). However, as noted above, climate change per se will not be the focus of the assessment, but will be treated as a direct driver of change in biodiversity and ecosystem services, on equal footing with other direct drivers such as land use, pollution, invasive species, etc. Indirect drivers causing climate change and other drivers will be addressed.

We will be happy to discuss further potential collaboration between our two organisations.

Yours sincerely,

Anne Larigauderie
Executive Secretary

UNITED NATIONS

BES

IPBES/4/INF/11

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Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
Fourth session
Kuala Lumpur, 22–28 February 2016
Item 4 of the provisional agenda*****

Report of the Executive Secretary on the implementation of the work programme 2014–2018

Progress report on the implementation of the land degradation and restoration assessment (deliverable 3 (b) (i))

Note by the secretariat

In its decision IPBES-3/1, the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services approved the undertaking of a thematic assessment on land degradation and restoration, as outlined in the scoping document for the assessment set out in annex VIII to the decision, for consideration by the Plenary at its sixth session. The annex to the present note provides information on the composition and work of the expert group carrying out the land degradation and restoration assessment. It is presented without formal editing.

* IPBES/4/1

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Annex

Expert group for the thematic assessment on land degradation and restoration

I. Composition of the expert group

A. Dedicated Multidisciplinary Expert Panel (MEP) and Bureau members

1. In accordance with the procedures for the preparation of Platform deliverables, the following dedicated MEP and Bureau members are responsible for overseeing the development of this assessment:

Leonel Sierralta (Bureau member)

Jay Ram Adhikari (Bureau member)

Günay Erpul (MEP member)

Yi Huang (MEP member)

Marie Roué (MEP member)

Leng Guan Saw (MEP member)

B. Selection of experts

2. The report co-chairs, coordinating lead authors, lead authors and review editors were selected according to the criteria set out in the procedures for the preparation of the Platform's deliverables in the annex to decision IPBES-2/3. A group of 86 experts composed of 2 co-chairs, 18 coordinating lead authors (CLAs) and 66 lead authors (LAs) was selected from a list of 223 nominations received from governments and other stakeholders. The selection process was performed by members of the Multidisciplinary Expert Panel (MEP), with advice from Bureau members, reviewing all nominations that had been submitted with a close examination of the curriculum vitae for each nominee. Selections were made on the basis of candidates' expertise with respect to relevant areas of the work programme. Once selected on merit, further selection was focused on balancing disciplinary, regional and gender diversity, as well as the ratio between governmental and non-governmental nominations of 80 to 20.

3. In its decision IPBES-3/1, the Plenary requested the MEP, in consultation with the Bureau, to develop a coordinated approach between the four on-going regional/subregional assessments, the thematic assessments (which includes the land degradation and restoration assessment), and future assessments (i.e. the global assessment) to ensure consistency and harmonization among them while minimizing redundancy of content, thereby increasing the added value of each assessment. In response to this decision, 38 of the 86 experts will perform their work as lead authors as part of the four ongoing regional/subregional assessments. These experts will ensure that the topic of land degradation and restoration is adequately assessed and evaluated within the regional/subregional assessments. These same experts will also act as lead authors in the land degradation assessment and will contribute remotely to the chapters of the land degradation and restoration assessment. Within these 38 lead authors, a subset of 8 authors (2 per region) are responsible for the coordination of land degradation and restoration information and content across chapters and across assessments. These 8 authors are called Liaison Experts (LEs). Annex I outlines how the chapters of the land degradation and restoration assessment correspond to those of the regional/subregional assessments.

4. The expert group selected includes 16 per cent of experts from Africa, 18 per cent from Asia Pacific, 11 per cent from Eastern Europe, 13 per cent from Latin America and the Caribbean and 42 per cent from Western European and Others Groups. The gender balance is 27 per cent female and 73 per cent male. Eighty per cent of the selected experts were nominated by Governments and the remaining 20 per cent were nominated by stakeholders.

5. The task force on capacity-building launched its IPBES fellows' pilot programme in 2015 (IPBES/4/INF/5). This programme allows young researchers and other professionals to take part in IPBES' activities. A total of 130 nominations were received for the land degradation assessment. The seven selected fellows will contribute as authors in the assessment.

6. The selection and complete list of review editors for the land degradation and restoration assessment is being finalized. A full list of experts, including young fellows and confirmed review editors, is presented in Annex II to this document.

C. The technical support unit (TSU)

7. The Bureau, in consultation with the MEP, agreed at their 5th session (13-17 April 2015 in Bonn, Germany), that the technical support unit would be based at the IPBES Secretariat in Bonn, Germany, and that a consultant would be hired to fulfil this role. The consultant, Ms. Anastasia Brainich, started her position during the 6th session of the MEP and Bureau (8-12 October 2015 in Bonn, Germany). In the interim, Ms. Hien Ngo, consultant for the pollination assessment at the IPBES Secretariat, provided necessary technical support.

8. The role of the technical support unit is to provide scientific, technical and organizational support toward the delivery of the assessment report. In addition, the role of the technical support unit is to liaise with relevant task forces and other technical support units of on-going assessments to ensure that cross-cutting issues are properly addressed.

II. Progress towards preparation of the assessment report

A. Management Committee Meeting

9. A management meeting was held from 13 to 15 July 2015 at the headquarters of the International Council for Sciences (ICSU) in Paris, France. In attendance were the assessment co-chairs, dedicated MEP and Bureau members, and the interim technical support person. The main objectives of the meeting were to plan for the first author meeting, to prepare an annotated chapter outline, and to finalize the selection of experts (including resource people, and young fellows).

B. First author meeting

10. The first author meeting was held from 20 to 24 September 2015 in Bonn, Germany. In attendance were 58 experts including the two assessment co-chairs, 18 CLAs, 31 LAs, and 7 fellows. Five LAs were unable to attend the meeting. The 30 land degradation experts embedded within the four regional assessments attended their respective regional first author meetings.

11. In addition to the aforementioned experts, participants to the first author meeting included members of the Secretariat, comprising of the technical support person, dedicated MEP and Bureau members, and representatives of various task forces and experts groups, including: i) scenarios and models, ii) valuation, iii) knowledge and data, iv) indigenous and local knowledge, and v) capacity-building.

12. The experts at the first author meeting were presented with background information on the following:

- Organization, overall objectives and functions of IPBES;
- The guiding conceptual framework of IPBES and the rules of procedure relevant to the production of an assessment;
- Existing IPBES guides, tools, and task forces (and their role in the context of an assessment);

13. During the meeting, the experts discussed the following issues:

- Detailed chapter outlines and content;
- Cross-chapter themes and topics;
- Internal chapter deadlines and strategies for coordinating content with the four on-going regional/subregional assessments;
- Operationalization of the shared drive for literature and working documents.

14. The meeting resulted in draft chapter outlines with sub-sectional headers for further content development (see Annex III to this report). This draft was based on the scoping report outlined in Annex VIII to decision IPBES-3/1.

C. Preparation of the zero order draft for the thematic assessment on land degradation and restoration

15. Following the first author meeting authors started to prepare the first draft of a report, called the zero order draft, which is due 21 December 2015. The zero order draft was submitted for an internal review on 22 December (i.e. circulated only among experts of the chapters and the co-chairs) for a period of four weeks until 15 January 2016.

16. From January to May (2016) leading up to the First Order Draft review by experts (June, 2016), the authors will continue developing assessment content which includes revisions resulting from the multiple internal review processes.

D. Second author meeting

17. The second author meeting will be held 22 to 26 August 2016 (Bonn, Germany), jointly between the land degradation and restoration assessment and the four regional/subregional assessments. This joint second author meeting will include assessment co-chairs, coordinating lead authors, liaison experts, and review editors of the five assessments. In addition, members of the Multidisciplinary Expert Panel, Bureau, relevant task forces and IPBES secretariat will be present. The joint second author meeting will address the following issues:

- Developing key messages for the executive summaries of each chapter;
- Addressing cross-cutting and overlapping issues across chapters and assessments;
- Prioritizing and handling the comments from the expert reviewers; discussing common comments from expert reviewers
- Ensuring continued collaboration between the regional/subregional assessments and the land degradation and restoration assessment.

E. Timeline

18. An updated annotated timeline is provided in Annex IV.

III. Progress in work plan and next steps

19. The first order draft will go out for the First Review by experts on 30 May 2016 for a period of 6 weeks until 11 July 2016. Governments will be notified of the commencement of the first review process 6 weeks in advance. All comments generated by expert reviewers will be collated and provided to the appropriate authors. Relevant authors (coordinating lead authors and lead authors) will be responsible for the chapter revisions and will respond to all comments from expert reviewers.

20. A full list of expert reviewers will be made available on the Platform’s website.

Annex I

The coupling of the thematic assessment on land degradation and restoration with the regional/subregional assessments on biodiversity and ecosystem services

