

IPCC SRCL First Order Draft Review Comments and Responses - Chapter 1

Comment No	From Page	From Line	To Page	To Line	Comment	Response
24228	0	0	0	0	The key issue is navigating the tradeoffs between environmental, economic, social and cultural demands on land in order to ensure human well-being, food security and healthy ecosystems simultaneously. This must involve doing the right thing in the right place at the right scale for land use and land management decisions because land and land-based natural capital is limited which means the land use and management decisions in one location in a given land type has ramifications for all land of that land type. It also means that planning actions to avoid or reduce the risk of new degradation (losses) as well as those designed to reverse past degradation (restoration/rehabilitation) need to be planning together. Moreover, the nexus of climate and land must involve more concerted focus on preventing the loss of carbon from land and drawing down carbon from the atmosphere into vegetation, and even more importantly, the soil. This means that a number of global efforts need to be pursued in a more synergistic way: (1) bridging the yield gap, (2) restoring degraded/desertified lands and achieving negative land degradation, (3) enhancing the terrestrial carbon stocks, (4) improving the use efficiency of inputs and producing more from less, and (5) encouraging sensible consumption. [Barron Joseph Orr, Germany]	Noted no action needed.
24232	0	0	0	0	General comment on Chapter 1: Be sure the discussion is balanced between land-based climate change mitigation (which seems to be larger in this draft) and land-based climate change adaptation. [Barron Joseph Orr, Germany]	Comment noted section totally updated and revised. section on adaptation added
24234	0	0	0	0	General comment on Chapter 1: While biodiversity is critical, considering this report is about land and climate, the larger emphasis should be towards soil and water issues. [Barron Joseph Orr, Germany]	Rejected . We try in ch1 to highlight some of the most critical aspects; due to word-limits we have to be selective (rather than comprehensive); see chapter 3-6 on soil and water; nonetheless, balance msut be ensured also in chapter 1
24308	0	0	0	0	General comment for Chapter 2: A key aspect of this chapter will be the contribution of appropriate government/management responses to land degradation to climate change mitigation and adaption such as sustainable land management (SLM). In 2017, the UNCCD Science-Policy Interface conducted an assessment which addressed this directly. It summarizes a lot of information in a systematic way and is an excellent source for key references on this topic. The report itself went through a rigorous peer-review. Here is the citation: M.J. Sanz, J. de Vente, J.-L. Chotte, M. Bernoux, G. Kust, I. Ruiz, M. Almagro, J.-A. Alloza, R. Vallejo, V. Castillo, A. Hebel, and M. Akhtar-Schuster. 2017. Sustainable Land Management contribution to successful land-based climate change adaptation and mitigation. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany (https://www.unccd.int/sites/default/files/documents/2017-09/UNCCD_Report_SLM_web_v2.pdf). [Barron Joseph Orr, Germany]	References useful some or all added.
8694	0	0	0	0	add more details on the contribution of this report in relation to reports by IPCC and other relevant institutions [Delphine Deryng, Germany]	Taken into account.
8696	0	0	0	0	Definition of key concepts is missing: vulnerability assessment, adaptation limits, residual risks [Delphine Deryng, Germany]	Rejected . Vulnerability, adaptation limits and risk in glossary; more details on risk in chapter 7

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20762	0	0	0	0	I feel some general points about complementarities between land- and coastal/ocean-related climate actions would be highly beneficial to this general introduction. It's not because this report is focusing on land that the rest of the planet should be forgotten about in the first chapter, which is meant to set the stage. I think it would make it a stronger chapter to add this complementarity between land and coastal/ocean actions. [Emmanuelle Quillerou, France]	Rejected - beyond the mandate of the report. We feel that because there is also the special report on oceans currently being written, in combination with the generally limited page restrictions we have in chapter 1 that this might not be crucial to address
20782	0	0	0	0	This chapter (and its summary) yet again emphasises the problem and not the fact that there ARE solutions we can adopt for effective climate action. I feel this more optimistic perspective is missing at the moment. We need to feel from the start that we can do something about the problem, it is not ineluctable, we are not doomed. We do not have all the answers yet but we certainly have some already. [Emmanuelle Quillerou, France]	Accepted - text revised. we try in the revised version to emphasise solution options in more places (even though our task is also to state the challenges)
21232	0	0	0	0	Instead of using adjectives providing fact an dfigures will make the issue more effective [Erhan Akca, Turkey]	Comment noted section totally updated and revised.
21238	0	0	0	0	Table 1.1. As % is provided in colum heading no need to provide in lines [Erhan Akca, Turkey]	Noted, copyedit to be completed prior to publication.
25600	0	0	0	0	There is an overemphasis on uncertainty, an issue of importance but no unique to land-climate linkages. Ecological feedbacks are minimized, When thinking of landscapes as socio-ecological systems, ecological resilience is a must. There is a lof of literature on that. The point will be to emphasize that land resources are dynamic, resilient. References to forest transition theory would be useful as a way to provide theories that link social and ecological systems and are linked to land transformation. [Laura Schneider, United States of America]	Rejected. We are specifically tasked to address uncertainty in the chapter (however, have reduced and revised the section). The section on socio-ecological thinking has also been revised.
7066	0	0	0	0	General comment on chapter 1: Is there a reason why biodiversity is singled quite frequently in this chapter? It would seem logical if the issue of soil and water issues are given visibility in order to maintain a balanced view about the complexity of land degradation / desertification. [Mariam Akhtar-Schuster, Germany]	Accepted balance revised.
14246	0	0	0	0	The key issue is "how to save land for nature: by: (1) bridging the yield gap, (2) restoring degraded/desertified lands and achieving negative land degradation, (3) enhancing the terrestrial carbon stocks (soil, vegetation, wetlands), (4) improving the use efficiency of inputs and producing more from less, and (5) encouraging sensible consumption. To achieve this, we need credible statistics on: (1) land use and land use change: historic and future, (2) the extent, severity and rate of land degradation at regional, continental and global scale and by different processes, (3) critical limits of key soil properties in relation to land degradation for diverse land uses, and (4) the basic concepts of best management practices (BMPs) which reverse the land degradation trends. The specific comments below are a collation of observations by the members of UNCCD-SPI and must be incorporated in the revised report. [Rattan Lal, United States of America]	Noted no action needed.
14248	0	0	0	0	The authors should be commended on a strong first draft of Chapter 1 of the Special Report. [Rattan Lal, United States of America]	Thank you for the positive comment.

