

**IPCC Special Report on climate change,
desertification, land degradation, sustainable land
management, food security, and greenhouse gas
fluxes in terrestrial ecosystems (SR2)**

Questionnaire and stakeholder consultation report

This report was prepared for participants at the SR2 Scoping Meeting, Dublin, February 2017, by IPCC Working Group III Technical Support Unit. Compiled by Raphael Slade, Renée van Diemen and Jim Skea.

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ii. Foreword

This report summarises the results of the stakeholder consultation undertaken by IPCC WGIII prior to the scoping of the IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems (SR2). It is one of the reports provided to participants of the SR2 scoping meeting to be held in Dublin in February 2017.

This report is presented in two parts. Part 1 presents the analysis of the responses to the SR2 stakeholder questionnaire circulated to national focal points and IPCC observer organisations between November 2016 and January 2017. Part 2 summarises the insights obtained from in depth discussions with representatives of key international stakeholder bodies: the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES), the UN Convention to Combat Desertification (UNCCD), and the Food and Agriculture Organisation of the United Nations (FAO). A list of other international reports being produced in parallel with SR2 is provided in Appendix 3.

Any omissions or errors in interpretation are the responsibility of the IPCC WG III Co-chairs and the WG III TSU.

iii. Summary

- Respondents to the questionnaire hope the report will be of practical value informing how governments prioritise response options underpinning the implementation of the Paris Agreement.
 - UNCCD sees an opportunity to provide the scientific basis on which to initiate policies aligned with the 2016 UN Sustainable Development Goals (SDG).
 - FAO sees an opportunity to make a clear link to the Paris Agreement identifying trade-offs in Nationally Determined Contributions (NDCs) between different land uses.
 - IPBES sees an opportunity to examine interactions between climate and land degradation and highlight impacts and trade-offs of restorative actions such as afforestation.
- The highest priority questions identified by respondents include:
 - What are the drivers of desertification, land degradation, changes in GHG fluxes and food security? And how do they relate to climate change? FAO consultees see food security as the main driver for the report and a major gap in previous IPCC assessment; they made the case that institutions, markets, and policies could not be ignored and food security should be considered across the four dimensions: *availability, accessibility, nutrition* and *stability*. IPBES, however, caution against turning SR2 into an assessment of food security as they consider it too large a topic for this report.
 - How can land based mitigation and adaptation measures contribute to food security and resilience? IPBES consultees emphasised the need to assess the impacts of mitigation and adaptation actions that can effect both climate and outcomes such as biodiversity. UNCCD emphasised the need to assess how future climate could affect how sustainable land management practices are designed and implemented.
 - What response options are there? And which ones are cost effective?
 - What is the feedback between sustainable land management choices and impacts on desertification, land degradation, food security, and GHG fluxes?
 - What is the role of water management in tackling each of the areas in the special report?
 - What is the current state of land degradation, desertification, and food insecurity?
 - Other issues identified as important include: Innovation and technology deployment; metrics and accounting approaches; security and migration; sustainable development goals and poverty alleviation, the need to include indigenous knowledge; local and regional impacts; forests, cities, mountains and wetlands.
- Respondents consider the unique added value of SR2 to be the opportunity to undertake a holistic and integrated assessment. The structure of AR6 is considered too rigid to examine inter-linkages effectively.
 - UNCCD, FAO and IPBES consultees were in agreement that the benefit of SR2 will only be realised if the five areas are discussed in an integrated fashion. UNCCD emphasised feedback loops between climate change and land management practices. FAO identified the opportunity to focus on the

interrelationships between biophysical issues, food availability and changes to climate change, as well as interdependencies across regions. IPBES emphasised the interactions between land and climate change.

- There are divergent views on how the report should be structured. Around 30% of respondents consider the report should be organised around interlinkages between areas. Around 25% of respondents consider the report should be organised directly around the five areas identified in the IPCC mandate.
 - UNCCD suggested structuring the report around four perspectives: *drivers, impacts, opportunities, policy options*.
 - FAO suggested merging desertification and land degradation and structuring the report around three perspectives: *land degradation, GHG fluxes, food security*.
 - IPBES suggested structuring the report around three perspectives: i) climate change as a driver of land degradation (sustainable land management and desertification); ii) land degradation as a driver of climate change (physical processes); iii) dynamics of the coupled system (feedback, and tipping points).
- There is a crowded landscape of other international reports being produced in parallel with SR2 or recently published (See Appendix 3).
- There were no strong views expressed around the content of SR2 compared to the content of AR6.

1 Responses to the SR2 Stakeholder Questionnaire

IPCC national focal points and observer organisations were encouraged to consult widely in preparation of their response. In total ninety four responses were received. A breakdown of responding organisations is shown in Appendix 1. The analysis presented below follows the structure of the SR2 stakeholder questionnaire. For each question the major themes emerging from the responses were identified and are described. Representative quotes (unattributed) are provided to illustrate respondents' views on the issues raised.