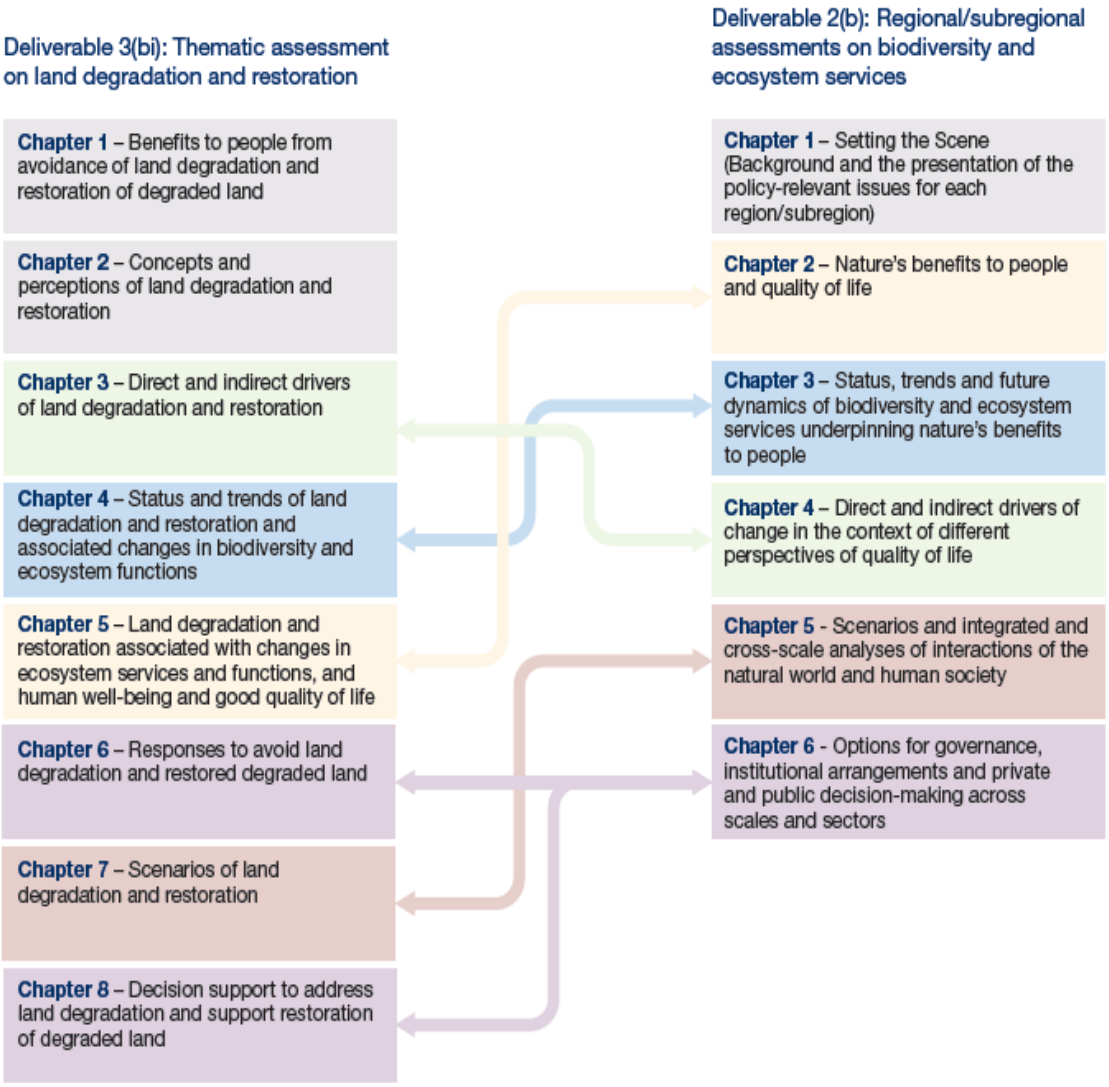

Figure 1. A group of 40 lead authors will perform their work on land degradation and restoration as part of the regional assessments (section B "Selection of Experts", para. 3). They will contribute remotely, as lead authors, to chapters of the land degradation and restoration assessment, according to the correspondence between chapters shown in the figure.

Annex II

List of experts for the thematic assessment on Land degradation and restoration as at 23 December 2015

Abbreviations: CLA (coordinating lead author), LA (lead author), LA 2b (land degradation and restoration expert working as expert within one of the four regional/subregional assessments), RE (review editor)

Role	*Name*	*Affiliation*	*Nominating Country/Organisation*
Assessment co-chairs			
Co-chair	Luca Montanarella	European Commission	Food and Agriculture Organization
Co-chair	Robert Scholes	University of the Witwatersrand	South Africa
Chapter 1: Benefits to people from avoidance of land degradation and restoration of degraded land			
CLA	Judith Fisher	Fisher Research Pty Ltd	Australia
CLA	Sergius Gandolfi	University of Sao Paulo	Brazil
LA & co-chair	Luca Montanarella	European Commission	Food and Agriculture Organization
LA & co-chair	Robert Scholes	University of the Witwatersrand	South Africa
Chapter 2: Concepts and perceptions of land degradation and restoration			
CLA	Florent Kohler	Université de Tours	France
CLA	Tao Wang	Chinese Academy of Sciences	China
LA	Carlton Roberts	Ministry of the Environment and Water Resources, Forestry Division	Trinidad and Tobago
LA	Elie Padonou	Laboratory of Applied Ecology	Aarhus University
LA	Janne Kotiaho	University of Jyväskylä	Finland
LA	Josef Seják	J.E.Purkyne University in Usti nad Labem	Czech Republic
LA	Robin Reid	Colorado State University	United States of America
LA	Laetitia Navarro	German Centre for Integrative Biodiversity Research (iDiv)	Group on Earth Observations Biodiversity Observation Network – GEO BON
LA	Shonil Bhagwat	The Open University	United Kingdom of Great Britain and Northern Ireland
LA	Zita Izakovičová	Institute of Landscape Ecology of the Slovak Academy of Sciences	Slovakia
Fellow	Maylis Desrousseaux	Environmental law institute	Lyon 3 University
RE	Marie-Pierre Ledru	Institute for Research and Development (IRD)	France
Chapter 3: Direct and indirect drivers of land degradation and restoration			
CLA	Nichole Barger	University of Colorado	United States of America
CLA	Mahesh Sankaran	National Centre for Biological Sciences, TIFR	India
CLA & Liaison Expert	Toby Gardner	Stockholm Environment Institute	Sweden
LA	Francisco Moreira	Institute of Agronomy	Portugal
LA	Tiina Maileena Nieminen	Natural Resources Institute Finland, Luke	Finland
LA	Toshiya Okuro	University of Tokyo	Japan

LA	Vivek Saxena	Government of Haryana, India	India
LA 2b	Alou Adamou Didier Tidjani	Université Abdou Moumouni	Observatoire du Sahara et du Sahel (OSS)
LA 2b	Danielson Kisanga	University of Dar es Salaam,	United Republic of Tanzania
LA 2b	Isbell Forest	University of Minnesota	United States of America
LA 2b	Linda Broadhurst	CSIRO	Australia
LA 2b	P.C. Abhilash	Banaras Hindu University	India
LA 2b	Ricardo Ribeiro Rodrigues	Agriculture School-ESALQ - University of Sao Paulo	Brazil
LA 2b	Violaine Brochier	Electricity of France (EDF), Research and Development	France
Fellow	Marina Monteiro	Universidade Federal de Goiás	Universidade Federal de Goiás
Chapter 4: Status and trends of land degradation and restoration and associated changes in biodiversity and ecosystem functions			
CLA	Fengchun Zhang	Chinese Research Academy of Environmental Sciences	China
CLA	Stephen Prince	University of Maryland	United Nations Convention to Combat Desertification (UNCCD)
CLA & Liaison Expert	Graham Von Maltitz	Council for Scientific and Industrial Research (CSIR)	United Nations Convention to Combat Desertification (UNCCD)
LA	Ayten Namli	Ankara University	Turkey
LA	Gil Eshel	Soil Erosion Research Station, Ministry Of Agriculture & Rural Development, Israel	Israel
LA 2b	Cristina Martínez-Garza	University of the State of Morelos	Mexico
LA 2b	Kenneth Byrne	University of Limerick	Ireland
LA 2b	Mongi Sghaier	Institut des Régions Arides	Observatoire du Sahara et du Sahel (OSS)
LA 2b	San Thwin	Director General Ministry of Environmental Conservation and Forestry	Myanmar
LA 2b	Yowhan Son	Korea University	Republic of Korea
Liaison Expert	German Kust	Moscow Lomonosov State University, Soil Science Faculty	Russian Federation
Liaison Expert	Jean Paul Metzger	Department of Ecology University of Sao Paolo	Brazil
Fellow	Bernard Nuoleyeng Baatuuwie	University for Development Studies	University for Development Studies
Chapter 5: Land degradation and restoration associated with changes in ecosystem services and functions, and human well-being and good quality of life			
CLA	Barend Erasmus	University of the Witwatersrand	South Africa
CLA	Matthew Potts	UC Berkeley	University of California, Berkeley
LA	Andrew Lowe	University of Adelaide	Terrestrial Ecosystem Research Network
LA	Eliška Krkoška Lorencová	Global Change Research Centre, Academy of Sciences of the Czech Republic	Academy of Sciences of the Czech Republic
LA	Sebastian Arnhold	University of Bayreuth	Germany
LA 2b	Céline Yolande Koffie Épouse Bikpo	Université Félix Houphouët Boigny de Cocody Abidjan	Côte d'Ivoire
LA 2b	Sandra Verónica Acebey Quiroga	YPFB Petroandina S.A.M.	Bolivia

LA 2b	Mustafa Riza Canga	Ankara University	Turkey
LA 2b	Peter Elias	University of Lagos	International Social Science Council (ISSC)
LA 2b	Robin Duponnois	Institut de Recherche pour le Développement (IRD)	France
LA 2b	Chuluun Togtohyn	National University of Mongolia	Mongolia
Liaison Expert	Maria Siobhan Fennessy	Kenyon College	Ramsar Convention Secretariat
Liaison Expert	Soojin Park	Seoul National University	Republic of Korea
Fellow	María Cecilia Rubio	Argentine Institute for Arid Land Research (IADIZA)	National Council for Scientific and Technical Research (CONICET)
RE	Ephraim Nkonya	International Food Policy Research Institute	Tanzania
Chapter 6: Responses to avoid land degradation and restore degraded land			
CLA	Ram Pandit	University of Western Australia	Nepal
CLA	Jim Harris	Cranfield University	United Kingdom of Great Britain and Northern Ireland
LA	Şükran Şahin	Ankara University	Turkey
LA	Ádám Kertész	Hungarian Academy of Sciences	Hungary
LA	Daniel Vieira	Embrapa (Brazilian Agricultural Research Corporation)	Brazil
LA 2b	Cristóbal Félix Diaz Morejón	Ministry of Science, Technology and the Environment	Cuba
LA 2b	Phumza Ntshotsho	Council for Scientific and Industrial Research (CSIR)	Council for Scientific and Industrial Research
LA 2b	Yaakov Anker	Samaria and the Jordan Rift R&D center	Samaria and the Jordan Rift R&D center
Liaison Expert	Noraini Mohd. Tamin	Institute of Ocean and Earth Sciences	Malaysia
Fellow	Ruishan Chen	East China Normal University	Hohai University
RE	Susan Galatowitsch	University of Minnesota	United States of America
Chapter 7: Scenarios of land degradation and restoration			
CLA	Michael Obersteiner	International Institute for Applied Systems Analysis (IIASA)	Austria
CLA	Ben Ten Brink	PBL-Netherlands Environmental Assessment Agency	Netherlands
LA	Aletta Bonn	Helmholtz Center for Environmental Research – UFZ	Germany
LA	Ana Mendes	University of Évora	Portugal
LA	Joe Morris	Cranfield University	United Kingdom of Great Britain and Northern Ireland
LA	Jonathan Davies	International Union for Conservation of Nature (IUCN)	International Union for Conservation of Nature (IUCN)
LA	Miguel Fernandez	German Centre for Integrative Biodiversity Research	German Centre for Integrative Biodiversity Research
LA 2b	Matthew Cantele	International Institute for Applied Systems Analysis (IIASA)	Italy
LA 2b	Jorge Alfredo Herrera Silveira	CINVESTAV-IPN	Mexico
LA 2b	Klaus Kellner	North West University	South Africa
LA 2b	Olusegun Yerokun	Mulungushi University	Zambia