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14250	0	0	0	0	General comment: Is there a reason why biodiversity is singled quite frequently in this chapter? It would seem logical if soil and water issues are given visibility in order to maintain a balanced view about the complexity of land degradation / desertification. [Rattan Lal, United States of America]	Rejected. We do not think that biodiversity is singled out too much, compared to other aspects; also soil and water related issues are treated in depth across the report in the individual chapters (esp. Chapters 3,4,6)
14252	0	0	0	0	General comment: there seems to be a slight imbalance between discussions on land-based climate change mitigation and land-based climate change adaptation, rather favouring discussions on mitigation. Please check, whether discussions could be more balanced. [Rattan Lal, United States of America]	Accepted balance revised. section on adaptation added
20172	0	0	0	0	A computerized framework of land degradation, mitigation, adaptation strategies under climate change may be developed to guide the stakeholders across different temporal and spatial scales. [Sabit Erşahin, Turkey]	Accepted - text revised. We were a bit unsure here what was meant by computerised framework, but the draft Figure under development should address this comment.
16078	0	0			Goal and structure of chapter 1. The goal of this chapter, as it is now, is unclear. There is now a miscellanea of facts, (e.g. 1.3.1 Status of global land use p 9 line 22 and subsequent), projections (p11, 1.3.1.3 Future trends) issues (e.g. 1.3.2 Goals and structure of chapter 1. The goal of this chapter, as it is now, is unclear and the structure requires significant revision. The chapter is now a miscellanea of facts (e.g. 1.3.1 Status of global land use p 9 line 22 and subsequent), projections (p11, 1.3.1.3 Future trends), issues (e.g. 1.3.2 competition for land, 1.3.3.2 land degradation etc.) and mitigation and adaptation policies and strategies (section 1.3.4) solutions. It is very difficult to read because there is no apparent design behind, and it does not seem to fit the purpose that an introductory chapter should have. Various options may exist to rescue chapter 1: for instance, structure the chapter along the following lines: a) concisely state the issue at stake: the risks that climate change may impinge on future availability of land-based services while current and future land use (overuse) may further exacerbate climate change with compounding negative effects on food systems and food security; In doing that, clearly state that the whole report builds on past and current observations but projects trends, behaviours and possible strategic and policy options in the future b) set up the conceptual framework of the systemic links among climate change, land and food security; c) outline how the report is going to highlight and disentangle the main linkages; and d) outline how strategic options to address the issues at stake will be analysed. A short overview of the different chapters, if not introduced before, could complement and close chapter 1. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.

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16080	0	0			<p>Systemic linkages among climate change, land and food security. Chapter 1 should help the reader to understand the systemic linkages among climate change, land use, land degradation-desertification, sustainable land management, soil-related GHG fluxes, food security and policy responses. This should pave the way of the reader through the whole report. Indeed chapter 1 should create the conceptual framework that hosts all the other chapters (from 2 to 7) of the report. Unfortunately, only one meagre paragraph (section 1.3.5: Systemic links between production and consumption) is devoted to the “systemic linkages” underlying the whole report. It is suggested that this “systemic” conceptual framework be thoroughly developed in a substantive section of chapter 1. The figure in FAO, 2018 The future of food and agriculture, alternative pathways to 2050, box 8 Chapter 3 and /or section 4.13 on land requirements. For info re this forthcoming report, please contact Lorenzo Giovanni Bellù, FAO global Perspectives Studies, at lorenzogiovanni.bellu@fao.org. These "systemic linkages" to be considered in building the conceptual framework of this Special Report have also been sketched, presented and discussed at the SR3 scoping meeting in Dublin, February 2017. This framework should cover the following aspects: (continued) [Lorenzo Giovanni Bellù, Italy]</p>	<p>Accepted chapter restructured. We hope we make these aspects now clearer, by restructuring, revising text and conceptual diagramme.</p>

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16082	0	0			<p>(Continued) 1) Future scenarios for climate change and socio-economic development patterns.</p> <p>Climate change, land use and food systems in general may evolve in different ways depending on the economic and social development patterns which will influence the demand of land-based goods and services, energy uses, GHG emissions and related climate change, technologies to produce land-based products and services. Reference has to be made here to the possible combinations of RCPs and SSPs, the typical references for IPCC work referring to future scenarios (note that RCPs/SSP are only incidentally and very briefly referred to in section 1.5.1.4). Reference to such futures should frame the analysis of the various interlinkages.</p> <p>2) Demand of land-based goods and services. The analysis of the demand of land-based goods and services (food feed, bio-energy, fibers, timber and other agricultural goods, including environmental services, should be read both from an historical perspective (based on historical data) and from a future perspective, contingent upon the future scenarios mentioned above. To this regard, reference has to be made to the various projections existing re evolution of food demand (e.g. FAO 2017, The future of food and agriculture – Trends and challenges. Rome, p.46)), bioenergy demand, etc. Reference should also be made to FAO (forthcoming). The future of food and agriculture – Alternative pathways to 2050, for the projection of food demand under alternative future scenarios.</p> <p>3) Use and management of land (and water) and supply of land-based goods and services. To satisfy the demand of land-based goods and services land (and water) is used and will be used in the future. Chapter 1 could contain a review of the past and current modalities of land use and future prospects. For future prospects, reference has to be made again to alternative scenarios, which depict alternative land uses, land management, land degradation and desertification as well as soil-related GHG emission patterns. This implies outlining prevailing technologies to produce land-based products and services and prospecting their future evolution, under alternative scenarios. In this way, chapter 1 should pave the way of the reader for in depth technical aspects and analytical details of interrelations between land use and climate change (chapter 2), desertification (chapter 3) and land degradation (chapter 4). (Continued) [Lorenzo Giovanni Bellù, Italy]</p>	Taken into account - combined with other comment.
16084	0	0			<p>(Continued) 4) Welfare (food security and nutrition) outcomes resulting from demand and supply of land-based goods and services. The use and production of land-based goods and services impacts on welfare of people, including their food security and nutrition, through various channels, such as:</p> <ul style="list-style-type: none"> a. Food availability, measurable through food-security indicators (e.g. availability of food at country/community level) b. Access to food, measurable through indicators of purchasing power of households reflected by income and food price levels; c. Nutrition (diversity of diets) d. Income generation in land-based production processes (e.g. agriculture, forestry, landscape management) e. Availability of other land-based goods and services <p>(see FAO, Forthcoming: The future of food and agriculture: Alternative pathways to 2050, box 2 Food security and nutrition outcomes: the analytical framework). Chapter 1 should refer to studies projecting food security and nutrition and pave the way to more detailed analyses in chapter 5. (Continued) [Lorenzo Giovanni Bellù, Italy]</p>	Taken into account - combined with other comment.

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16086	0	0			(Continued) 5) Strategic options and policy responses. Chapter 1 should highlight that the current practices in land-use as well as the prevailing GHG emission pattern may jeopardize the sustainability of land-based ecosystems and land-based human activities (including food and agricultural systems), but strategic options and policy responses exist to put those systems back on sustainability patterns, thus introducing chapters 6 and 7 of the report. Strategic options and policy responses should be presented here as instruments to move demand, technologies (natural resource use) and supply away from unsustainable future patterns (e.g. scenarios based on SSPs 3, 4 and 5 and RCPs 4.5, 6.0 or 8.5) towards more sustainable ones (e.g. scenarios based on SSP1 and RCPs 2.6, or similar). [Lorenzo Giovanni Bellù, Italy]	Taken into account - combined with other comment.
16106	0	0			HLPE and CFS. Sub-section 1.3.3.4. "Food security (definition, magnitude)" Please, note that the High Level Panel of Experts on Food Security and Nutrition (HLPE) was established in 2010 as the science-policy interface of the UN Committee on World Food Security (CFS) http://www.fao.org/cfs/cfs-hlpe/en/ , so is a CFS body not a FAO one. [Lorenzo Giovanni Bellù, Italy]	Definition of food system- correction made in reference to HLPE/CFS
16134	0	0			Recognizing the multiple roles of food and agricultural systems to achieve SDGs. Overall, chapter 1 should acknowledge in its framing that agriculture is a significant contributor to greenhouse gas emissions but is also an important part of the solution to climate change, although the economy-wide exit from fossil fuels is even more important. In addition, agricultural sectors not only can reduce climate change impacts and contribute to achieve the objective of the Paris Agreement, but contribute to maintain income earning opportunities for reducing poverty, eradicating hunger and delivering on the 2030 Agenda for Sustainable Development. Climate change, hunger and poverty should therefore be tackled together through a full understanding and management of the systemic linkages among these elements (See FAO, 2018 - • Chapter 1 should acknowledge in its framing that agriculture is a significant contributor to greenhouse gas emissions but is also a fundamental part of the solution to climate change. Agricultural sectors not only can reduce climate change impacts and achieve the objective of the Paris Agreement, but can also reduce poverty, eradicate hunger and deliver on the 2030 Agenda for Sustainable Development. Climate change, hunger and poverty should therefore be tackled together. The future of food and agriculture - Alternative pathways to 2050. Rome Forthcoming, September. Info re this report: lorenzogiovanni.bellu@fao.org) [Lorenzo Giovanni Bellù, Italy]	Rejected. These aspects are indeed crucial and are more the scope of ch 5, 6; however we have rewritten the introduction section and hope that some of the aspects mentioned would now also be better reflected.
2844	0				Be more precise on: framing and context of what? (1) is the main chapter (including the summary on all chapters) and thus has a synthesizing task: Especially, it should prepare (7): dealing with uncertainty and the urgency, how to develop sustainable governance of Earth/how linked to Agenda 2030 and GSDs, the importance of science-society interaction, etc. But such issues are not sufficiently covered. [Cordula Ott, Switzerland]	Accepted - text revised. Objectives of report, and of the chapter spelled out more clearly
2850	0				Strengthen conceptual base on specific issues, for example: multifunctional agriculture that goes beyond the provision of products; more up-to-date and nested concept of gender ; understanding of different actors as part of the solution/agency; appraise bottom-up solutions;. Such concept need to be expanded. [Cordula Ott, Switzerland]	Accepted - text revised. See revised section 1.4 and 1.5, but within what is possible withing specified word limits