Question 1: *Information on respondents.*

See Appendix 1 for a statistical overview.

Question 2: *What are the highest priority questions, in the context of climate change, that this report should address within the five areas that will be covered: desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.*

Responses to question 2 can be categorised as falling into seven broad themes. Each theme is described below, presented as questions that might be tackled in the IPCC special report. A simple measure of the strength of the response has been provided by calculating the proportion of statements that broadly correspond with each theme. A wordcloud based on responses to question 2 is presented in Figure1. The seven themes are as follows:

- **What are the drivers of desertification, land degradation, changes in GHG fluxes and food security? and how do they relate to climate change? (~30% of responses).** The impact of climate change should be quantified. The costs and benefits should be described and the extent to which changes in drivers can be attributed to climate change evaluated.
 - *“What are the relative roles of natural and human-induced forces in bringing about change?” “How can we separate climate change induced desertification from that caused by land-use factors (grazing, water use, etc.?)”*
 - *“What are the drivers of degradation at national, regional and local scales? And the impacts of these processes on society and on ecosystems and their trends”*
- **How can land based mitigation and adaptation contribute to food security and resilience? (~29% of responses).** The adaptation and resilience of agricultural systems should be assessed, and sustainable soil management practices evaluated. What is the role of early warning systems, risk and vulnerability assessments?
 - *“What is the risk of food production failure?”*
 - *“What are the options and strategies for land-based adaptation and mitigation through adoption of measures such as sustainable intensification and other ways of increasing production?”*
 - *Examine the “Pivotal role of soil organic carbon in relation with ‘End Hunger’, ‘climate action’, ‘land degradation’, water’ nexus Sustainable Development Goals”*

- **What response options are there? And which ones are cost effective? (~26% of responses).** What practical steps can ensure actions are effective? The cost / benefit of taking mitigating actions should be established and strategies for managing trade-offs with sustainable development goals described. Success stories should be identified including mechanisms to identify and share best practice.
 - *“What are the most cost-effective climate change mitigation options in sustainable land management that can be implemented?”*
 - *“What actions being taken by countries to prevent, mitigate and halt these processes, especially in the area of sustainable management?”*
 - *“What policy instruments can be used to manage and reduce greenhouse gas fluxes in terrestrial ecosystems?”*
- **What is the feedback between sustainable land management choices and impacts on desertification, land degradation, food security, and GHG fluxes? (~24% of responses).** What are the trade-offs and synergies between food security/climate policies/water resources? What socio-economic consequences and cross-border issues might arise?
 - *“The main priority questions are the interactions between the drivers and impacts.”*
 - *“The land-atmosphere interaction is essential to considering mitigation measures for the implementation of the Paris Agreement”.*
 - *“The frequency of dust storms [has impacts on desertification, health, economic disruption, crop productivity and food security]”.*
- **What is the role of water management in tackling desertification, land degradation, sustainable land management, food security, and GHG gas fluxes? (~24% of responses).**
 - *“The report cannot look at sustainable land management or degradation without getting into water management issues.”*
 - *“Water scarcity and droughts are becoming increasingly important issues in Europe.”*
 - *“Climate impacts on the atmospheric water cycle are the primary drivers for all of these subtopics.”*
 - *“Reduced rainfall [...] impacts water resources in the country, it also affects the agriculture which reduces agricultural productivity. Furthermore, dust storms destroy the crops and manipulate the soil nature.”*
- **What is the current state of land degradation, desertification, and food insecurity (~19% of responses).** The report should establish a baseline against which future trends can be compared. Local and regional case studies should be considered. Interdependencies across regions along with implications for policy.
 - *“What is the status of land degradation, with special focus on semi-arid regions?” “Where and by how much does desertification progress?”*
 - *“What is the current state and the degree to which people, biodiversity and the environment are threatened?”*
 - *“My region is presently affected by a civil war which may have been triggered by desertification processes. If the war is brought to an end massive economic support (machinery, fertilizers, irrigation systems, etc.) the will be needed”.*
- **Other issues that might be examined in SR2:**

- *“Definition and application of appropriate metrics for sustainable land management”.*
- *“What indicators and monitoring systems can help assess ex-ante and ex-post impacts of SLM? How to evaluate success of adaptation/mitigation using land indicators?”*
- *“Issues of poverty, education and social stability as factors in food security and sustainable land management”.*
- *“Omitting forestry in SR2 would be difficult...”*
- *“Peatlands”, “wetlands”, “mountains”, “urbanisation”, “frequency of dust storms”, “emerging pests and diseases”.*
- *“Importance of indigenous and local knowledge (ILK)”, “sustainable development goals”.*
- *“The role of new technologies”, “scope for innovation and advice and extension services to reduce costs and increase deployment”.*
- *“Loss and damage” “local and regional impacts”*