LA 2b	Sinkyu Kang	Kangwon National University	Republic of Korea
LA 2b	Wilson Ramirez Hernandez	Alexander von Humboldt Institute	Instituto Alexander von Humboldt
Fellow	Vanessa Marie Adams	University of Queensland, School of Biological Sciences	University of Queensland
Chapter 8: Decision support to address land degradation and support restoration of degraded land			
CLA	Grace Nangendo	Wildlife Conservation Society	Uganda
CLA	Louise Willemen	ITC University of Twente	Netherlands
LA	Afshin Akhtar Khavari	Griffith University	Australia
LA	David Douterlungne	CONACyT and IPICyT	Mexico
LA	Nana Bolashvili	Ivane Javakhishvili Tbilisi State University	Georgia
LA	Prasanta Mishra	Indian Institute of Soil and Water Conservation (IISWC)	India
LA	Lindsay Stringer	University of Leeds	United Kingdom of Great Britain and Northern Ireland
LA 2b	Jayne Belnap	U.S. Geological Survey	United States of America
LA 2b	Ravshankar Thupalli	Arty Environmental Solutions	India
LA 2b	Ulf Molau	University of Gothenburg	Sweden
Liaison Expert	Mekuria Argaw Denboba	Addis Ababa University	Ethiopia
Fellow	Sugeng Budiharta	Indonesian Institute of Sciences	Indonesian Institute of Sciences
RE	Pedro Brancalion	University of Sao Paolo	Brazil

Annex III

Chapter summaries and outline for the thematic assessment on land degradation and restoration

The following section includes a list of the chapters of the assessment with the description of its content, as approved by the Plenary in annex VIII to decision IPBES-3/1, and the list of the sub-sections developed by experts during the first authors meeting.

Chapter 1 - Benefits to people from avoidance of land degradation and restoration of degraded land. This chapter will present a brief summary of the benefits to human well-being and quality of life that can be achieved by the halting, reduction and mitigation of degradation processes as well as the restoration of degraded land. The chapter will draw on information and insights from all other chapters, highlighting examples of success stories of how land conservation and restoration measures have helped to deliver improvements in livelihoods, reduce poverty and strengthen the long-term sustainability of land use and the extraction of natural resources.

Executive Summary

1.0 Introduction

1.1 Scope

- 1.1.1 Why undertake the Assessment?
- 1.1.2 Who requested the Assessment?
- 1.1.3 How is it different and new?
  - Inclusion of ILK, biodiversity and ecosystem services
- 1.1.4 How was the Assessment undertaken?
- 1.1.5 Conceptual Framework and its use within the Assessment
  - Definitions of degraded land, land degradation restoration and rehabilitation, policy
- 1.1.6 Geographic scale of the Assessment

1.2 Success - Interactions between Restoration and Policy

- 1.2.1 What is success? Framed as restoration and arrested degradation
- 1.2.2 Incorporate social, ecological and economic factors
- 1.2.3 Identify criteria which will be used to define success incorporating findings from Chapters 2-8

1.3 Success Stories - Highlighting benefits to people from avoidance of land degradation restoration of degraded land

- 1.2.1 Success stories identified
- 1.2.2 Outline each success story
- 1.2.3 Success stories style
- 1.2.4 Insights from success stories linked to IPBES conceptual framework

1.4 References

Chapter 2 - Concepts and perceptions of land degradation and restoration. This chapter will focus on assessing and comparing differing concepts and perceptions of land degradation and restoration, stemming from both science and other knowledge systems, including indigenous and local knowledge. The chapter will also review concepts and approaches used to assess the diversity of land degradation processes, the status of ecosystems and the impact thereon, as well as concepts and approaches used to describe different responses, including rehabilitation and restoration.

Executive Summary

2.0 Conceptual framework: hypothesis: to address land degradation and restoration, taking into account upstream perceptions

2.1 Linking worldviews to impacts: showcases

2.2 Perceptions of land degradation and restoration

- 2.2.0 Synthesis (key findings)

2.2.1 Scientific perceptions of land degradation and restoration and approaches to assess it

2.2.2 Legal perceptions and approaches to assess land degradation and restoration

2.2.3 Indigenous and Local perceptions and approaches to assess

2.2.4 Policy makers

2.3. Connecting perceptions of land degradation and restoration with quality of life to facilitate restoration: addressing perceptions is also a way of addressing land degradation and restoration issues

2.3.1 Perceptions of impact of degradation and restoration on nature's benefits to people and human well-being.

2.3.2 Considering/ working with perceptions as a policy supporting tool (aiming at avoiding land degradation, or at rehabilitating, or restoring, degraded lands)

Chapter 3 - Direct and indirect drivers of land degradation and restoration. This chapter will assess how land degradation and restoration are the result of multiple drivers, involving both direct anthropogenic and natural factors and interactions between them, as well as underlying indirect drivers. Direct drivers of degradation (e.g., unsustainable levels of biomass extraction and extractive industries) can result directly in degraded land, including reduction in the productivity of land, or in processes such as soil erosion due to unsustainable land management techniques, and natural drivers, such as floods, wind and drought, that result in land degradation. Direct drivers of restoration, encompassing both passive and active approaches, can result in either halting or reducing degradation and in the recovery of biodiversity and ecosystem functions. Indirect drivers of land degradation and restoration are related to institutions and governance systems, as well as social, cultural, technological and economic factors, including poverty, which underpin direct drivers, at the local to global levels. The chapter will assess the extent and severity of different drivers and how they vary within and between different biomes, regions and land-use systems around the world. The assessment of direct drivers will include anthropogenic drivers at global, national, regional and local scales, including human-driven climate change, as well as natural drivers and interactions between anthropogenic and natural drivers. Particular attention will be paid to climate change and its interaction with other anthropogenic drivers of land degradation, including interactions between processes of land degradation and extreme weather events.

Executive Summary

3.1 Purpose and value of chapter

3.2 Defining drivers of degradation and restoration

3.3 Direct drivers of degradation and restoration

3.4 Climate change as a threat multiplier of degradation drivers

3.5 Indirect drivers

3.6 Food security through tackling land degradation (theme box)

Chapter 4 - Status and trends of land degradation and restoration and associated changes in biodiversity and ecosystem functions. This chapter will focus on the status and trends of land degradation and restoration in terms of changes in biodiversity and ecosystem functioning, as well as the degradation and restoration processes that result in those changes. Degradation processes include soil erosion, contamination, compaction, sealing, sedimentation, loss of organic matter, soil and water salinization, degradation of freshwater systems, invasion of alien species, changes in natural fire regimes and pollution. Degradation can also include landscape-scale processes such as changes in ecological connectivity, land cover and land use and changes in land management practices. Restoration processes include the avoiding, halting and reversing of degradation processes as well as the recovery of biodiversity and ecosystem functions. The chapter will assess levels of land degradation and restoration with regard to the type, extent and severity of changes in both biodiversity and ecosystem structure and functioning in different biomes and under different land-use and management systems. Changes in biodiversity include changes to both wild biodiversity and agrobiodiversity, including both above-ground and below-ground biodiversity. Changes in ecosystem structure and functioning include aspects such as primary productivity, nutrient cycling and the provision of habitat for species. Particular attention will be given to understanding system resilience (capacity to recover systems structure and functions following a perturbation), including the potential for thresholds and sudden changes in key attributes of biodiversity and critical ecosystem functions.

Executive Summary

4.1 Introduction

4.2 Previous studies of the status of land degradation

4.3 Degradation and Restoration Processes

a) Soil degradation

b) Changes on water regimes

c) Landscape changes

d) Species composition changes

e) Climate "feedbacks"

f) Degradation Descriptors (status and trends)

4.4 Status of major global ecosystems

4.5 Executive summary

4.6 References

Chapter 5 - Land degradation and restoration associated with changes in ecosystem services and functions, and human well-being and good quality of life. This chapter will focus on the impact of land degradation and restoration on changes to the delivery of nature's benefits to people and the resultant impact on quality of life. The chapter will assess land degradation associated with the loss of benefits to people including provisioning services, such as food production, quality and quantity of water resources, and availability of raw materials, as well as regulating, cultural services and other aspects of nature, recognizing a diverse conceptualization of the values of nature. The chapter will analyse changes in benefits to people in terms of the relative contribution of biodiversity and ecosystem structure and functioning and that of anthropogenic assets (e.g., technologies, knowledge) applied by people in the co-production of benefits. The impact on the diverse dimensions of a good quality of life will include the impact on health, poverty, income-generating opportunities, meaningful livelihoods, the equitable distribution of natural resources and rights and values considered important in different cultures. The chapter will consider the diverse costs of land degradation and benefits of restoration for people, including the overall economic and non-economic costs and benefits, encompassing those that are associated with the area of degraded or restored land itself, as well as costs or benefits borne by people in other areas who are affected by degraded or restored sites. For both land degradation and restoration the chapter will examine the type, extent and severity of these changes in different social-ecological systems in different land cover and land management systems, including their implications for social and ecological stability and resilience and cultural integrity.

Executive Summary

5.1 Introduction: Quality of life, well-being and world views

5.2 Drivers of land degradation and restoration, and Nature's benefits

5.3 Drivers of land degradation and restoration, and quality of life?

5.4 Case studies

5.5 The way forward

5.6 Food security box

5.7 Figure: Conceptual diagram of framing

5.8 Summary and trends of drivers vs. benefits and drivers vs. quality of life (tables)

5.9 References

Chapter 6 - Responses to avoid land degradation and restore degraded land. This chapter will develop a framework for assessing the effectiveness of existing interventions to prevent, halt, reduce and mitigate the processes of land degradation and to rehabilitate and restore degraded land through the recovery of biodiversity and ecosystem structure and functioning and their benefits to people. The chapter will assess how past and current responses to degradation problems and restoration approaches vary according to context, including the type and severity of land degradation and underlying direct and indirect drivers, as well as the consequences of land degradation and the restoration for nature's benefits to people and quality of life. The chapter will analyse the effectiveness of addressing the indirect causes of land degradation and restoration (institutions, governance systems and other indirect drivers), as compared to efforts to address direct drivers or anthropogenic assets (better techniques, access to training). The chapter will assess the relative success or failure, as well as the potential risks, of different institutional, governance and management response options against a range of social, cultural, economic, technological and political criteria. It will explore how responses to prevent land degradation through sustainable use compare with efforts to deal with its effects through adaptation and restoration. The chapter will also assess different institutional, policy and governance responses based on the type of policy instrument used, as well as support given to research and technology development, institutional reform and capacity-building.