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2852	0				Possible arguments to include: (a) SLM also brings back a focus on smallholders who have an important role in SLM/LBM (see: IAASTD report 2009; UN Contribution to the 2018 High Level Political Forum on Sustainable Development – Submission from the UNCCD). (b) Under current trends, disparities are growing along social and socio-economic strata (men-women; age, rich-poor; centered-marginal; ...). (c) Interlinkages rural-urban need attention for solutions. In these interlinkages/tele-coupling/chains to detect challenges but also, potentials for change (see 1.1.3.5... a bit too narrow). [Cordula Ott, Switzerland]	Accepted - text revised. Section has been revised, but we are also confined by specified word limit, hence not all topics can be included at depth
25886	0				Consider introducing the risk framework and specific challenges for the various chapters to apply it, with particular reference to Ch7. [Hans Poertner and WGII TSU, Germany]	Accepted - text revised. definition of risk included, and chapter 7 referenced
20492	0				2.Section 1.4.6 may be moved to the first part of 1.5, which highlights the challenge of uncertainty. And 1.5.1 and 1.5.2 can be changed to parts 1.5.2 and 1.5.3. [Huai Jianjun, China]	Sections have been restructured (although not following completely the reviewer suggestions, but hope in a meaningful way regardless)
9680	0				Ch1 is a challenging chapter to write. The balance between scene setting and going into the various issues of the chapters may be difficult. I suggest that the authors read Ch1 of SR1.5 to see if there are approaches and perspectives there that can be used here. Coordination with SROCC is also important and I hope there can be similarities in the way the framing chapters set the scenes for the three Special Reports. [Jan Fuglestedt, Norway]	Rejected. In principle these are very good points. However, our chapter 1 structure also reflects discussions we had with the other chapters or the SRCL and we agreed on the overall "flow" of chapter 1 with the colleagues
9682	0				Ch1 is aiming for seeing the bigger picture and integrating the issues in the following chapters. This is especially challenging and important in this SR given the broad range of topics addressed across chapters. I suggest a bit more emphasis on development (over the last couple of decades) in seeing these issues together and what the potential is in terms of further integration. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.
9684	0				I think Ch1 could give more emphasis to the Paris Agreement and possible interpretations [Jan Fuglestedt, Norway]	Accepted - text revised. revised section 1.2
9686	0				An element of the Paris Agreement which I would expect to be discussed or at least mentioned is the concept of achieving greenhouse gas balance. Such a balance will strongly involve the climate system components addressed in this SR. One potentially relevant paper is Fuglestedt et al., 2018: Implications of possible interpretations of 'greenhouse gas balance' in the Paris Agreement. Philos. Trans. R. Soc. A Math. Phys. Eng. Sci., 376, 20160445, doi:10.1098/rsta.2016.0445. http://rsta.royalsocietypublishing.org/lookup/doi/10.1098/rsta.2016.0445 . [Jan Fuglestedt, Norway]	Rejected. Fits to chapter 2
9698	0				The chapters sometimes has strong statements with only one underlying reference. Will comment on some of the specific cases. [Jan Fuglestedt, Norway]	Taken into account. additional references on several aspects included
9700	0				The chapter sometimes has statements that are policy prescriptive, and not policy neutral. [Jan Fuglestedt, Norway]	Taken into account. Text revised in order not to be policy prescriptive
9758	0				The draft as it is now, is in my view, too much of a summary of issues; sometimes value based. [Jan Fuglestedt, Norway]	Taken into account.

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9928	0				The report refers to pre-industrial levels. As far as I can see, this is not defined anywhere in the report. There has been discussions in the literature about adequate time periods, and SR1.5 also discusses this in their first chapter. Chapter 1 would be a natural place to make clear what has been used through the report. [Jan Fuglestedt, Norway]	Rejected. This aspect has to be agreed with all chapters of the report; as discussed during the 3rd LAM, default is to use the same as the 1.5 deg report
25414	0				A good overview and point of departure. Attention will eventually need to be paid to close editing - including the executive summary. This is perhaps more noticeable than with other chapters. [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
25328	0				Thank you for a clear introduction! [Kaisa Kosonen, Finland]	Thank you for the positive comment.
25700	0				There is an overemphasis on uncertainty, an issue of importance but not unique to land-climate linkages. Ecological feedbacks are minimized, When thinking of landscapes as socio-ecological systems, ecological resilience is a must. There is a lot of literature on that. The point will be to emphasize that land resources are dynamic, resilient. References to forest transition theory would be useful as a way to provide theories that link social and ecological systems and are linked to land transformation. [Laura Schneider, United States of America]	Taken into account - combined with other comment.
9586	0				I find the chapter difficult to read. I would prefer it to start with the objective, the scope and the methodology of the assessment. This should be followed by the main topical challenges and the uncertainties. Finally the presentation of the report in detail. [Markus Giger, Switzerland]	Accepted chapter restructured. Much of the chapter has undergone substantial revision and this point is addressed.
3900	0				Please check: The integrated storyline of this special report, chapter narratives, and linkages to other chapters apparently look weak and may be strengthened in relation to the essence of other chapters. This framing chapter sets the scene for this special report. Opportunity is there to strengthen the discussion in context of socioeconomic, biogeochemical, and biophysical interactions between climate change vis-à-vis desertification, land degradation, food security, and GHG fluxes (e.g. present land uses, pressure on land for land use change and conversion to different land cover types/land use management practices due to anthropogenic activities, shifting trend and pattern in agricultural-forestry and other land uses, pressure on shrinking agricultural land for more food production, effects of ongoing and anticipated climate change on land resource, climatic anomalies-risk-hazard on land resources and its environmental-societal outcome, overall effects of land use or land conversion on nutritional and food security and environmental services, GHGs emissions and tradeoffs, role of sustainable land management for rational and judicious land uses). Authors can elaborate discussion incorporating the demands and use of land in context of climate change and socioeconomic and technological changes (e.g. introduction of BECCS and/or CCS, their short, medium and long-term implications, effects on ecosystem services, conflict for land between agriculture-food production and BECCS-CCS, risk encountered and mitigation-cum-adaptation strategies). [Suvadip Neogi, India]	Accepted. improved cross-referencing to other chapters
1646	0				Discussing the SDGs, somewhere it should be mentioned that aiming at achieving one should not come at the cost of another SDG [Tobias Rütting, Sweden]	SDG mentioned at several places in the chapters, in conjunctions of co-benefits (and risks of tradeoffs)