A number of respondents interpreted question 2 as asking whether some areas should be given priority over others. Sustainable land management emerges as an over-arching topic, but there are disparate views on the priority given to the other areas. Some regional priorities emerge, for example Focal Points for countries in the Middle East and the African countries bordering the Sahara give a high priority to desertification and food security. The majority of respondents consider that desertification and land degradation are closely related topics and should be considered together. The following bullets indicate alternative priorities around which the indicated number of respondents broadly agree:

- **Priority should be given to sustainable land management (SLM) / SLM, desertification, land degradation should be considered as aspects of the same problem (supported by 16 responses):**
 - *“Land degradation and sustainable land management. Arresting the former and implementing the latter, means that effectively desertification will be controlled and food security ensured”*
- **Priority should be given to linkages between the five areas (supported by 11 responses):**
 - *“The main priority questions are the interactions between the drivers and impacts.”*
- **Priority should be given to desertification and land degradation (supported by 9 responses):**
 - *“Desertification is the most important part [...] my country is being affected by desertification and all its negative effects: land degradation food security...”*
- **Priority should be given to GHG fluxes (supported by 8 responses):**
 - *“GHG fluxes has the highest priority, because it is directly related to climate change and is strongly affected by the other four areas”*
- **Priority should be given to food security (supported by 8 responses):**
 - *“When and how will food security for human beings be threatened?”*



Figure 1: Wordcloud based on respondents answers to question 2

Question 3: *Are there some questions within the five areas that it is essential to address in the Special Report rather than the Sixth Assessment Report? Why is this the case?*

The responses to this question elaborated on many relevant issues also identified in question 2, but few respondents presented an argument as to why some topics should be examined in AR6 and others in SR2. It was noted that SR2 will be published prior to the AR6 assessment reports. Of the responses which do consider the balance between the two reports the consensus view was that the unique added value of SR2 is the opportunity to focus on the inter-linkages between the five areas, as well as with the broader social, economic and policy environment. The following quotes illustrate the strength of opinion behind this view:

Unique features of SR2:

- *“SR2 should focus on the identification and analysis of linkages and synergies between mitigation and adaptation.”*
- *“Priority should be given to questions that best can be treated in an interdisciplinary way across the five areas. Because such issues will be difficult to cover in the AR6 WG-reports.”*
- *“Questions on food, bioenergy, land use and greenhouse gas emissions are interwoven. In a special report it is possible to highlight and make a better full picture of the related issues, challenges and possibilities.”*
- *“The SR will allow for the analysis of the synergies and trade-offs between adaptation with mitigation co-benefits and mitigation with respect to desertification”*
- *“AR5 makes clear that negative emissions technologies and terrestrial carbon sinks are essential. Policy makers are in need of more information on what this means in concrete terms, what the challenges are and what the potential policies are to address these. These questions should be addressed in the Special Report and where issues remain open there should be a clear identification of further important questions that science needs to address in AR6.”*

Unique features of AR6:

- *“AR6 should be concentrated more on physical, biogeochemical and ecological fundamentals of structure and processes of natural systems.”*
- *“ The [working group] structure of AR6 is too rigid to examine inter-linkages”*
- *“AR6 is usually structured into 3 WGs where adaptation and mitigation issues are well addressed but separately, thus lacking the important element of trade off and synergies.”*

Question 4: *Please highlight any gaps in previous IPCC assessments or emerging knowledge since the IPCC AR5 (including scientific, technological, policy) that you consider highly relevant for this Special Report.*

Gaps identified ranged from the very specific to general questions about how to best inform policy makers and integrate knowledge from different fields. Examples of gaps and emerging knowledge that might be examined in SR2 include:

- how best to advise policy makers on viable solutions;
- examples of policy instruments that realise greenhouse gas abatement in the land sector (and the link to nationally determined contributions (NDCs));
- human migration and security as a result of climate change and environmental-related drivers (water scarcity, land degradation, etc.);

- links between climate and the Agenda for Sustainable development;
- how to capture and act upon local and indigenous knowledge;
- importance of social capital in transformational scenarios, how to better involve the social sciences;
- improvements in remote sensing;
- tipping points and non-linear processes; and,
- mitigation co-benefits, of adaptation measures relating to desertification.

Question 5: *What should be the distinctive features of this report that are not captured by other reports planned or under preparation by other international organizations?*

Respondents consider SR2 provides the opportunity to integrate knowledge across traditional boundaries to provide an interdisciplinary perspective on how climate change relates to anthropogenic land use change and sustainable development goals. The questionnaire responses also demonstrate the aspiration that the report will be of practical value informing how governments prioritise mitigation options and underpinning the implementation of the Paris Agreement.