Executive Summary

6.1 Introduction: key concepts and a brief guide to chapter

6.2 Developing response framework

6.2.1 Typology of responses and interventions

6.2.2 The Framework

Criteria

- Social
- Cultural
- Economic
- Political
- Financial
- Technical/ Biophysical
- Legal/institutional

6.3 Assessment of responses: Using the multidimensional framework. Available responses to degradation processes, and direct and indirect drivers will be critically examined for their effectiveness to:

6.3.1 Response options addressing degradation processes

6.3.2 Response options to address direct drivers

6.3.3 Response options to address indirect drivers

6.3.5 Effectiveness of preventive vs. mitigating response options

6.4 Assessment of response mechanisms

6.4.1 Institutional, policy, and governance responses

6.4.2 Effectiveness of addressing indirect causes of land degradation and restoration (institutional,policy, governance) compared with efforts to address direct drivers or anthropogenic assets

6.4.3 Success or failure of different institutional, governance, and management responses

6.5 References

Chapter 7 - Scenarios of land degradation and restoration. This chapter will explore the implications of a range of plausible development scenarios, including the adoption of different response options across multiple scales, and their implications for land degradation and restoration globally, including impacts on human well-being and quality of life and possible trade-offs between social, economic and environmental objectives. Scenarios will be developed using information derived from the assessment and work from across the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, motivated by a systematic review of other scenario exercises of this type, including the Platform's ongoing methodological assessment of scenario analysis and modelling of biodiversity and ecosystem services, to be released at the end of 2015. The chapter will reveal the variation in plausible land degradation and restoration futures that depend on choices (with associated social and economic implications) made at the landscape, national, subregional, regional and international scales to address indirect and direct drivers and introduce new mechanisms for avoiding land degradation, mitigating its impacts and rehabilitating and restoring degraded sites.

Executive Summary

7.1 Introduction

7.2 Previous & contemporary parallel scenario processes

a) Over/review of similar other scenario exercises

b) Use of scenarios related to policy targets: Aichi, Sustainable Development Goals, Kyoto Protocol, Land Degradation Neutrality

c) Insights Expert Group on scenario analysis and modeling

7.3 Scenarios of global land degradation

a) Stock-taking of global scenarios

b) Scenario results by theme

c) Overall conclusions Global scenarios

7.4 Scenarios of local land degradation

a) Stock-taking of local scenarios

b) Results local scenarios

c) Conclusion local scenarios

7.5 Using scenarios to guide development paths

a) Overarching messages from scenarios

b) Conclusions on the use of scenarios in general

c) Way forward for better scenarios

d) Uncertainty in scenarios / what is good enough

7.6 References

Chapter 8 - Decision support to address land degradation and support restoration of degraded land. This chapter will consolidate and rationalize information necessary to support evidence-based decision-making and institution-building for policymakers and practitioners responsible for selecting and implementing strategies for addressing land degradation problems and restoring degraded land. The chapter will assess actions necessary to develop institutional competencies in the detection and analysis of land degradation problems and the design, implementation, management and monitoring of response strategies, including data, methods, decision support tools and stakeholder engagement. The chapter will place land degradation problems and potential restoration solutions in the wider policy, socioeconomic and environmental context, emphasizing the importance of institutions, governance and other indirect drivers that are the root drivers of both degradation and restoration. It will consider interactions between land degradation and restoration and other major policy areas such as farming and food, flood risk and water resource management, climate change adaptation and mitigation, invasive species and disease management, biocultural diversity conservation, public health and rural, urban and industrial development.

Executive Summary

8.1 Introduction

8.2 Information to support decision-making making strategies for land degradation and restoration

8.2.1 Information, knowledge and decision -making tools available to identify land degradation problems

8.2.1.1 Information, knowledge and decision support tool (IKT) needs

8.2.1.2 IKT to identify current land degradation (severity, extent, urgency)

8.2.1.3 IKT to identify future land degradation (severity, extent, risk based on scenario)

8.2.2 Information, knowledge and decision support tools available to identify restoration solutions

8.2.2.1 Biophysical/technical options (limitations)

8.2.2.2 Economic viable options (cost of actions and inaction/opportunity costs, financing mechanisms)

8.2.2.3 Institutional/Social options (legal, customary, equity/conflict)

8.2.3 Linking tools to support the whole land degradation and restoration decision making process

8.2.3.1 From agenda setting to planning and design

8.2.3.2 From planning and design to implementation and management

8.2.3.3 From implementation and management to evaluation and adaptation

8.3 Building institutional competencies

8.3.1 Identify and prioritize enabling conditions for land degradation and restoration strategies, and assess actions necessary to achieve them

8.3.1.1 Legal and regulatory instruments

8.3.1.2 Rights-based instruments and customary norms

8.3.2 Economic and financial instruments

8.3.3 Social and cultural instruments

8.3.4 Science and technological instruments

8.4 Interaction among land degradation and restoration decisions and other policy areas

8.4.1 Performance measures/indicators to evaluate the synergies and trade-offs between land degradation and restoration strategies and other policy areas

8.4.2 Interactions between land degradation and restoration decisions and other policy responses

8.4.3 Identify and prioritize responses to minimize trade-offs and/or maximize synergies address land degradation and/or develop restoration

8.5 References

Annex IV

Annotated timeline for the thematic assessment on land degradation and restoration

Time frame	*Actions and institutional arrangements*
2015	
First quarter	Plenary at its third session approves the undertaking of a thematic assessment on land degradation and restoration, asks for offers of in-kind technical support for the assessment and requests the Bureau and the secretariat to establish the necessary institutional arrangements to put in place technical support
Second quarter	The Panel selects the assessment co-chairs, coordinating lead authors, lead authors and review editors, using the approved selection criteria set out in decision IPBES-2/3
	Meeting of the Management Committee (co-chairs, the technical support unit, and MEP/Bureau members) to select remaining expert team and assign roles (i.e., coordinating lead authors, lead authors and review editors)
Third quarter	First author meeting, including co-chairs, coordinating lead authors, liaison experts, lead authors, and young fellows (Bonn, Germany)
Fourth quarter	Elaboration of zero order draft by experts
2016	
First / early second quarter	Internal reviews and continuation of the preparation of the draft toward the First Order Draft by experts
Second quarter	Parallel First Order Draft review by experts of all four regional/subregional assessments and the land degradation and restoration assessment
Third quarter	Joint second author meeting between the experts of the regional/subregional assessments and the land degradation and restoration assessment (including co-chairs, coordinating lead authors, liaison experts, and review editors)
Third/ Fourth quarter	Second drafts of chapters and first draft of summary for policymakers in preparation towards the Second Order Draft review by Governments and experts
2017	
First quarter/ early Second quarter	Internal reviews and continuation of the preparation of the second drafts of chapters and first draft of summary for policymakers towards the Second Order Draft review by Governments and experts
Second quarter	Parallel second review by governments and experts of Second Order Draft and first draft of summary for policymakers of all four regional/subregional assessments and the land degradation and restoration assessment
Third quarter	Third author meeting, including co-chairs, coordinating lead authors, liaison experts, lead authors, young fellows, and review editors
Fourth quarter	Final text changes to the assessment and the summary for policymakers
2018	
First quarter	Translation of the summary for policymakers into the six official languages of the United Nations
	Submission of the assessment, including the translated summary for policymakers, to Governments for final review prior to Plenary
Second quarter	IPBES-6 presentation of the summary for policymakers (for approval) and of the technical report (for acceptance) to Plenary
	Outreach and communication

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Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
Fourth session
Kuala Lumpur, 22–28 February 2016
Item 4 of the provisional agenda*

Report of the Executive Secretary on the implementation of the work programme 2014–2018

Progress report on the implementation of the regional and subregional assessments on biodiversity and ecosystem services (deliverable 2 (b))

Note by the secretariat

1. In decision IPBES-3/1, part III, the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services approved the undertaking of four regional and subregional assessments for Africa, the Americas, Asia and the Pacific, and Europe and Central Asia, in accordance with the following:

(a) Procedures for the preparation of deliverables (annex I to decision IPBES-3/3);

(b) Generic scoping report for regional and subregional assessments of biodiversity and ecosystem services (annex III to decision IPBES-3/1), which provides a generic chapter outline, a timetable and a cost estimate for the four regional assessments;

(c) Scoping reports for each one of the four regional assessments (annexes IV to VII to decision IPBES-3/1), which provide additional information pertaining to each region, to complement the generic scoping report.

2. The overall scope of the regional and subregional assessments is to assess the status and trends regarding biodiversity, ecosystem functions and ecosystem services and their interlinkages, the impact of biodiversity, ecosystem functions and ecosystem services and threats to them on good quality of life, and the effectiveness of responses, including the Strategic Plan for Biodiversity 2011–2020, the Aichi Biodiversity Targets and the national biodiversity strategies and action plans developed under the Convention on Biological Diversity. The assessments will address terrestrial, freshwater, coastal and marine biodiversity, ecosystem functions and ecosystem services.

3. The objective of the regional and subregional assessment processes is to strengthen the science-policy interface on biodiversity, ecosystem functions and ecosystem services at the regional and subregional levels.

4. The annex to the present note provides a report on the expert groups performing the assessments and on progress made towards the production of the regional assessments, which will be submitted for consideration by the Plenary at is sixth session. The annex is presented without formal editing.

* IPBES/4/1

Annex

I. Composition of the expert groups performing the regional assessments

A. Dedicated Multidisciplinary Expert Panel and Bureau members

1. In accordance with the rules of procedure for preparing Platform reports, members of the Multidisciplinary Expert Panel and Bureau relevant to each region are overseeing the reports, ensuring that they are prepared in accordance with agreed procedures.

B. Selection of experts

2. Co-chairs, coordinating lead authors, lead authors were selected for each of the four regional and subregional assessments according to the criteria set out in the procedures for the preparation of the Platform's deliverables in the annex to decision IPBES-2/3. The selection of Review Editors will be finalised early 2016.

3. A total of 746 nominations was received for the four regional assessments. Of those, 425 were selected as experts for the assessments: 103 for Africa, 90 for the Americas, 107 for Europe and Central Asia and 125 for the Asia and Pacific region. Within those, forty experts were selected as Lead Authors for the land degradation and restoration assessment. These same experts at the same time also participated as Lead Authors in the regional/subregional assessments, which means that 10 land degradation and restoration experts are "embedded" as Lead Authors within each of the four regional/subregional assessments. Within these 40 Lead Authors, a subset of 8 authors (2 per region) play a role of liaison experts. They are responsible for the coordination of land degradation and restoration information and content across chapters and across assessments. Out of the total of 425 experts, 33% are female and 67% male; 32% were nominated by organizations and 68% by governments.