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1146	0				The chapter is slow to fully integrate food security into the framing, despite the topic being one of the key aspects of the report (per the title). And food system is used in lieu of food security. "Food system" is an important concept and a welcome addition to the framing of the challenges we face. However, a balance should be struck that does not leave a reader with the sense that food systems have replaced the concept of food security. Food security includes a far stronger human element than food systems. [Tonya Rawe, United States of America]	Accepted definition clarified. FS definition incorporated up front; clear distinction and linkages with food systems clarified
27082	0				It would be useful to present photosynthesis and NPP as the fundamental basis for all land C services. [Zoltán Rakonczay, Belgium]	Accepted - text revised.
27084	0				The loss of productive land (land take / land loss) should be presented up front as a key risk. It is now only mentioned once, and only on p.11. [Zoltán Rakonczay, Belgium]	Accepted chapter restructured.
27086	0				Links of the C cycle to the nitrogen cycle should be noted. [Zoltán Rakonczay, Belgium]	Rejected . not sure to which sub-section of the chapter this comment relates - it is covered in any case in chapters 2 and 6
20490	1	5	1	10	1. The 1.2 and 1.3 subsections should be switched order based on the logical description of characteristics to some examples. [Huai Jianjun, China]	Accepted chapter restructured. New revised paragraph has some descriptive sentences and sections – unavoidable in an introductory, but also some examples.
25156	1	9	1	11	It is important also to add social SDG. In many developing countries the social SDG are important to realise Sustainable land management [Mohammed Yahya Said Yahya, Kenya]	Accepted chapter restructured.
9672	1	26	1	29	in which areas of the world a considerable attention was paid being studied local on AFOLU sector?¶ [Nadji Tellro Wai, Chad]	Accepted - text revised. see box on afforestation/deforestation
6556	1	2	3	3	Change "but in terms of the " to "and" [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised.
6558	1	6	3	6	Replace "and" with ", " [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised.
6560	1	27	3	27	Expand AFOLU [Shrinidhi Ambinakudige, United States of America]	Taken into account.
25158	1	1	4	43	Although there is mention of population as drivers to land use changes the executive summary - it will be important to give the current population and population projections - for many of the developing countries this is not addressed in their land use plans and impacts of land resources and degradation could be more than the impacts of climate change. [Mohammed Yahya Said Yahya, Kenya]	Rejected. Belongs in chapters 3, 4
6572	1	10	4	22	Level of evidence/agreement is required [Shrinidhi Ambinakudige, United States of America]	Noted, accepted, uncertainty language added or revised.
17634	1	19	4		I suggest a top of climate change instead of atop of climate change [Norbert François Tchouaffe, Cameroon]	Accepted - text revised.

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17636	1	3	8		Under the table entitled A condensed narrative of the graphical framing of the linkages between climate change, land use, and the food system, please feel free to remove 'at' in the paragraph 2 by the food environment at that determines the conditions for availability, access, quality, safety as well as the equilibrating role of trade. [Norbert François Tchouaffe, Cameroon]	Accepted - text revised.
17638	1	4	8		Last paragraph, please read to propose sustainable solutions instead of to propose sustainable solutions [Norbert François Tchouaffe, Cameroon]	Noted, copyedit to be completed prior to publication.
6562	1	37	9	37	Close the parenthesis [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised.
6564	1	7	10	7	Change 0,2% to 0.2% [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised.
6566	1	32	12	32	Replace "and" before ecosystems - with "currently, ecosystems" [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised.
6568	1	23	20	23	change "require" to "requires" [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised.
6574	1	3	21	3	correct the citation to - Gautier et al. 2016 [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised.
6576	1	10	21	10	correct the citation to - Gautier et al. 2016 [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised.
6580	1		25		In table 1.2, uncertainty for landcover satellite showing >100% which doesn't make sense. [Shrinidhi Ambinakudige, United States of America]	Accepted - text revised. Typo error. The symbol > means an arrow showing uncertainty range is between 16 and 100% . It has changed
6578	1	4	28	5	Reference is missing [Shrinidhi Ambinakudige, United States of America]	References useful some or all added. Problem fixed