Example quotes that illustrate this high level of ambition include the following:

- *[SR2 should provide] “practical and collaborative approaches to achieve SDG target in 2030, using Sustainable Land Management”.*
- *“A scientific basis for decision-making with regard to achieving the balance of emissions and removals under the Paris Agreement”.*
- *“There is a real need for more social and economic science input to such reports” [to achieve a policy impact].*
- *“International organizations including the UNCCD, UNEP, FAO, UNFCCC, IFAD, GEF, etc. have produced reports addressing the subject of desertification This Special Report should go beyond the scope of work being done by these organizations and others elsewhere and address in a very comprehensive manners issues such as climate change and desertification, environmental and socio-economic impacts of desertification, climate scenarios and modelling related to the process of desertification etc.”*

A list relevant reports being produced by other international organisations is provided in Appendix 3.

Question 6: *Please comment on the policy relevance of this Special Report for your region*

Respondents broadly anticipate that the report would support national and regional policy making and play a role in educating policy makers. Specific interactions with policy were more limited, but include the following aspects:

- *“SR2 would be extremely useful [to help] policy makers understand the complexity of the interactions of drivers and impacts.”*
- *“Regional information and/or case studies on such settlements would strongly increase the policy relevance of the report in the region.”*
- *“This report come out in a new global framework constituted by Agenda 2030 and SDG, where the central role of the scientific knowledge for policy making process is underlined.”*
- *“Governance can benefit from a better and fuller picture of sustainability options.”*

- *“The ASEAN leaders have expressed their concern and commitment for ASEAN to play a proactive role in addressing climate change.”*

Question 7: *Should this Special Report be organised according to the five areas that will be covered (desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems)? If not, how would you propose organising the report so that the five areas are covered?*

Respondents identified many ways in which the report could be structured. The options that received the greatest support are as follows:

- **Adopt a structure that emphasises the inter-linkages between the different report areas (supported by ~29% of respondents).** Many alternatives were suggested for how the report could be re-structured to reflect the interconnected nature of the areas, including the following examples:
 - *“We need to see and show the links between the subjects [...] inquiry into cause-effects relations among the five areas seems necessary.”*
 - *“The five areas are strictly interconnected and mutually dependent. In particular, desertification can be considered as a component of land degradation, while sustainable land management is a mitigation action to reverse or limit land degradation processes.”*
 - *“There are concerns that [a chapter for each theme] will not reflect the system nature and complex challenge of degradation processes in a changing climate”.*
- **One chapter for each theme (supported by ~25% of respondents).** The principal argument in favour of this structure includes simplicity and clarity, as illustrated by the following quotes:
 - *“The organization according to the five proposed areas is the most convenient, so we do not consider it necessary to propose another type of structure.”*
 - *“This Special Report should be consisted of separate reports for the five areas”.*
 - *“This Special Report attempts to cover a very broad range of topics. Organising the Report by the five areas will make it possible for readers to easily find the material relevant to them”.*
- **One chapter for each theme plus cross cutting chapters (supported by ~18% of respondents).** This option provides a compromise between the clarity of directly tackling each theme and addressing the inter-linkages:
 - *“Yes, the report should cover the five areas in different chapters [but] another section should be added on synergies, linkages, etc., to have a better global picture on how to act on these areas from a holistic perspective.”*
 - *“It is not a bad choice if the Special Report is organised according to the five areas. But, beyond that format, we need to see and show the links between the subjects. Then there is a risk of losing those links if the five areas are approached in an isolated way.”*
- **Other alternative structures.** Suggestions included differentiating between drivers, impacts and responses, focussing on one area to which others are subordinate, or merging areas. For example:

- *“Structure according to: “Drivers” (to include desertification and land degradation), “Impacts” and “Solutions” or “Problems, Solutions, Interactions”*
- *“One idea might be to have a report structure more related to impacts and adaptation on one side and fluxes, scenarios and mitigation on the other side.”*
- *“Greenhouse gas fluxes cuts across all other areas so could be better placed as a defined sub-section within each area.”*
- *“Merge desertification, other aspects of land degradation and sustainable land management into one chapter since they are relating to same topic and concept”.*
- *“It would be easier to read a report separated by regional climatic zones addressing the above [areas] in the order of regional importance with specific calls for short term, medium term and long term action plan.”*

2 Insights from consultations with key international stakeholder bodies

The Scientific Steering Committee consulted with three international stakeholder bodies (UNCCD, FAO, IPBES) that are undertaking complementary assessments to the SR2 report. Each consultation was carried out through a WebEx conference of up to two hours involving representatives of the international bodies, scientists whom they had nominated, members of the Scientific Steering Committee for the Scoping Meeting and members of the Working Group (WG) Technical Support Units (TSUs). Each consultation followed the format of the stakeholder questionnaire previously circulated to focal points and observer organisations, and provided an opportunity to explore the questions in more depth.