4. The selection process was performed by members of the Multidisciplinary Expert Panel, with advice from Bureau members, together reviewing all nominations that had been submitted, based on examination of nomination templates and curriculum vitae for each nominee. Selections were made on the basis of candidates' expertise with respect to relevant areas of the work programme. Once selected on merit, further selection was focused on balancing disciplinary, regional and gender diversity, as well as sectorial diversity. For the different regional and subregional assessments, certain gaps were assessed with regards to disciplinary, regional and gender balance. These gaps in authors were filled by the identification of potential suitable authors by the co-chairs of the assessments and MEP and Bureau members, and subsequent nomination of these experts by their respective governments or organizations.

5. The technical support unit on capacity-building launched its IPBES Fellow Pilot Programme earlier this year (IPBES/4/INF/5). This fellowship programme allows early career researchers and other professionals to take part in IPBES activities. For the regional and subregional assessments, a total of 309 nominations were received, and 26 selected. These fellows will contribute as authors in the assessments. Africa and Asia Pacific selected 7 fellows each, while the Americas, and Europe and Central Asia selected 6 fellows each.

6. The composition of the expert groups is presented in Annex I.

C. The technical support units

7. Prior to IPBES-3, the Chair requested governments and stakeholders to provide offers for in-kind contributions to support the implementation of the work programme with particular reference to the need for technical support for implementing the regional and subregional assessments. The Bureau, in consultation with the MEP, met several times by teleconference and selected host organisations, which had volunteered to host technical support units, in each of the four regions of the regional assessments. Institutional agreements have been signed and staff recruited in the following host institutions:

- for the regional and subregional assessment for the Americas: the Alexander von Humboldt Institute, Colombia;
- for the regional and subregional assessment for Asia and the Pacific: the Institute for Global Environmental Strategies (IGES), Japan;

- for the regional and subregional assessment for Africa: the Council for Scientific and Industrial Research (CSIR), South Africa;
- for the regional and subregional assessment for Europe and Central Asia: Institute of Plant Sciences, University of Bern, Switzerland.

8. The role of each technical support unit is to provide scientific, technical and organizational support toward the delivery of the assessment report. In addition, the technical support units liaise with the task forces and other experts groups, as necessary, and support work towards other deliverables (e.g. deliverable (2a) on Guide on production and integration of assessments from and across all scales, and deliverable (4a) on Catalogue of relevant assessments) in order to ensure that cross-cutting issues are properly addressed.

9. Additional information on institutional arrangements is provided in IPBES/4/INF/18.

II. Progress towards preparation of the regional assessment reports

A. Management committee meetings

10. In order to plan for the first author meetings, including preparation of an annotated chapter outline, and to finalize the selection of experts, a management committee meeting took place in each one of the four regions comprising the regional co-chairs, representatives of the relevant technical support unit, Bureau and MEP members of the respective region and a representative of the IPBES secretariat. The meetings were held in Tokyo (Japan), Bogota (Colombia), Pretoria (South Africa) and Edinburgh (UK), between mid-June and mid-July, 2015.

B. First author meetings

11. The first author meetings were held in Bogota (20 to 27 July 2015) for the regional and subregional assessment for the Americas, Tokyo (17 – 21 August 2015) for the regional and subregional assessment for Asia and the Pacific, Pretoria (3-7 August 2015) for the regional and subregional assessment for Africa, and Engelberg, Switzerland (31 Aug- 4 Sept 2015) for the regional and subregional assessment for Europe and Central Asia. They were organised by the respective TSUs with support from the IPBES Bonn Secretariat. A total of about 450 participants attended these meetings, including co-chairs, coordinating lead authors, lead authors, fellows, Multidisciplinary Expert Panel and Bureau members, representatives of task forces/expert groups, and IPBES Secretariat. All four meetings produced a first version of the zero order draft, consisting of a detailed scope for each chapter, and agreed on responsibilities of each author, and detailed timeline of activities towards the production of the regional and subregional assessment report.

12. The first author meetings also served as an opportunity for discussions and information exchange between the regional experts and other experts from thematic assessments (land degradation), various task forces and experts groups, including: (i) scenarios and models, ii) valuation, iii) knowledge and data, iv) indigenous and local knowledge, and v) capacity-building. The first author meeting received information and/or discussed the following items:

- Organization, overall objectives and functions of IPBES
- IPBES clients and end-users
- The IPBES conceptual framework, key messages, and work programme and procedures
- The team: co-chairs, coordinating lead authors, lead authors, fellows, contributing authors, and review editors
- The assessment timeline
- The relationships between the regional and subregional assessments and the thematic and global assessments
- Confidentiality, method to select literature, resources, and treatment of uncertainty

13. The detailed chapter outlines for each of the six chapters resulting from the first author meeting were later worked out in more detail for the zero order drafts, based on the initial scoping report outlined in annex V to decision IPBES-2/5.

14. The authors also worked on the initial content for the zero order draft during the first author meetings. The expert teams also agreed on a detailed timeline, as well as on a process for file sharing within each chapter.

C. Preparation of the Zero Order Draft

15. Following the first authors meetings during which the chapter outlines were further specified, experts started to prepare the Zero Order Draft for their assessment. The Zero Order Draft is based on the outline and initial content agreed at the first author meeting. Each regional assessment had a slightly different timeline in place for delivering it and a slightly different process for internal review. The preparation of the zero order draft started during the first author meetings and will continue until the start of 2016, after which the experts will prepare the first order drafts of the full report for the first external review by experts (30-May – 11 July, 2016).

16. In order to include indigenous and local knowledge into the regional and subregional assessments, the task force on indigenous and local knowledge is organizing sub-regional/regional indigenous and local knowledge resource workshops. The first one took place for the African regional and subregional assessment in Paris in September 2015, and the next one focuses on Europe and Central Asia region, and takes place in Paris, from 11 to 13 January 2016. The primary focus of the meeting is to facilitate dialogue and share knowledge between selected indigenous and local knowledge holders/experts and experts of the regional assessments, as described in IPBES/4/7 and IPBES/4/INF/6. This shared dialogue and knowledge are expected to reinforce the contribution of indigenous and local knowledge to the regional assessments.

17. In order to identify the capacity building needs in the four regions, the technical support units for the regional and subregional assessments also participated in the capacity building forum that took place in Dehradun India in October 2015. Additionally, the regional and subregional assessments have at least one fellow per chapter as part of their assessment, as described in IPBES/4/6 and IPBES/4/INF/5.

D. Second author meetings

18. The second authors meeting will be held jointly by the regional and subregional assessments and the land degradation and restoration assessment in Bonn from 22-26 August 2016. The co-chairs, coordinating lead authors and review editors will attend the meeting, together with dedicated members of the Multidisciplinary Expert Panel, Bureau, task forces and Secretariat. The second authors meeting will address the following issues:

- Developing key messages and Executive Summaries
- Reducing redundancy of cross-cutting issues across chapters
- Standardizing the quality of scientific evidence across chapters
- Harmonizing the tone and comprehensiveness across chapters
- Discussions on incorporation of indigenous and local knowledge into the report chapters
- Discussions on the incorporation of values, scenarios and data and knowledge into the report chapters
- Prioritizing and handling the comments from the expert review
- Ensuring collaboration between the regional and subregional assessments and the land degradation and restoration assessment

E. Timeline

19. An updated annotated timeline per region is provided in Annex II.

III. Progress in work plan and next steps

20. The preparation of the first order drafts of the regional assessments will take place from the end of 2015 until April 2016. The internal review of the first order draft will take place from mid-March until mid-April 2016, with the external review taking place from mid-April 2016 until the end of May 2016 (with slight differentiation in the exact dates possible between the different regional assessments). Governments will be notified of the commencement of the first review process. The results of this review

will be summarized by the review editors, and authors will respond to all review comments and record their annotations on the comment forms. The handling of comments will be left to the discretion of the coordinating lead authors along with advice and guidance from the review editors. The second author meeting will give an opportunity for coordinating lead authors and review editors from all regions to align the overall structure of the assessment reports as well as to discuss the comments for the technical report.

21. A full list of expert reviewers per regional assessment has been made available on the Platform's website.

Annex I

List of experts for the regional and subregional assessments on biodiversity and ecosystem services

Abbreviations: CLA (Coordinating Lead Author), LA (Lead Author), LA 3bi (Land degradation and restoration assessment expert working as thematic expert within the regional assessment), LA 3bii (invasive alien species assessment expert working as thematic expert within the regional assessment), LA 3biii (sustainable use and conservation of biodiversity assessment expert working as thematic expert within the regional assessment), and Fellow (Young Fellow).

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Annex II

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Date	*Actions and institutional arrangements*
2015	
First quarter	Plenary at its third session approves the conduct of regional and subregional assessments on biodiversity and ecosystem services. The Chair, through the secretariat, requests nominations from Governments and other stakeholders of experts to prepare the assessment report.
Second quarter	Secretariat compiles lists of nominations. The MEP selects the assessment co-chairs, coordinating lead authors and lead authors, using the approved selection criteria set out in decision IPBES-2/3. List gets fine-tuned by assessments co-chairs. The Panel
Third quarter	The Management Meetings for the regional Assessments take place as well as their First Author Meetings. Start of the drafting of the Zero Order Draft.
Fourth quarter	Preparation of Zero Order Draft.
2016	
First / early second quarter (Jan – May)	Preparation of First Order Draft and an internal review
Second quarter 30 May-11 Jul	Parallel *First Order Draft review by experts* of all four regional/subregional assessments and the land degradation and restoration assessment
Third quarter 22-26 Aug	Joint second author meeting between the experts of the regional assessments and the land degradation and restoration assessment (including co-chairs, coordinating lead authors, liaison experts, and review editors)
Third / fourth quarter	Second drafts of chapters and first draft of summary for policymakers to be prepared
2017	
First quarter	Continued preparation of Second Order Draft and internal review
Second quarter 1 May – 19 Jun	Parallel *Second review by Governments and experts* (Second Order Draft and first draft of summary for policymakers) of all four regional/subregional assessments and the land degradation and restoration assessment
Third quarter	Third author meeting (co-chairs, coordinating lead authors, lead authors, liaison experts, review editors)
Fourth quarter	Final text changes to the assessment and the summary for policymakers
2018	
First quarter 15 Dec 2017 – 26 Jan	Translation of the summary for policymakers into the six official languages of the United Nations
Jan - Mar	Submission of the assessment, including the translated summary for policymakers, to Governments for final review prior to Plenary session
19-24 Mar	IPBES-6 Presentation of the summary for policymakers to Plenary
Second quarter	Outreach and communication