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25024	1	1	30	20	<p>I would frame chapter 1 in a way that provides answer or, when an univoque answer isn't feasible, all available information that supports answering the following questions:</p> <ul style="list-style-type: none"> - what is the magnitude of the so-called "terrestrial missing sink", what are the elements of the terrestrial system that are acting as missing sink, and what is the relative contribution of each of them; - what are the variables that impact the so-called "terrestrial missing sink", and what is the predicted trend of such variables according with current and expected trends in the use of land as well as with the impacts projected by climate models; - how models used to build the RCPs model the contribution of the terrestrial missing sink and to which fraction of the terrestrial contribution -i.e. managed vs unmanaged land; anthropogenic vs non-anthropogenic fluxes- the terrestrial missing sink, or each of its components, is assigned - what is the amount of negative emissions from land to achieve the 2C target by the end of the century - what is the share of land among current uses of land and which is the impact of each use in terms of contribution to the atmospheric GHG concentration; - what are the area changes expected by 2030 and 2050 for each land use according to the need to: ensure food security and nutrition, mitigate climate change, adapt to climate change, protect biodiversity, ensure water quality and availability. - what are the impacts on each land use of temperature rise and precipitation change, and associated changes in the evapotranspiration balance and in the impact (frequency and magnitude) of extreme events; what are solutions applicable to ensure food security and nutrition as well as forest protection? - what are the adaptation needs associated with each use of land as stratified by climate and ecological zones as well as socio-economic systems. [Sandro Federici, Italy] 	Rejected . This is an interesting suggestion but it does not fit with the tasks given to the chapter on what the framing chapter should cover; plus, the general flow of chapter 1 had been discussed and agreed with the other chapters of the special report
26712	1	1	30	42	<p>In general, an presentation and distinguishing between effects of crop based 1st generation biofuels, 2nd generation waste based and advanced biofuels would be beneficial. Comments on 1st generation biofuels are not valid for 2nd generation waste based, in particular in the true sense of waste based as defined by the EU Commission in advanced biofuels. [Knud Christensen, Denmark]</p>	Comment noted section totally updated and revised.
25330	1	1	60	14	<p>The report and its framing needs to be made consistent with the Paris Agreement and its Article 2, which defines the goal of the agreement as limiting warming WELL BELOW 2°C, pursuing maximum warming of 1.5°C. Currently the First Order Draft and its Chapter 1 focus on limiting warming to "at or below 2°C above pre-industrial levels" and that is very different from what the Paris Agreement aims at. [Kaisa Kosonen, Finland]</p>	Rejected - beyond the mandate of the report. given the 1.5 degree report I believe the SRCL can be a bit more vague in places; however, we added more cross-refs to the 1.5 degree report.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
26832	1	1	60	14	As essential part of the context of any issue related to anthropogenic climate change is the fundamental science of climate and carbon, but a summary of the science is missing from this chapter. This chapter briefly mentions some points of scientific in a dispersed way throughout the text. It would make the report more effective by gathering material on climate and carbon science relevant to drylands into a clear and concise summary in chapter 1, where such context belongs. The information required would be: historical climate trends, future climate projections, extreme events, the carbon budget from agriculture, forestry, and other land use, including estimates of sinks, emissions, and removals. [Patrick Gonzalez, United States of America]	Rejected. Relates more to Chapters 3 (w.r.t. drylands), chapter 2 (w.r.t. climate more general)
4324	1	1	60	14	The whole chapter suffers from a lack of native English speakers. It needs professional English editing, as the few English speakers involved have not been able to work through the chapter to make it grammatically correct and make sense. This may seem minor but being unable to understand what the authors mean will limit the useability, uptake and ultimately, the impact of the report. [Samantha Grover, Australia]	Comment noted section totally updated and revised.
5082	1		60		a helpful reference may be Gert-Jan Nabuurs, Philippe Delacote, David Ellison, Marc Hanewinkel, Lauri Hetemäki, Marcus Lindner, Markku Ollikainen 2017. By 2050 the mitigation effects of EU forests could nearly double through Climate Smart Forestry. Forests 8, 484; doi:10.3390/f8120484 [Gert-Jan Nabuurs, Netherlands]	Reference noted but point already covered by current used citations.
21310	1		60		This is an evident lack of consistency in the use of the different definitions (e.g. for desertification, food security,...) in this chapter in relation to the author chapter. Authors should refer only to internationally agreed definition. [Martial Bernoux, Italy]	Accepted - text revised. Definitions now used as in the IPCC SRCL glossary/which relate to definitions as used in the report's chapters; & cross references to the chapters included
21312	1		60		The overall objective of this special report should be stated clearly in that chapter but this is not the case apart a definition given in a box page 8 (But I think it is not the overall objective of the report) [Martial Bernoux, Italy]	Accepted chapter restructured. The overall objective of the report is now clearly stated and the emphasis on the climate-land interactions to induce policy responses through scientific evidence and assessment is also provided in this revised version
25210	1	30			Worldregions should read world regions [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
16190	1				The chapter does not convey the objective of the report, it fails to frame the report and to connect it not only to AR5 but also to other IPCC specific reports. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured. This is now fixed. Reference is made to AR5 and other previous relevant IPCC reports.
16192	1				Frequently reference is given to chapters that follow. Please cite also the page number as it is difficult to find the cross-reference within an entire chapter of several pages. [Lorenzo Giovanni Bellù, Italy]	Noted, copyedit to be completed prior to publication.
24236	2	8	2	9	Consider moving "Climate change " to end of the sentence as the revised version: " 1.2.3 The challenges related to land use, degradation, desertification, food security and climate change". [Barron Joseph Orr, Germany]	Accepted.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24238	2	8	2	9	This part only reflects contribution of land use system to GHG emission and impacted by climate change, but does not emphasize the role of sustainable land management (SLM) and its potential contribution to both climate mitigation and adaptation. Balance is important. [Barron Joseph Orr, Germany]	Accepted. Problem fixed – and effort taken to analyze SLM as part of the solutions mix.
6820	2	10	2	15	Are key issues related to land use and land cover changes (section 1.3) different from the challenges related to land use (section 1.2.3)? Could those topics be merged together? [Wilfran Moufouma Okia, France]	Accepted chapter restructured.
14254	2		2		I know the author team may be constrained by titles in the scoping document but the long list of land use, climate change, land degradation, desertification, and food security is poorly constructed. For example desertification is just land degradation in dryland ecosystems. Also food security is just one impact to human well being of the many impacts to human well being. I suggest changes in the next draft that reflects what this assessment is targeting, climate change and land. [Rattan Lal, United States of America]	Thank you for the positive comment.
20210	2		60		Overall, this chapter is successful in providing appropriate framing and context for the special report. [Kaoru Kitajima, Japan]	Thank you for the positive comment.
1852	2	6			Page 2 Line 6. Suggest only 'Scope' is sufficient. [Mastura Mahmud, Malaysia]	Accepted - text revised.
8796	2	11			Clearer to read without brackets: 'Global status of land use [Natasha Hall, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised.
1854	2	18			Page 2 Line 18. Add (SLM) after Sustainable Land Management [Mastura Mahmud, Malaysia]	Accepted - text revised.
1856	2	39			Page 2 Line 29. Replace '&'. 'Introduction of the remaining chapters' should be sufficient. [Mastura Mahmud, Malaysia]	Accepted - text revised.
21188	3	30	1	30	world-wide instead of worldwide [Soora Naresh Kumar, India]	Accepted - text revised.
18606	3	1	3	15	It would be optimal to separate two very different parts of land based mitigation. 1) True mitigation of land emissions releasing CO ₂ e from animal, microbe and plant respiration or fire. 2) drawing down new CO ₂ via photosynthesis or carbon capture, and then storage as biomass, biochar, soils, wetlands, weathered rock, ocean alkalization. These are 2 levers in land use, as we can do less bad, but also more good [Justin Borevitz, Australia]	Accepted chapter restructured.
3962	3	1	3	30	After reading the entire report, this introduction fails to do it justice - as it will be read by many as a summary. It is dull and negative when it should be inspirational. The other chapters have rich content that is not well reflected here, while this stresses other themes that are not emphasized elsewhere in the report and that will be seen as having more to do with social policy than science. Specific comments on three paragraphs of the Executive Summary follow: [Reid Detchon, United States of America]	Accepted chapter restructured.
25640	3	2	3	3	It is self-evident that demand for land resources is unprecedented. Rather emphasize lessons learned. [Jon Magnar Haugen, Norway]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16194	3	2	3	3	Please explain what it means "magnitude" and "multitude" of demand for land resources. [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised.
5536	3	2	3	3	the first sentence (key) should be presented clearly and correctly! [Sanaz Moghim, Iran]	Accepted - text revised.
280	3	2	3	3	The first sentence (under Executive summary) is wrong. It should be worded like: Today's demand for land resources is unprecedented, not only in terms of magnitude, but also in terms of the multitude of different ecosystem services required (robust evidence, high agreement). [Santosh Kumar Mishra, India]	Comment noted section totally updated and revised.
6948	3	3	3	5	Land ecosystem services referred do not consider appropriately other services provided, such as CO2 storage. [Anna Luise, Italy]	Taken into account. we provide examples, not a complete list
25888	3	4	3	4	how are 'vital' ecosystem services defined, and why do you only refer to those here? [Hans Poertner and WGII TSU, Germany]	Taken into account.
11766	3	4	3	4	It would be better to write "[...] and vital ecosystem goods and services [...]" instead of "[...] and vital ecosystem services [...]" [Jacques Andre Ndione, Senegal]	Rejected . Scientific literature over the last years has dropped the "goods"
17692	3	4	3	4	add identity ie for food,water and identity [Sawsan Mustafa, Sudan]	Accepted - text revised.
26850	3	5	3	5	Recommend changing "fundamentally" to "strongly". The former term implies that land management is the primary driver of ecosystem services and provisions. However, physical properties and ecosystem characteristics such as soil type (and associated properties such as moisture holding capacity, organic matter content, nutrient content, base cation saturation, etc.) and climatic variables, which are not directly impacted by management, interact to limit the potential for land to provide the services mentioned. [Knut Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
7354	3	5	3	8	Rephrase the sentence to make a clear distinction between the well-established drivers and the new drivers. [Marieke Sandker, Italy]	Accepted - text revised.
16196	3	5	3	9	it is not clear if urbanization is one of the "well-established" factors and if the new factor is rapid urbanization. [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised.
24726	3	6	3	6	No curly braces referring to the traceable account of the assessment [Andreas Fischlin, Switzerland]	Noted, accepted, uncertainty language added or revised.
20766	3	6	3	6	well-established drivers of land demand also include lower productivity driving demand for more land under agriculture and other "productive" uses. Getting more land into agricultural production is one option when productivity is lowering to keep the same overall production. In some places, this comes before improving land. I am thinking about the peanut basin ("bassin arachidier") in Senegal in particular. It has shifted towards the South over a few years but without land practices and management improving, thereby reproducing in new sites the original problems faced in the earlier basin. [Emmanuelle Quillerou, France]	Noted no action needed.
3970	3	6	3	6	replace the first "and" with a comma - to read: population growth, changing diets, and ... [Reid Detton, United States of America]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3282	3	6	3	6	changing "diets" may be replaced with changing " life styles" [Suresh Kumar, India]	Accepted - text revised.
108	3	7	3	7	Worth distinguishing upfront between direct or proximate drivers (mainly agriculture, then urbanisation and then infrastructure - surprising no mention of infrastructure), and the indirect drivers or underlying causes such as population growth, economic development which imply growing demand for food, energy and water (and agriculture consumes 70% of "blue water" withdrawals from rivers and aquifers. Surprising not to see this upfront in Exec Summary. Why is there no mention of agricultural subsidies? A major major driver of land use. [Elizabeth Penelope Davies, United States of America]	Comment noted section totally updated and revised.
24240	3	8	3	8	Please consider inverting the order of agreement and evidence so as to comply to the sequence established throughout the entire document. [Barron Joseph Orr, Germany]	Accepted - text revised.
11768	3	8	3	8	It would be better to write "The Paris Agreement", instead of "The Paris COP21 Agreement" [Jacques Andre Ndione, Senegal]	Accepted - text revised.
25336	3	8	3	8	It is not appropriate to reference the Article 2 only partially like this and to leave out the reference to 1.5°C warming limit. So please add: "...and to pursue efforts to limit the temperature increase to 1.5°C..." [Kaisa Kosonen, Finland]	Accepted - text revised. langue in the Executive summary checked
2322	3	8	3	8	I find confusing to use the notation @high agreement, medium evidence@. I think that in a scientific work the evidence and the agreement should go together. I would prefer to see references but it it is necessary this nomenclature, I think that just sayng strong evidence should be enough. This coment is valid through the whole document. [Manuel Llansola-Portoles, France]	Noted, accepted, uncertainty language added or revised.
21314	3	8	3	8	Editorial comment, but reflecting also a lack of consistency in the use of agreed terminology internationally: The "Paris Agreement" should be refered as such an not such a as here "Paris COP21 Agreement". [Martial Bernoux, Italy]	Accepted - text revised.
16908	3	8	3	8	fine to simply refer to the Paris Agreement but at the first occurrence I suggest you give the date and mention UNFCCC, e.g. the 2015 Paris Agreement within the UNFCCC (spelled out at this first occurrence). COP-21 on its own may not mean anything to general readers [Pauline Midgley, Germany]	Comment noted section totally updated and revised.
3972	3	8	3	8	insert "to" - to read: limit warming to well below ... [Reid Detchon, United States of America]	Accepted - text revised.
10032	3	8	3	8	It should be 'medium evidence, high agreement' instead of 'high agreement, medium evidence' for reasons of consistency throughout the report. [Reinhard Prestele, Germany]	Noted, accepted, uncertainty language added or revised.
1154	3	8	3	8	Reference to 2oC should be accompanied by reference to 1.5oC, as both are in the Paris Agreement and given the IPCC's other special report on 1.5oC. Same applies to page 3, line 18. [Tonya Rawe, United States of America]	Accepted - text revised.
14868	3	8	3	9	Do not forget to mention the 1,5°C objective when there is a reference to the long-term temperature objective of the Paris agreement. [Florian Claeys, France]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20770	3	9	3	9	Sustainable land management is not limited to the "integrated land-water-biodiversity nexus perspective". Writing this is too reductive and is forgetting about the social and the economic pillars (if not the cultural pillar) of sustainable development. You need to add a reference to social sciences and humanities if you want this to work (i.e. people and societies). [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
7466	3	9	3	9	..land mitigation...' please rephrase to make clear this refers to land based climate change mitigation. [Joris de Vente, Spain]	Accepted - text revised.
3974	3	9	3	9	insert "-based" - to read: land-based mitigation ... [Reid Detchon, United States of America]	Accepted - text revised.
4326	3	9	3	9	land mitigation should surely read "land-based mitigation" - as we are not considering mitigating land but mitigating climate change [Samantha Grover, Australia]	Accepted - text revised.
17528	3	9	3	9	Ex. Summary: The term "land mitigation" is unclear, not reported in the glossary. Should be clarified , even in short, what is intended [TURI FILECCIA, Italy]	Accepted - text revised.
2414	3	9	3	9	Land mitigation sounds vague. I suggest be more specific, e.g., land use mitigation, land based climate change mitigation. [William Lahoz, Norway]	Accepted - text revised.
27566	3	9	3	11	Uncertain language that needs alignment Align language in Page 3, Line 9-11 with Language in page 9, Line 6-8 Sustainable Land Management (SLM) has the potential to bring substantial improvement towards the achievement of three main global sustainability goals; namely food security, energy access, and water availability. Sustainable land management, which seeks an integrated land-water-biodiversity nexus perspective, has the potential to contribute to several Sustainable Development Goals (SDGs) including food, biodiversity, water, as well as the SDG on climate change trade-offs are properly considered (medium evidence, high agreement) (section 1.3, see also chapter 6). [Omoyemen Lucia Odigie-Emmanuel, Nigeria]	Noted, accepted, uncertainty language added or revised.
24242	3	10	3	10	Considering that the definition of "land" provided in the glossary states that soil, vegetation and other biota, and water comprise land, maybe this should be "soil-water-biodiversity nexus" which maintain all land-based natural capital and associated ecosystem services. (see also: ICCD/COP(12)/CST/6). [Barron Joseph Orr, Germany]	Comment noted section totally updated and revised.
7030	3	10	3	10	Regarding the term "land-water-biodiversity nexus": The definition of "land" provided in the glossary states that soil, vegetation and other biota, and water comprise land. Therefore, it seems to be redundant to list "land" besides water and biodiversity in the nexus. Please check and consider replacing "land-water-biodiversity nexus" with "soil-water-biodiversity nexus, which maintain the land's productivity that supports human wellbeing by securing the life and livelihood of individuals and communities" (see also: ICCD/COP(12)/CST/6). [Mariam Akhtar-Schuster, Germany]	Taken into account - combined with other comment. see 7030