The three summaries presented below were circulated to meeting participants and where comments were received these have been taken into account. A list of participants in the consultation meetings is provided in Appendix 2.

2.1 Summary of consultation with the United Nations Convention to Combat Desertification (UNCCD), 13 January 2017

Question 2: *What are the highest priority questions, in the context of climate change that this report should address within the five areas that will be covered: desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems?*

Participants identified three priority questions:

- What are the key inter-linkages (interactions and feedbacks) between climate change and land degradation?
- Will existing sustainable land management (SLM) practices still be effective in the face of climate change?
- How should SLM practices be designed and implemented to be effective under future climate scenarios?
- What are the impacts of climate change and land management on food security and human well-being?

In discussing the treatment of desertification, UNCCD participants noted that under climate change the extent and location drylands could change in the future. A global perspective on land degradation, which goes beyond drylands, is needed.

Question 3: *Are there some questions within the five areas that it is essential to address in the Special Report rather than the Sixth Assessment Report? Why is this the case?*

The land-water-food-climate nexus should be central to the SR. Sustainable land management should be a cross cutting theme. The report should focus on synergies between good land management and adaptation, and should address mitigation and adaptation together. Specifically, the report could:

- focus on the feedback loops between climate change and land management practices; and,
- go deeper into the role of soil organic carbon (SOC) in contributing to climate action and management of land degradation, including the associated benefits of building SOC through SLM for resilience to drought? (The links to food security, sustainable livelihoods and therefore SDGs might also be evaluated?)

The report could provide a coherent assessment of the central role of land management in simultaneously addressing climate change mitigation, adaptation, and managing land degradation.

Meeting the Land Degradation Neutrality (LDN) target (SDG #15.3) through integrated land use planning, provides an opportunity to plan interventions that jointly address climate change and land degradation objectives. Planning for LDN is already underway – this guidance needs to be provided as soon as possible and could provide the scientific basis on which policymakers could construct their land degradation neutrality policies.

Question 4: *Please highlight any gaps in previous IPCC assessments or emerging knowledge since the IPCC AR5 (including scientific, technological, policy) that you consider highly relevant for this Special Report.*

The SR should examine sustainable land management options under different climate scenarios. Treatment of the feedback loops between land degradation, land management and climate change was missing in AR5. There is new scientific knowledge on how land management could contribute to combatting desertification and land degradation, climate change adaptation and mitigation.

Question 5: *What should be the distinctive features of this report that are not captured by other reports planned or under preparation by other international organizations?*

An integrative and trans-disciplinary approach (covering plant science, water management, social and economic science) is needed in this SR. Land degradation neutrality concepts could connect the dots between food security, climate action, SDGs and water management.

UNCCD regards the Paris Agreement as very important and actively prepares for the UNFCCC COPs to ensure that land is part of the solution. Many NDCs include action on agriculture, forests and the land sector. UNCCD activities are also in line with the Marrakech Action Plan for food security and land degradation.

Question 6: *Please comment on the policy relevance of this Special Report for your region*

The SR could provide the scientific basis on which to initiate policies that are aligned with the SDGs. The UNCCD participants believed that there would be natural places where regional case studies become relevant in the report. The impacts and drivers for land degradation and desertification are different across regions but it is important to have a global perspective in order to stress the global nature of the problem which affects everyone. The treatment of regional aspects should be addressed at the scoping meeting.

Question 7: *Should this Special Report be organised according to the five areas that will be covered (desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems)? If not, how would you propose organising the report so that the five areas are covered?*

The benefit of the SR will only be realised if the five areas are discussed in an integrated fashion. The report should be structured in a way that would emphasise interconnections between areas. The suggestion outline would be:

- *drivers* of land use degradation and climate change;
- *impacts* of these dynamics, including on food security and GHG emissions;
- *opportunities* through land and water management to address climate change and land degradation; and,
- *policy options* to encourage sustainable land management and restoration of degraded land, including integrated land use planning.

If the structure instead follows the five areas, well elaborated introductory and concluding chapters would be necessary to stress how the topics within each of these areas relate and interact.

Question 8: *Do you have any other comments?*

No other comments

2.2 Summary of consultation with the Food and Agricultural Organization of the United Nations (FAO), 18 January 2017

Question 2: *What are the highest priority questions, in the context of climate change that this report should address within the five areas that will be covered: desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.*

FAO participants saw food security as the main driver for the other areas of the report. Food security differs in that it is an outcome of the other areas. It is important to emphasise the inter-linkages between food security and the four other areas. Food security should be considered across four dimensions: *availability, accessibility, nutrition and stability*. It is important to focus not only on the link between land and food security, but also the links between land, nutrition and sustainability of access to food. Specifically, the report should consider:

- the role of institutions, markets, and policies;
- the pathways through which food security, in its four dimensions, is impacted by climate change, and the means to reduce these impacts;
- trade-offs and synergies between food security, the sustainable development goals, and the implementation of the NDCs; and,
- the links between climate change mitigation, adaptation and food security.