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Fourth session
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Agenda item 5 (e)

Work programme of the Platform: scoping report for a global assessment on biodiversity and ecosystem services

[NOTE TO EDITORS, THIS WILL BE ANNEX I TO DECISION IPBES-4/1]

Scoping report for a global assessment on biodiversity and ecosystem services

I. Scope, geographic coverage, rationale, utility and methodological approach

A. Scope

1. The global assessment will critically assess the state of knowledge on past, present and possible future trends in multi-scale interactions between people and nature, taking into consideration different world views and knowledge systems. The assessment will examine the status, trends (past and future), direct and indirect drivers of change, values[1] and response options regarding nature (including biodiversity and the structure and functioning of ecosystems on land and in inland waters, coastal zones and global oceans), nature's benefits to people (including ecosystem goods and services), and the interlinkages between the elements in the conceptual framework[2]. The assessment will also highlight thresholds, feedbacks, and resilience in such linkages, as well as opportunities, synergies and trade-offs between different response options. The assessment will furthermore analyse the contributions of biodiversity, ecosystems and their benefits to a long-term good quality of life in the context of sustainable development as expressed in the Sustainable Development Goals. The assessment will consider the synergies and trade-offs associated with meeting multiple goals, and the interactions among the social (including cultural), economic and environmental dimensions of sustainable development. This analysis will be undertaken in the context of the Strategic Plan for Biodiversity 2011–2020, its 2050 Vision and the Aichi Biodiversity Targets, and the national biodiversity strategies and action plans.[3] The assessment is intended to strengthen the science-policy interface on biodiversity, ecosystem functioning and ecosystem goods and services at a range of

[1] Values will be assessed following guidance laid out in the preliminary guide regarding diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem services (deliverable 3 (d)) (IPBES/4/INF/13).

[2] The terms "nature", "nature's benefits to people" and "good quality of life" correspond to the inclusive categories defined in the conceptual framework of the Platform (decision IPBES-2/4) and its glossary (see Dias et al. (2015), The IPBES conceptual framework – connecting nature with people, Current Opinion in Environmental Sustainability, 14:1–16).

[3] As expressed in deliverable 2 (b) of the work programme of the Platform (decision IPBES-2/5, annex I).

spatial scales from the local to global levels by providing the knowledge and policy-support tools needed for informed decision-making by Governments, the private sector and civil society.

2. The time frame of analyses will cover the current status, trends up to 2020 (going back as far as 50 years[4]) and plausible future projections[5] with a focus on various periods between 2020 and 2050,[6] which cover key target dates related to the Strategic Plan for Biodiversity 2011-2020 and the Sustainable Development Goals. The conceptual framework of the Platform will guide these analyses of the social and ecological systems that operate at various time and space scales. The assessment will draw on and synthesize information from the four regional/subregional assessments of the Platform, as well as other previous and ongoing relevant assessments, and address issues of a global nature not covered in the regional and cross-regional assessments and global indirect drivers, such as economic, demographic, governance, technological, and cultural ones, among others. Special attention will be given, among indirect drivers, to the role of institutions (both formal and informal) and impacts of the patterns of production, supply and consumption on nature, nature's benefits to people, and good quality of life. The assessment will also cover direct drivers, such as: climate change, pollution, land use change, invasive alien species, and zoonoses, including their effects across regions. The assessment will also examine other relevant issues such as biological and cultural diversity and the links between them, globally important biodiversity hotspots and migratory species. The assessment will demonstrate how the integration of nature and ecosystems into development can advance human quality of life.

3. The global assessment will address the following questions:

(a) What is the status of and trends in nature, nature's benefits to people, and indirect and direct drivers of change?

(b) How do nature and its benefits to people contribute to the implementation of the Sustainable Development Goals? What is the evidence-base that can be used for assessing progress towards the achievement of the Aichi Biodiversity Targets?

(c) What are the plausible futures for nature, nature's benefits to people and their contribution to a good quality of life between now and 2050?

(d) What pathways and policy intervention scenarios relating to nature, nature's benefit to people and their contributions to good quality of life can lead to sustainable futures?

(e) What are the opportunities and challenges, as well as options available to decision makers at all levels relating to nature, nature's benefit to people and their contributions to good quality of life?

B. Geographic coverage of the assessment

4. For the purposes of the global assessment, the geographic area includes land, inland waters, coastal zones and oceans.

C. Rationale

5. The rationale for this assessment is to undertake for the first time a comprehensive global intergovernmental assessment of nature nature's benefits to people, their contribution to a good quality of life, and the way in which they are affected by indirect and direct drivers, incorporating multiple world views, different knowledge systems and diverse values.

6. Nature and its benefits to people provide the basis for economies, livelihoods, spirituality and a good quality of life, including by contributing to security, of people around the world. The assessment will address issues across regions and of a global nature, such as global drivers and processes and consequences for people that cannot be addressed in the regional assessments.

[4] Long-term historical data as well as the longer-term paleoecological record will be used to estimate species extinction rates.

[5] A range of techniques will be used as discussed in the methodological assessment of scenarios and models of biodiversity and ecosystem services (see Annex x).

[6] Some projections may go to 2100 to assess the implications of projected changes in climate.

7. The assessment will contribute to the development of a strengthened knowledge base and interplay between policymakers,[7] scientists and holders of different knowledge (such as indigenous and local knowledge) [8] from different knowledge and value systems.

8. The assessment will contribute to the implementation of the Platform's functions as they relate to capacity-building (the assessment is an important vehicle for capacity-building and the assessment will identify future capacity-building needs), identification of knowledge gaps, knowledge generation and enhanced use of policy support tools. Furthermore, such an assessment is critical to furthering the Platform's operational principle of ensuring the full use of national, subregional and regional knowledge and tools, as appropriate, including a bottom-up approach, in providing knowledge for informed decision-making.

D. Utility

9. The global assessment will provide users (e.g., Governments, multilateral organizations, the private sector and civil society, including indigenous peoples and local communities and non-governmental organizations) with a relevant, credible, legitimate, authoritative, evidence-based, holistic and comprehensive analysis based on the current state of scientific and other knowledge systems (including indigenous and local knowledge). For example, the assessment will analyse, model and synthesize the potential effectiveness of response options as they relate to the Sustainable Development Goals and the sustainable management of nature and nature's benefits to people under plausible global scenarios and present best practices and lessons learned. It will also catalyse critical knowledge generation, and identify current gaps in capacity, knowledge and policy, and options for addressing them at the relevant levels.

10. The assessment will provide information relevant to a range of stakeholders in the public and private sectors and civil society. The findings and key messages will be presented to a broad audience as outlined in the Platform's communications strategy. The outputs will also include a summary for policymakers, highlighting key policy-relevant, but not policy-prescriptive, findings. The information will be widely disseminated, including (but not exclusively) by making use of new information and communications technologies. The findings and key messages of the assessment will provide Governments and intergovernmental fora, e.g., the Convention on Biological Diversity and United Nations General Assembly ocean related processes, with a knowledge base (highlighting key policies) to inform national, regional and global policies to conserve and sustainably use biodiversity, ecosystems and their benefits to people. The assessment will also provide knowledge for a wide range of other decision makers as set out in the description of chapter 6 in the chapter outline below.

11. The assessment will be well placed in time to contribute to the fifth edition of the Global Biodiversity Outlook of the Convention on Biological Diversity. The fifth edition will report in 2020 on the implementation of the Strategic Plan for Biodiversity 2011–2020 and assess the achievement of the Aichi Biodiversity Targets. The fifth edition of the Global Biodiversity Outlook will be based on the sixth national reports of Parties to the Convention on Biological Diversity, on the one hand, and on the outcome of the assessment and other relevant work of the Platform (UNEP/CBD/SBSTTA/19/9). It is expected that the Subsidiary Body on Scientific, Technical and Technological Advice at a meeting in the fourth quarter of 2019 will consider this assessment and its implications for the future work of the Convention on Biological Diversity, and that the fifth edition will be launched at a meeting in the second quarter of 2020.

12. The completion of the assessment will be timed to provide information relevant to the assessment of progress towards the achievement of the Aichi Biodiversity Targets and the review of implementation of the Strategic Plan for Biodiversity 2011–2020 foreseen at the fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity in 2020 (Recommendation XIX/5 of the Subsidiary Body on Scientific, Technical and Technological Advice). The scope of the assessment is designed to be complementary to and provide an input to the proposed fifth edition of the Global Biodiversity Outlook to be undertaken by the Convention on Biological Diversity. In this regard the assessment will be additional and complementary to the 6th National Reports to the Convention (UNEP/CBD/SBSTTA/19/9).

[7] Governments will be involved in the peer review process in accordance with the rules for the preparation of assessments.

[8] Procedures have been developed to ensure that indigenous and local knowledge will be incorporated into all the Platform's assessments, see Annex II to decision IPBES-4/3.

13. The assessment, including in particular its scenarios and consideration of response options, is also well placed in time to contribute to the update/follow-up of the Strategic Plan for Biodiversity beyond 2020 which will be considered by the Conference of the Parties to the Convention on Biological Diversity at its fifteenth meeting (decision XII/31 of the Conference of the Parties to the Convention on Biological Diversity), and to other fora.

14. The assessment is particularly well placed in time to contribute also to the assessment of the achievement of several biodiversity-related targets of the Sustainable Development Goals and other relevant conventions and agreements, as appropriate and in accordance with their respective mandates.

E. Methodological approach

15. The global assessment will be based on existing data (including, as appropriate, national data), published scientific and grey literature and other information, including indigenous and local knowledge, according to guidelines of the Platform. The expression "analysis and synthesis" is used frequently in this assessment. In the context of this assessment and in accordance with the principles of the Platform, analysis refers to a critical evaluation of the evidence base; it does not refer to new research. Synthesis refers to combining evidence from multiple sources, and is a key step in carrying out analyses in the context of assessments.

16. The assessment will draw on the Platform's regional/subregional, thematic and methodological assessments and guidelines, as well as other relevant global assessments, such as the Global Biodiversity Outlook series, assessments by the Food and Agriculture Organization of the United Nations, the Global Environmental Outlook series, the reports of the Intergovernmental Panel on Climate Change (IPCC), the Millennium Ecosystem Assessment, the first World Ocean Assessment (WOA I) and other assessments prepared under the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects (Regular Process). The assessment will also use existing data and information held by global, regional, subregional and national institutions, such as the relevant multilateral environmental agreements. The assessment will rely on existing scenarios and models and will also make use of scenarios and models that may be catalysed as part of the follow-up to the methodological assessment, among others. In this context, IPBES will work closely with the research communities, including those working on the Shared Socio-economic Pathways (SSP) to be used by the IPCC.