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14256	3	10	3	10	Regarding the term "land-water-biodiversity nexus": The definition of "land" provided in the glossary states that soil, vegetation and other biota, and water comprise land. Therefore, it seems to be redundant to list "land" besides water and biodiversity in the nexus. Please check and consider replacing "land-water-biodiversity nexus" with "soil-water-biodiversity nexus, which maintain the land's productivity that supports human wellbeing by securing the life and livelihood of individuals and communities" (see also: ICCD/COP(12)/CST/6). [Rattan Lal, United States of America]	Comment noted section totally updated and revised.
2324	3	10	3	11	In the sentence several #Sustainable Development Goals (SDGs) including food, biodiversity, water, as well as the SDG#, it is described SDG as part of SDG. It is a minor mistake that needs to be corrected or clarify what the author means. [Manuel Llansola-Portoles, France]	Accepted - text revised.
5538	3	10	3	15	not clear [Sanaz Moghim, Iran]	Accepted - text revised.
6950	3	11	3	11	SDG 15 should be explicitly mentioned as directly concerning land issue, as better reported in paragraph 1.2.3 [Anna Luise, Italy]	Comment noted section totally updated and revised.
7468	3	11	3	11	add land degradation [Joris de Vente, Spain]	Accepted - text revised.
1826	3	11	3	11	"afforestation/reforestation, which competes with area required for food production or biodiversity conservation" - this is presented as contradiction, which it not need be: e.g. food forest/ permaculture style could combine multiple demands (and more sustainable than monoculture food production); biodiversity could be supported in afforestation if native biodiversity is used (and forest in natural complex definition, not disguised plantation). [Rianne ten Veen, Netherlands]	Comment noted section totally updated and revised.
24722	3	12	3	14	Replace the long title of this report by "This report" [Andreas Fischlin, Switzerland]	Accepted - text revised.
24720	3	12	3	16	I doubt this statement is appropriate, since getting close to be policy prescriptive. I suggest to delete that last sentence, in particular since the same message of this report being provided at a time when SDGs are pursued could be made efficiently in other statements as well. [Andreas Fischlin, Switzerland]	Accepted - text revised. Language in the Executive summary checked w.r.t being policy prescriptive
2326	3	13	3	13	The sentence does not read properly. I could guess that the authors meant # The IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems is, therefore, timely assessing the various land use challenges# [Manuel Llansola-Portoles, France]	Accepted - text revised.
7872	3	13	3	17	The Executive Summary can be clarified by avoiding the excessive use of freight-trains (i.e. long strings of nouns acting as modifiers) in which the relationship between the various elements is obscure. For example, land based climate change mitigation (LBM) features can be clarified by inserting a few prepositions or hyphens to specify the relationships between and among the various elements of this term. The abbreviation LBM suggests that this term can be simplified to Land-based mitigation to climate change [Paul Glaser, United States of America]	Comment noted section totally updated and revised.
7470	3	15	3	15	land use and land management challenges [Joris de Vente, Spain]	Accepted - text revised.