Question 3: *Are there some questions within the five areas that it is essential to address in the Special Report rather than the Sixth Assessment Report? Why is this the case?*

The SR should highlight the policy dimension of food security. It can help define sustainable development indicators as a guide for policymakers. One specific advantage of the SR2 is to focus on the interrelationships between biophysical issues, food availability and changes to climate change. Another is to focus on interrelationships between impacts, adaptation, and mitigation as well as interdependencies across regions. Specific questions include:

- What are the incentives that can drive changes in behaviour?
- How to incentivise sustainable land management?
- What are the implications of land degradation on food security?

Question 4: *Please highlight any gaps in previous IPCC assessments or emerging knowledge since the IPCC AR5 (including scientific, technological, policy) that you consider highly relevant for this Special Report.*

The treatment of food was weak in AR5. The focus was limited to food production, but food security covers the whole food system including the supply chain and consumption. In addition, the issue of soil organic carbon was not addressed solidly in the AR5. Soil organic carbon also relates to inventories and reporting. New studies are emerging that could cover:

- the impacts of climate change on crops beyond cereals (e.g. trees, vegetables);
- the direct and indirect impacts of climate change on ecosystems and socio-economic systems including, societal stability and gender equality and thus on food security and nutrition; and,
- concrete impacts on specific systems in addition to modelling approaches.

Question 5: *What should be the distinctive features of this report that are not captured by other reports planned or under preparation by other international organizations?*

So far there is no report that links food security to NDC aspects. The interface between socioeconomic and biophysical systems needs to be explicit and strong.

Question 6: *Please comment on the policy relevance of this Special Report for your region*

The report should highlight interdependencies across regions. There would be some value in focusing on areas:

- with large surface area (e.g. central Asia);
- that are experiencing multiple issues addressed by the SR (e.g. Horn of Africa); and
- regions of deforestation and forestry changes (e.g. Latin America and central Africa).

Question 7: *Should this Special Report be organised according to the five areas that will be covered (desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems)? If not, how would you propose organising the report so that the five areas are covered.*

FAO suggests keeping the five areas but, noting the definition of desertification from the UNCCD, desertification and land degradation should be covered in one section, as separating the topics risks repetition. Three ‘packages’ are suggested:

- land degradation, with desertification as a specific case of land degradation, followed by land management;
- GHG fluxes in terrestrial ecosystems, referencing Section 1; and
- food security, drawing on sections 1 and 2, including socioeconomic factors.

Question 8: *Do you have any other comments?*

The report should cover two elements of land management: crop management to have sustainable use of soil; and what the land is used for. Water is an essential part of sustainable land management.

Agriculture should be treated explicitly under the sustainable land management section of the report. Forests, and their link to land use change and competing land uses for food and energy production, should also be considered. The timing of afforestation, and where crops should be grown to produce the greatest benefit, should also be considered.

The SR should link to the Paris Agreement, and the trade-offs in NDCs between different land uses.

2.3 Summary of consultation with the Intergovernmental Platform on Biodiversity and Ecosystems (IPBES), 19 January 2017

Question 2: *What are the highest priority questions, in the context of climate change that this report should address within the five areas that will be covered: desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.*

There is a need to distinguish between human activities that drive land degradation and climate change drivers. Participants firmly believed that this SR should focus on the climate change aspects. The five areas overlap considerably. IPBES has subsumed desertification, degradation and land management within land degradation.

There were further views expressed on the scope of the report. An assessment of food security is broad enough for a full report in itself; it was suggested the report could look at marginal food security impacts and the interaction between climate change and land degradation. There seems no need for an SR covering GHG fluxes as this is covered by other reports already, with no substantial new literature to look at. It was suggested that the report could be narrowed to focus on changes in GHG as a result of climate change and land degradation.

Question 3: *Are there some questions within the five areas that it is essential to address in the Special Report rather than the Sixth Assessment Report? Why is this the case?*

The SR should focus on the interactive relationship between land and climate change.

Question 4: *Please highlight any gaps in previous IPCC assessments or emerging knowledge since the IPCC AR5 (including scientific, technological, policy) that you consider highly relevant for this Special Report.*

There is emerging evidence that, under many circumstances, restorative actions such as afforestation can have negative impacts on the climate and other outcomes such as biodiversity. Looking at land degradation without looking at forestry would not make sense.