17. The IPBES global assessment will build on WOA I completed in 2015. The component of the assessment focused on the oceans will include elements such as values, indirect drivers, scenarios associated with marine biodiversity and its benefits to people and management of marine resources. The assessment will also directly address how changes in human quality of life are linked to the trends in ocean uses and ocean biodiversity documented in WOA I.

18. Experts involved in the assessment will work closely with the task force on indigenous and local knowledge systems to ensure that the multiple sources of knowledge are drawn upon using indigenous and local knowledge procedures.[9] The group of experts for the assessment will, in accordance with the procedures for the preparation of Platform deliverables, reflect the appropriate geographic, disciplinary, gender and expertise balance (policy, terrestrial and marine natural sciences, social and economic sciences, and arts and humanities). The authors will work with expert groups undertaking regional, thematic and methodological assessments, in order to ensure conceptual and methodological coherence. The authors will work closely with the task forces on knowledge and data, indigenous and local knowledge systems and capacity-building, taking into account the rights of knowledge holders. The group of experts will be supported by the guide to the production and integration of assessments (see IPBES/4/INF/9) and the preliminary guide regarding the diverse conceptualization of multiple values of nature and its benefits, including ecosystem functions and services (IPBES/4/INF/13).

19. The Multidisciplinary Expert Panel, in overseeing the group of experts, will facilitate liaison with the scientific advisory bodies and secretariats of the relevant global processes at all stages of the preparation of the assessment to ensure that the needs of the end users are effectively addressed.

20. Stakeholders will be engaged throughout the assessment process through a number of mechanisms such as the participation of stakeholders, where appropriate, in the development of new scenarios and models developed in response to the needs of the Platform for the assessment and

[9] Annex II to decision IPBES-4/3.

through consultations between experts and stakeholders at meetings held with the support of the capacity-building deliverable of the Platform or with in-kind support.

II. Chapter outline

21. The assessment will be a policy-relevant, six-chapter report, as set out below. The overall chapter structure outlined here does not preclude dividing the chapters into smaller components (as long as the high-level titles are maintained in the overall structure) in order to ensure clarity and manageable tasks for authors. Each chapter will include an executive summary. A summary for policymakers will outline the key findings and messages most relevant to policymakers in a non-prescriptive manner.

22. Chapter 1 will set the stage for the assessment by outlining the elements in the relationship between people, nature, nature's benefits to people, a good quality of life, indirect and direct drivers of change and anthropogenic assets, and their major interactions, as defined in the Platform's conceptual framework. The assessment will incorporate multiple world views, multiple knowledge systems and diverse values. Chapter 1 will provide a road map and overarching rationale for the sequence of chapters in the assessment. In assessing the contributions of nature and nature's benefits to people to achieving a good quality of life, this chapter will recognize synergies and trade-offs associated with meeting multiple goals and the need for balanced integration between the social (including cultural), economic and environmental dimensions of sustainable development.

23. Chapter 2 will address question (a) in paragraph 5 above. The chapter will assess the global and cross-regional status of, and trends in, nature, nature's benefits to people, their contribution to a good quality of life, indirect and direct drivers of change, and the major interactions among these elements as set out in figure I of the conceptual framework. The analysis and synthesis will cover ecosystems on land and in inland waters, coastal zones and global oceans and will include analyses of the roles of formal institutions as well as informal institutions (i.e., socially shared rules and cultural practices). This chapter will draw on multiple evidence bases, including natural and social sciences and indigenous and local knowledge. This chapter will cover:

(a) Analysis and synthesis of the Platform's regional/subregional assessments and other regional scale assessments, focusing on status and trends. Emerging issues and lessons from case studies from the regions will be identified and commonalities and divergences across regional/subregional scales highlighted. Syntheses across regions regarding some key biomes or ecosystem types covered in the regional assessment could also be considered;

(b) Synthesis of prior global assessments, including the Platform's thematic assessments and those mentioned in paragraph 16, as well as new global scale evidence, focusing on status and trends with an explicit consideration of linkages across regions;

(c) Evaluation highlighting the status and trends of institutional drivers at the global level and across regions, such as investment initiatives and multilateral environmental, trade and health agreements, as well as their effects on other components of the conceptual framework;

(d) Identification of information and knowledge gaps, as well as needs for capacity-building.

24. Chapter 3 will address question (b) in paragraph 5 above. The chapter will focus on the evidence available for assessing progress towards meeting major international objectives related to biodiversity and ecosystem functions and services, with special attention given to the Aichi Biodiversity Targets and relevant Sustainable Development Goals, as well as the objectives of other biodiversity-related agreements. This chapter will build on analyses in the previous chapter, but will explicitly focus on internationally agreed targets and goals in consultation with the relevant institutions (e.g., the Convention on Biological Diversity and the United Nations Statistics Division). These analyses will use multiple evidence bases, including natural and social sciences and indigenous and local knowledge. This chapter will cover:

(a) Analysis and synthesis of the evidence base that can be used to determine progress towards the achievement of the Aichi Biodiversity Targets and relevant Sustainable Development Goals, recognizing that the final assessment of achievement of the Aichi Targets will be carried out for the fifth edition of the Global Biodiversity Outlook using this evidence base and additional information including national reports under the Convention on Biological Diversity;

(b) Analysis and synthesis of the underlying reasons why progress has or has not been made towards achieving the Aichi Biodiversity Targets, relevant Sustainable Development Goals and other major international goals related to biodiversity and ecosystem functions and services. It will include

consideration of the contributions of past and ongoing policy and management actions and resource mobilization to achieving these goals;

(c) Analysis and synthesis of the evidence base that can inform the development of new targets for the follow-up to the Strategic Plan for Biodiversity 2011–2020, including the interactions among trends towards the achievement of the Aichi Biodiversity Targets to understand how they contribute to reaching the 2050 Vision. The chapter will also include consideration of the availability of existing and emerging indicators, including indicators that are being developed in the context of the reporting obligations of the Parties to relevant biodiversity-related agreements;

(d) Identification of information and knowledge gaps, as well as needs for research and capacity-building that would need to be addressed in order to enhance understanding of progress towards the achievement of these international goals.

25. Chapter 4 addresses question (c) in paragraph 5 above. The chapter will focus on plausible futures of nature, nature's benefits to people and their contributions to a good quality of life, by considering a wide range of scenarios of direct and indirect drivers, focusing on the 2030 and 2050 time frames. The assessment, in this chapter, will evaluate how these scenarios of direct and indirect drivers impact nature, nature's benefits to people and good quality of life using quantitative and qualitative models that mobilize a full range of world views and knowledge systems. Outcomes of the scenarios will be assessed in relation to internationally agreed goals related to biodiversity and ecosystem functions and services, such as the relevant Sustainable Development Goals, the 2050 Vision and other relevant conventions and agreements, as appropriate and in accordance with their respective mandates, in order to facilitate better understanding of which types of socio-economic development pathways lead to outcomes that are closest to or furthest from these goals. This chapter will include:

(a) Assessment of positive and negative feedback loops in social and ecological systems and their contributions to potential future shifts;

(b) Attribution of changes in nature, nature’s benefits to people and good quality of life resulting from direct and indirect drivers;

(c) Evaluation following consideration of a diverse set of values, following the preliminary guide regarding diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem functions and services (IPBES/4/INF/13) of policy actions or inaction;

(d) Evaluation of uncertainty, and methods for dealing with uncertainty in decision-making;

(e) Reflections on how the evidence from the scenarios may contribute to the elaboration of the follow-up to the Strategic Plan for Biodiversity 2011–2020.

26. Plausible future scenarios will be analysed based on three broad classes of methods: statistical extrapolations (like those carried out for the fourth edition of the Global Biodiversity Outlook), exploratory scenarios of direct and indirect drivers coupled with quantitative or qualitative models (like the scenarios and models used in the Millennium Ecosystem Assessment), and inferences from patterns in case studies that focus on general lessons that can be learned from such studies on a global scale (see also Annex IV to decision IPBES-4/1).

27. Chapter 5 addresses question (d) in paragraph 5 above. The chapter focuses on scenarios and pathways towards a sustainable future, in particular on the means of achieving internationally agreed upon goals and targets related to biodiversity and ecosystem functions and services. The chapter will focus on the components of sustainable development related to biodiversity and ecosystem functions and services and, therefore, cover only a subset of sustainability issues. It will take into account trade-offs, synergies, feedbacks and opportunities; make extensive use of work based on participatory scenarios; take into consideration a nested range of decision-making processes in Government, the private sector and civil society; and recognize power and policy asymmetries. This chapter will contain:

(a) Description of the roles in, and contexts of, decision-making in identifying opportunities for future development, building on analyses from the Platform’s regional, subregional and thematic assessments; and explore:

(i) How drivers are relative to decision makers and can be seen as being within their control (endogenous) or beyond their control (exogenous);

(ii) The role of timescales and time lags (inertia) in social, cultural, economic and natural systems, including in human responses to endogenous and exogenous drivers of change;

(iii) Analyses of relevant policies and legislative tools at the local to regional scales and how these are congruent with or in conflict with global goals;

(b) Review the outcomes of the following types of scenarios, by building on existing work and available new scenarios developed in response to, or of relevance to, the needs of the Platform: target-seeking scenarios that examine broad suites of actions needed to improve sustainable development; policy and management screening scenarios that explore the contributions and effects of specific interventions, including trade-offs and opportunity costs; and inferences from patterns in case studies and analyses across scales and regions (see also document IPBES/4/4);

(c) Analysis of paths of dependency and adaptive (versus locked-in) institutional and governance structures as indirect drivers (in the context of the conceptual framework) that will determine dominant values and potential future impacts on nature and nature's benefits to people. This will take into account information from chapters 1–4 to identify the state of knowledge of relevant processes in support of the Sustainable Development Goals and 2050 Vision, thus contributing to the follow-up to the Strategic Plan for Biodiversity 2011–2020.

28. Chapter 6 will address question (e) in paragraph 5 above. The chapter will focus on opportunities and challenges for decision makers at all levels and will build on the analysis of the roles of decision-making as well as the decision-making contexts from earlier chapters. This chapter will analyse specific issues and opportunities for action for a range of policymakers and decision makers at all levels, including relevant United Nations agencies, biodiversity-related agreements and other relevant conventions and agreements, as appropriate and in accordance with their respective mandates.

29. In identifying opportunities and challenges, efforts will be made to recognize the variety of decision-making processes, the role of timescales and time lags (inertia) in social, cultural, economic and natural systems and that for all decision makers some drivers will be seen as within their control and others as beyond their control.