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24724	3	17	3	17	Why introducing a new concept and even an acronym (while acronyms should be avoided as much as possible) when terms such as LULUCF (Land Use and Land-Use Change and Forestry) and AFOLU (Agriculture, Forestry, and Other Land Use) are concepts that are used by UNFCCC since a long time. I agree none of the latter two clearly factor out the mitigation part. However, LULUCF negotiations were mostly focused on mitigation. Therefore if authors really want to introduce a new concept called LBM, they need then to clarify the relationship between LBM and LULUCF. The current text fails to do that and appears to be largely ignorant of the context in which UNFCCC has discussed LBM in the past. The main audience of IPCC reports, i.e. policy makers, do not like that. [Andreas Fischlin, Switzerland]	Accepted - text revised.
25838	3	17	3	17	Please clarify for non-experts what kind of "scenarios" you refer to or explain the term otherwise early on in the report. [Hans Poertner and WGII TSU, Germany]	Accepted - text revised. see e.g., text box "futures"
7478	3	17	3	17	what about climate change adaptation by SLM, like increased drought resilience, flood and erosion prevention, forest fire risk, etc..? [Joris de Vente, Spain]	Adaptation text to be enhanced and moved to ES.
25338	3	17	3	19	Please add a reference to 1.5°C scenarios too. [Kaisa Kosonen, Finland]	Accepted - text revised.
17348	3	17	3	20	Biodiversity should be included in ecosystem services. Maybe "ecosystem services including biodiversity" will be better [Fei Lu, China]	Rejected . There are diverging views in the scientific literature if BD is part of ecosystem services or not (e.g. several papers by Georgina Mace provide v.g. reviews on this issue). We prefer to keep the terms separately, to avoid confusion
3726	3	17	3	29	Too early in the story and too much focus on 1.5/2 degree scenarios . Need also to think about higher levels of warming [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Noted. ES revised/restructured. However, it is difficult not to mention the 1.5 degree report explicitly, although indeed higher warming needs to be mentioned throughout the chapter
3964	3	17	3	29	This paragraph leads with a negative statement about the state of knowledge, but there are numerous statements in the report that have robust evidence, high agreement that show the potential of land-based mitigation to contribute significantly. The last sentence of the paragraph should be rephrased to urge that these studies become integrated into global scenarios. [Reid Detchon, United States of America]	Comment noted section totally updated and revised.
26852	3	18	3	18	Change "...mitigation potential" to "...mitigation potentials" [Knut Nadelhoffer, United States of America]	Accepted - text revised.
3976	3	18	3	18	insert "the" - to read: the climate change mitigation potential ... [Reid Detchon, United States of America]	Accepted - text revised.
4328	3	18	3	20	add "the" before climate, remove "the" before different, add a comma after synergies and after biodiversity [Samantha Grover, Australia]	Accepted - text revised.
25840	3	19	3	19	Please clarify which ecosystem services you refer to or explain the concept otherwise early on in the report. [Hans Poertner and WGII TSU, Germany]	Comment noted section totally updated and revised. early in chapter, link to cross-chapter box
24874	3	20	3	20	should read "IPCCs Fifth Assessment Report (AR5)" [Dale Lockwood, United States of America]	Accepted - text revised.

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25188	3	20	3	20	AR5' seems to appear suddenly without prior knowledge of what it means for an ordinary reader [Denis Asizua, Uganda]	Comment noted section totally updated and revised.
25646	3	20	3	24	The words "scenarios"/"projections" should be altered to "pathways"/"trajectories" in line with IPCC lingo. [Jon Magnar Haugen, Norway]	Accepted - text revised.
25648	3	20	3	26	Suggested wording: "Since AR5, the number of studies dealing with LBM efforts have increased significantly. Pathways consistent with 2oC indicate large area requirements for e.g. bioenergy crops or afforestation/reforestation, which competes with area required for food production or biodiversity conservation. Intensive use of water and fertiliser may mitigate the need for land in the short term, with possible detrimental side-effects for GHG emissions, water resources, air quality and ecosystem services (robust evidence, high agreement). Low agreement exists regarding the true carbon uptake potential (or the energy that can be supplied as bioenergy) implicated in these pathways (robust evidence)." [Jon Magnar Haugen, Norway]	Comment noted section totally updated and revised. message rewritten, hence not possible to take on the suggestions by reviewer.
11874	3	21	3	21	Please consider replacing "(or energy)" with "(or energy)" [Burba George, United States of America]	Accepted - text revised.
3978	3	21	3	21	replace "have" with "has" - to read: has increased significantly. [Reid Detchon, United States of America]	Accepted - text revised.
726	3	21	3	21	should read "has increased" (singular) [Rolf Sommer, Kenya]	Accepted - text revised.
27248	3	21	3	24	The implication of the text here is that bioenergy crops and afforestation / reforestation is REQUIRED. There are quite a number of new scenarios considered in the context of the 1.5 report that do not REQUIRE large areas of land for CDR. Update with a more circumspect assessment based on the entire range of IAMs and other scenarios out there, not just the ones that have BECCS and A/R as their outputs. [Doreen Stabinsky, United States of America]	Comment noted section totally updated and revised. refs to these scenarios inserted in chapter text
11876	3	22	3	22	Please remove ")" [Burba George, United States of America]	Accepted - text revised.
5816	3	22	3	26	not clear. In addition, this sentence "Alternativeley, smaller area", I believe it is not right or it is confusing! [Sanaz Moghim, Iran]	Accepted - text revised.
1828	3	23	3	24	"afforestation/reforestation, which competes with area required for food production or biodiversity conservation" - this is presented as contradiction, which it not need be: e.g. food forest/ permaculture style could combine multiple demands (and more sustainable than monoculture food production); biodiversity could be supported in afforestation if native biodiversity is used (and forest in natural complex definition, not disguised plantation). [Rianne ten Veen, Netherlands]	Comment noted section totally updated and revised.
15966	3	23	3	24	Is afforestation and reforestation competing with biodiversity conservation? The reviewer is not sure about this [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account - combined with other comment. see 1828