There was a discussion about how to treat topics that could form part of more than one SR, or AR6 itself. This was prompted by a discussion of land-atmosphere interactions such as for tundra and in the permafrost zone. One view was expressed that there is no need to partition topics between reports - topics could be shared across reports ("cut and paste") to avoid duplication of efforts

Question 5: *What should be the distinctive features of this report that are not captured by other reports planned or under preparation by other international organizations?*

The distinctive feature is that IPCC should consider the climate change aspects. UNCCD is addressing the extent to which desertification is driven by human activity, and to what extent climate change is the dominating factor. This report should have an impact for UNCCD.

Question 6: *Please comment on the policy relevance of this Special Report for your region*

The SR needs to focus on climate change. IPBES's regional assessments include the other drivers of desertification and land degradation.

Africa is one of the key drivers behind this report. The SR could also provide the EU with a solid scientific basis to assess which countries are affected, and what the effects will be.

It was noted that the topic is highly political: we need to get more scientific evidence on desertification and land degradation in order to build policies and actions.

Question 7: *Should this Special Report be organised according to the five areas that will be covered (desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems)? If not, how would you propose organising the report so that the five areas are covered?*

It is necessary to take an integrated approach, and not have a report structured around the five separate areas. The following outline was proposed:

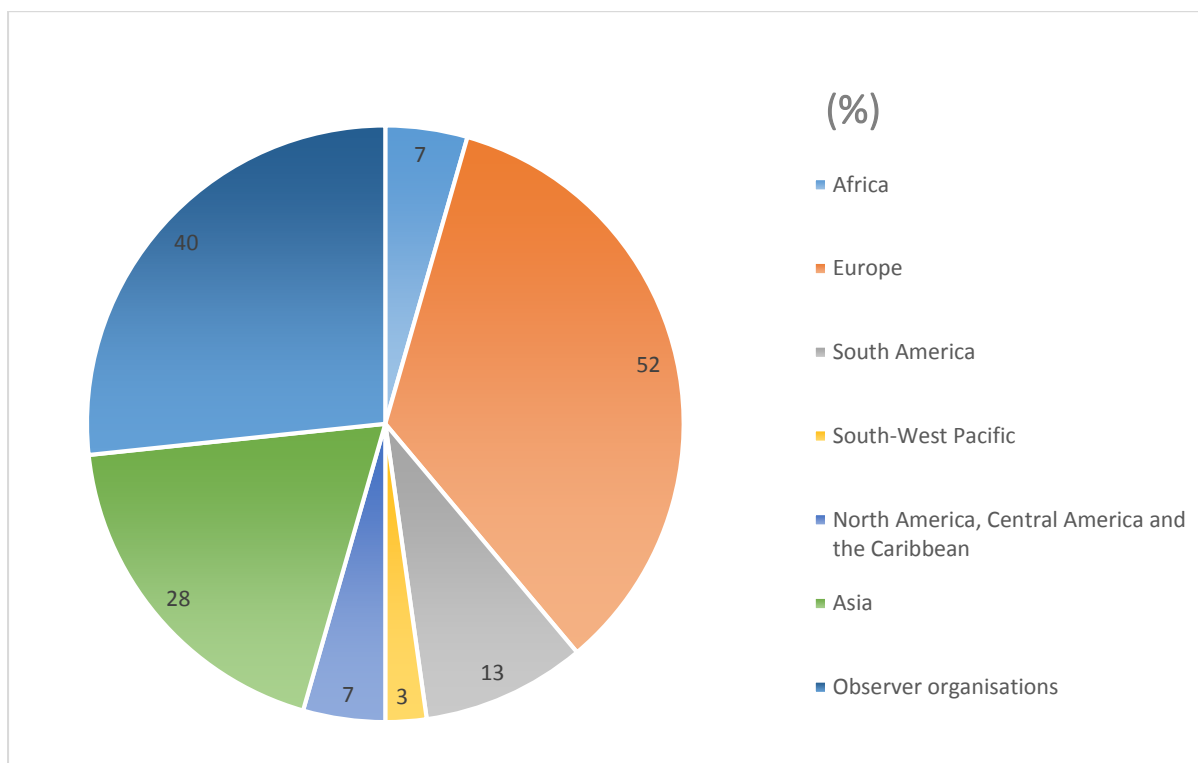
- climate change and variability as a driver of land degradation (including sustainable land management and desertification);
- land degradation as a driver of climate change, physical and GHG processes, changes in capacity; and,
- the dynamics of the coupled system, looking at positive feedbacks, tipping points etc.