30. The chapter will identify the target audiences and their needs that are to be addressed within a range of stakeholders such as policymakers, legislators, financial planners at overarching levels and decision makers, as well as all other relevant stakeholders, including civil society and indigenous peoples and local communities, who are directly or indirectly related to biodiversity, ecosystem functioning and ecosystem services.

III. Data and information

31. The global assessment will draw on data and information from diverse knowledge systems, addressing all the components of the conceptual framework in order to explore the interrelationships between nature, nature's benefits, drivers, and human well-being. The assessment process will interact with the Platform's regional/subregional assessments and other global assessments to explore, integrate and interpret the emerging transregional issues of global importance.

32. Attention will be given, in accordance with the Platform's data and information management plan, to ensuring access to metadata and, whenever possible, the corresponding underlying data, through an interoperable process to ensure comparability between assessments. Furthermore, the task force on data and knowledge will develop recommendations and procedures to assure that data and information used in the global assessment will be widely available for future IPBES assessments and other uses.

33. The assessment will also identify and seek access to any other globally relevant data and information sources that may exist or emerge. These sources include global, regional and national institutions and organizations, scientific literature, and indigenous and local knowledge. The requirements of the assessment process will be communicated widely in order to identify and encourage the sharing of relevant data and information.

34. The task force on data and knowledge will provide active guidance on data and information quality, confidence, indicators, baselines and representativeness. A core set of indicators with appropriate baselines will be used consistently across the global and regional/subregional assessments and closely aligned with existing international frameworks, such as the indicators for the Strategic Plan for Biodiversity 2011–2020 and the Sustainable Development Goals, building on and supporting existing international processes on indicators to share the same data and methods and to avoid additional reporting burdens.

35. Similarly, the task force on indigenous and local knowledge systems will guide the procedures for the analysis and use of indigenous and local knowledge. The collective ability to perform these

tasks will be strengthened through capacity-building, knowledge-sharing and international collaboration.

IV. Strategic partnership and initiatives

36. Under the operating principles of the Platform, partnerships are important in order to avoid duplication and promote synergies with ongoing activities. Strategic partnerships are a critical subset of the many possible forms of partnership with the Platform. In the context of the global assessment, strategic partnerships are those that promote, for example, opportunities to increase alignment and reciprocity, and reduce duplication, between global assessments, or to build and maintain relationships with multiple relevant bodies under one global umbrella. Strategic partners should be identified for the assessment process in accordance with the guidance on the development of strategic partnerships and other collaborative arrangements (decision IPBES/3/4). Among key strategic partners currently identified are Future Earth, Group on Earth Observations Biodiversity Observation Network and the Biodiversity Indicators Partnership. Other interested organizations are invited to engage with the assessment process.

V. Technical support

37. Technical support for the assessment will be provided by a technical support unit, located within the Platform secretariat, in order to promote synergies with the rest of the work programme, and with the regional and thematic assessments in particular. The unit will be composed of one full-time staff member, supported by one or more full-time staff members seconded to the secretariat. The technical support unit will liaise with other technical support units, including those for the regional assessments.

VI. Capacity-building

38. A key objective of the global assessment is to build capacity to undertake assessments at the global level and to encourage the creation of an independent network of capacity-building that will continue after the assessment is complete. Capacity-building will also include the strengthening of effective contributions of indigenous and local knowledge systems to assessments. Furthermore, capacity-building interventions will be designed to enable the effective participation of experts from developing countries in the assessment. The assessment will be supported by the task force on capacity-building and its technical support unit, in particular through the implementation of the proposed programme on fellowships, temporary secondment of staff and exchange of individuals, mentoring and training presented in document IPBES/4/6. The assessment will identify a pool of experts that can be used to provide support to capacity-building activities related to the Platform.

VII. Communication and outreach

39. The global assessment report and its summary for policymakers will be published in electronic format. The summary for policymakers will be available in all official languages of the United Nations and will be printed on demand. The reports will be made available on the Platform website. Outreach to a broad set of stakeholders, including the general public, will be based on the Platform's communications and outreach strategy and budget. Dissemination will target all Platform stakeholders and will be adapted to the specific interests of different users, and metadata used in the assessment will be made publicly available in accordance with relevant guidance developed by the Platform.

40. Communication and outreach will be undertaken from the outset of the assessment in order to build engagement with the wider scientific community and the end users of the assessment. Engagement with users will help to define the type and range of communication products and policy support tools that will be developed as part of the assessment.

VIII. Process and timetable

41. The proposed process and timetable for preparing the assessment report, including actions, milestones and institutional arrangements, is set out below.

Time frame		*Actions and institutional arrangements*
2016	First quarter	The Plenary, at its fourth session, approves the undertaking of the global assessment of biodiversity and ecosystem services, asks for offers of in-kind support for staff secondments for the technical support unit for the global assessment
		The Chair, through the secretariat, requests nominations from Governments and other stakeholders of experts to prepare the global assessment report
	Second quarter	Secretariat compiles lists of nominations
		22–28 May: the Panel and the Bureau select the assessment co-chairs, coordinating lead authors, lead authors and review editors, using the approved selection criteria set out in decision IPBES-2/3 (IPBES/2/17, annex)
		*27–30 June: meeting of the Management Committee (co-chairs, the technical support unit and Panel/Bureau members) to select the remaining members of the expert team and assign respective roles (i.e., coordinating lead authors, lead authors and review editors) and prepare for the first author meeting
		Selected nominees contacted, gaps filled and the list of co-chairs, authors and review editors finalized
	Early third quarter	*25–29 July: first author meeting with approximately 150 participants: co-chairs, coordinating lead authors and lead authors, Panel/Bureau members and technical support unit
	Third quarter	*22–26 August: co-chairs (and 2 or 3 relevant coordinating lead authors) of the global assessment participate in joint second author meeting of the regional assessments and the land degradation and restoration assessment
	Fourth quarter	Zero order drafts of chapters prepared and sent to secretariat through the technical support unit
2017	First quarter	Preparation of first order drafts of chapters and submission to secretariat
	Second quarter	May–June: first order draft of global assessment sent for expert review (6 weeks)
		Collation of review comments by secretariat for revision (1 week)
	Early third quarter	Second author meeting including: 3 co-chairs, 20 coordinating lead authors and 14 review editors, Panel/Bureau members and technical support unit
	Third quarter	Preparation of second order drafts of chapters including graphics and first order draft of summary for policymakers prepared (5–6 months)
2018	First quarter	Second order draft of the assessment and first order draft of the summary for policymakers sent for government and expert review (8 weeks)
	First quarter	Collation of review comments for second order draft of the assessment and first order draft of the summary for policymakers sent to authors (2 weeks)
	End of first quarter	Co-chairs to attend the sixth session of the Plenary to observe consideration by the Plenary of the regional and land degradation assessments
	Second/early third quarter	Third author meeting (participants: co-chairs, coordinating lead authors, lead authors, review editors, Panel/Bureau members and technical support unit)
	Third and fourth quarters	Preparation of final text changes to the assessment and the summary for policymakers (6 months)
2019	First quarter	Translation of the summary for policymakers into the six official languages of the United Nations (6 weeks)
	First quarter	Submission of the assessment report, including the translated summary for policymakers, to Governments for final review prior to the Plenary session (8 weeks)
	First quarter	Final Government comments on the summary for policymakers for consideration by authors prior to the Plenary session (2 weeks)
	Second quarter	May (to be confirmed): Plenary to consider and possibly approve and accept the summary for policymakers and the technical global assessment report, respectively

*These dates are tentative and may vary by a few weeks.

IX. Cost estimate

42. The table below shows the estimated cost of conducting and preparing the assessment report.

Year	*Cost item*	*Assumptions*	*Estimated cost (United States dollars)*
2016	Meeting of co-chairs, secretariat/technical support, and Multidisciplinary Expert Panel/Bureau members	Venue costs (0.5 week, 10 participants, in Bonn)	0
		Travel and DSA (5 x $3,750)	18 750
	First author meeting (participants: co-chairs, coordinating lead authors, lead authors, and Panel/Bureau members)	Venue costs (1 week, 115 participants) (25 per cent in kind)	37 500
		Travel and DSA (86 x $3,750)	322 500
	Co-chairs participation in joint regional land degradation and restoration assessment meeting	Travel and DSA (2 x $3,750)	7 500
	Technical support	1 full-time equivalent Professional position; to be supported by one or more people (in-kind contribution)	150 000
2017	Second author meeting (participants: co-chairs, coordinating lead authors, review editors, and Panel/Bureau members)	Venue costs (1 week,40 participants) (25 per cent in kind)	11 250
		Travel and DSA (30 x $3,750)	122 500
	Technical support	1 full-time equivalent Professional position; to be supported by one or more people (in-kind contribution)	150 000
	Co-chairs to attend the sixth session of the Plenary of the Platform	Observe negotiations of regional assessments	22 500
2018	Third author meeting (participants: co-chairs, coordinating lead authors, review editors and Panel/Bureau members)	Venue costs (1 week, 130 participants)	37 500
		Travel and DSA (100 x $3,750)	375 000
	Communications	Graphic design, data visualization, dissemination and outreach (public relations and media, etc.)	500 000
	Technical support	1 full-time equivalent Professional position; to be supported by one or more people (in-kind contribution)	150 000
2019	Participation by the 12 co-chairs and coordinating lead authors in the sixth session of the Plenary	Travel and DSA (9 x $3,750)	33 750
	Technical support	1 full-time equivalent Professional position (5 months); to be supported by one or more people (in-kind contribution)	93 750
Total			**2 022 500**

IPCC-Sec IPCC-Sec <ipcc-sec@wmo.int>

5103-16/IPCC/GEN (Log No. 162)

1 message

Andrea Garcia <AGarcia@imo.org> Mon, Mar 14, 2016 at 6:03 PM
To: "IPCC-Sec@wmo.int" <IPCC-Sec@wmo.int>
Cc: Nihan Unlu <NUnlu@imo.org>, Edmund Hughes <EHughes@imo.org>, Morag Santini <MSantini@imo.org>, Frederick Kenney <FKenney@imo.org>, Stefan Micallef <SMICALLE@imo.org>, Sivylla Ampatzoglou <SAmpatzo@imo.org>

Dear Sir/Madam,

I refer to Mr. Mannava Sivakumar's letters of 19 January and 29 February 2016 to the Secretary-General (attached), inviting him to provide information on possible workshops, reports or other products that IMO may intend to produce in relation to any of the topics proposed in the attachment to his January letter.

In this connection, kindly note that there are no plans to update the Third IMO GHG Study 2014 which is the report most related to the topics proposed.

Faithfully,

Andrea

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INTERNATIONAL MARITIME ORGANIZATION

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