Food security is a cross-cutting topic, addressed in all three sections of the report. Participants cautioned against turning the SR into an assessment of food security, as it is a huge topic and cannot be effectively covered in the SR. It is important to stress that different countries and regions have different perspectives and priorities

Question 8: *Do you have any other comments?*

No other comments

Appendix 1: Statistical overview of questionnaire respondents



Appendix 2: Participation in consultation meetings

UNCCD	FAO	IPBES
<p>Youba Sokona (Chair), IPCC Vice-chair</p> <p>Sasha Alexander, UNCCD Victor Castillo, UNCCD Jean-Luc Chotte, IRD France Annette Cowie, NSW DPI Australia Axel Hebel, UNCCD Joris de Vente, CSIC</p> <p>Sarah Connors, WGI TSU Renée van Diemen, WG III TSU Jan Fuglestedt, WG I Vice-chair Phil O'Brien, WGIII TSU Jim Skea, WG III Co-chair Raphael Slade, WG III TSU</p>	<p>Youba Sokona (Chair), IPCC Vice-chair</p> <p>Manuel Barange, FAO Lorenzo Bellu, FAO Martial Bernoux, FAO Aziz Elbehri, FAO Martin Frick, FAO Alexandre Meybeck, FAO Anne Mottet, FAO Ramasamy Selvaraju, FAO Ronald Vargas, FAO</p> <p>Sarah Connors, WGI TSU Renée van Diemen, WG III TSU Jan Fuglestedt, WG I Vice-chair Phil O'Brien, WGIII TSU Juliette Scull, WGIII TSU PR Shukla, WG III Co-chair Jim Skea, WG III Co-chair Raphael Slade, WG III TSU</p>	<p>Raphael Slade (Chair), WG III TSU</p> <p>Anne Larigauderie, IPBES Luca Montanarella, EC Bob Scholes, University of the Witwatersrand</p> <p>Sarah Connors, WGI TSU Renée van Diemen, WG III TSU Jan Fuglestedt, WG I Vice-chair Phil O'Brien, WGIII TSU Juliette Scull, WGIII TSU Jim Skea, WG III Co-chair</p>

Appendix 3: Recent and forthcoming publications by international bodies

Title	Organisation	Release Date
Status of the world's soil resources	FAO / ITPS	2015
Voluntary Guidelines for Sustainable Soil Management	FAO	2016
World Atlas of Desertification Mapping Land Degradation and Sustainable Land Management Opportunities"	JRC	2017
The State of Food and Agriculture 2017 "Overview of the current global agriculture situation, as well as more in-depth coverage of a topical theme"	FAO	2017
The State of Food Insecurity in the World "Raises awareness about global hunger and malnutrition, discusses their causes, and monitors progress towards hunger reduction targets"	FAO	2017
Scientific Conceptual Framework for Land Degradation Neutrality (LDN) UNCCD initiative intended to provide a scientifically-sound basis for understanding, implementing and monitoring LDN.	UNCCD	April 2017
Global Environmental Outlook -The sixth edition of UNEP's flagship GEO assessment. Will "create a comprehensive picture of the environmental factors contributing to human well-being, accompanied by an analysis of policies leading to greater attainment of global environmental objectives and goals"	UNEP	Mid-2017
Agricultural Outlook "Annual publication presenting projections and related market analysis for some fifteen agricultural products over a ten year horizon"	OECD-FAO	Mid-2017

Title	Organisation	Release Date
Global Land Outlook Will “demonstrate the central importance of land quality to human well-being, assesses current trends in land conversion, degradation and loss, identifies the driving factors and analyzes the impacts, provides scenarios for future challenges and opportunities, and presents a new and transformative vision for land management policy, planning and practice at global and national scales.	UNCCD	September 2017
World Energy Outlook “Trends in energy demand and supply and what they mean for energy security, environmental protection and economic development”	IEA	Mid-2017
SLM contribution to successful land based climate change adaptation and mitigation activities Report on the potential of SLM practices to create synergies between addressing desertification, land degradation and drought and climate change mitigation and adaptation	UNCCD	Mid-2017
Regional Assessments on Biodiversity and Ecosystem Services Performed in four regions: Africa, Asia and the Pacific, the Americas, Europe and Central Asia; covers terrestrial and coastal zone ecosystems	IPBES	2018
State of the World’s Forests “Covers the status of forests, policy and institutional developments and other key issues concerning the forest sector”	FAO	2018
Agricultural Outlook “Annual publication presenting projections and related market analysis for some fifteen agricultural products over a ten year horizon”	OECD-FAO	Mid-2018
Thematic Assessment on Land Degradation and Restoration “Global status of and trends in land degradation, by region and land cover type; the effect of degradation on biodiversity values, ecosystem services and human well-being; and the state of knowledge, by region and land cover type, of ecosystem restoration extent and options”	IPBES	2018
Global Assessment on Biodiversity and Ecosystem Services “Knowledge on biodiversity and ecosystem services and their interlinkages at the global level”	IPBES	2019



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