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
26854	3	24	3	24	Change "competes with area" to "compete with areas" [Knut Nadelhoffer, United States of America]	Accepted - text revised.
3980	3	24	3	24	replace "competes" with "may compete" - Comment: In some cases, the changes will be complementary, e.g., reforestation will help biodiversity. [Reid Detchon, United States of America]	Accepted - text revised.
10352	3	24	3	24	In some regions of the world while agriculture remains the main sector, the yield gap is still large. Therefore in these areas intensification could be a driver for wider development (and bioenergy might be an option). Thus this statement seems misleading at global level. Also seems in contradiction with statement in line 41. [Zitouni Ould-Dada, Italy]	Comment noted section totally updated and revised.
24244	3	24	3	26	The sentence "Alternatively, smaller areas needs [...] air quality [...]" could benefit from further elaborating on what is meant by "smaller areas needs" to facilitate its understanding/avoid potential misinterpretation. [Barron Joseph Orr, Germany]	Accepted - text revised.
25190	3	24	3	26	...small areas needs...' seems to require some editing in relation to punctuation or reference to plural or singular [Denis Asizua, Uganda]	Accepted - text revised.
3982	3	25	3	25	wording is unclear; suggest replacing "needs are associated with intensive use of water and fertiliser, and" - to read: "may be needed with more intensive use of water and fertiliser, but with" ... [Reid Detchon, United States of America]	Accepted - text revised.
27088	3	25	3	25	"local" should be deleted. Impacts of fertilisation on water resources can be far reaching, including international conflicts. Impacts of fertilisation are regional to global, as the perturbation of the global N cycle is important (but not meaningfully addressed in the report) and include dead zones in the oceans. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
9690	3	26	3	29	the sentence "Mitigation arising from decreasing...." is unclear. I would expect that the mitigation is not arising from but leading to decreasing emissions. [Jan Fuglestedt, Norway]	Accepted - text revised.
16198	3	26	3	29	The sentence reads as if you are suggesting that mitigation from AFOLU or from restoring soil carbon content are not yet part of scenarios that look at climate change mitigation options globally. But there are studies that look at such scenarios and analyses the effects at global level. See for example: van Meijl et al. 2018. Comparing impacts of climate change and mitigation on global agriculture by 2050. Environmental Research Letters 13: 064021, http://iopscience.iop.org/article/10.1088/1748-9326/aabdc4/pdf Please clarify and revise your statement and please specify where in sections 1.2, 1.3 and chapters 2 and 6 the reader should look to find more information. [Lorenzo Giovanni Bellù, Italy]	Cross references to chapters in the report added

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3984	3	26	3	29	Add here and later (e.g., p. 18) from these important statements in Chapter 2: "CO2 fertilisation and its nutrient down-regulation remain the key uncertainty in the prediction of future carbon sinks and sources (robust evidence, high agreement). The nutrients availability would eventually determine the upper limit of plant growth responses and ecosystem carbon sequestration to increasing CO2 (robust evidence, high agreement)." (page 4, lines 24-27) "The sensitivity of soil organic matter (SOM) stocks to changes in climate and plant productivity has been identified as a major uncertainty in global carbon cycle projections (robust evidence, high agreement)." (page 25, lines 15-17) "Overall, the roles of soil microbial community and trophic dynamics in global SOC cycling remain very uncertain." (page 26, lines 48-49) Comment: These unknowns offer great promise for new breakthroughs, but additional research on the processes involved is desperately needed. [Reid Detchon, United States of America]	Rejected . these are important, but chapter 1 should not duplicate chapter 2; and the topic fits better in context of chapter 2
25118	3	26	3	29	AFOLU mitigation has been a part of are of scenarios that explore climate change mitigation options globally, so this statement is not correct. There are not many models that can do it, but those models and studies do exist. For example, studies by IIASA (GLOBIOM) and PNNL (GCAM). See draft Chapter 6 of this report, page 17, lines 19-39 [Sara Ohrel, United States of America]	Comment noted section totally updated and revised.
24246	3	27	3	27	Please write out AFOLU: Agriculture, forestry and other land use (AFOLU) should it be the first time used in the SRCL. [Barron Joseph Orr, Germany]	Accepted - text revised.
24876	3	27	3	27	Define AFOLU as it is first use. [Dale Lockwood, United States of America]	Accepted - text revised.
25192	3	27	3	27	AFOLU' also seems to require defining in case this chapter was a stand alone [Denis Asizua, Uganda]	Comment noted section totally updated and revised.
18662	3	27	3	27	As 'AFOLU' first appears here, this abbreviation should be expanded. [Hiroaki Kondo, Japan]	Accepted - text revised.
17322	3	27	3	27	AFOLU has not been defined before [Jhan Carlo Espinoza, France]	Accepted - text revised.
26856	3	27	3	27	The abbreviation/acronym "AFOLU" is not defined in the text. As it stands readers must search for the meaning of this term in the cited references. Recommend making it easier for readers by inserting "Agriculture, Forestry, and Other Land Use" the first time this acronym is used. [Knut Nadelhoffer, United States of America]	Accepted - text revised.
2416	3	27	3	27	Identify AFOLU acronym. [William Lahoz, Norway]	Accepted - text revised.
7472	3	27	3	28	protection of soil organic carbon within the physical structure of soil [Joris de Vente, Spain]	Accepted - text revised.
5540	3	27	3	28	What does "physical structure" mean here? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24728	3	29	3	29	Use curly braces and do not use phrases such as "sections" or "see also chapters". Referring to an entire chapter is to be avoided, since not helpful given the complexity of IPCC reports and the traceable account can only be found if specific sections where this is contained is given. [Andreas Fischlin, Switzerland]	Noted, copyedit to be completed prior to publication.
24716	3	30	3	30	worldregions' should be written separately [Andreas Fischlin, Switzerland]	Taken into account - combined with other comment.
6952	3	30	3	30	Even globally widespread [Anna Luise, Italy]	Accepted - text revised.
26858	3	30	3	30	Change "worldregions' to "world regions" [Knut Nadelhoffer, United States of America]	Taken into account - combined with other comment.
2328	3	30	3	30	worldregions [Manuel Llansola-Portoles, France]	Taken into account - combined with other comment.
4330	3	30	3	30	world regions, not worldregions [Samantha Grover, Australia]	Accepted - text revised
24732	3	30	3	31	It is questionable to emphasize large differences and then with high confidence for world regions that are not even explained. Why not trying to assess a range by listing a specific world region with the lowest and one with the highest degree of desertification and degradation (, and recovery from past resource over-use) (read on to understand the parentheses). Moreover, the dimension "recovery from past resource over-use" is different from the degree of desertification and degradation. Thus it is not clear what is really assessed here in the bold statement. I think confidence statement would be best given separately to distinguish the two dimensions. [Andreas Fischlin, Switzerland]	Comment noted section totally updated and revised.
3966	3	30	3	40	The two middle sentences about trade are not untrue, but they are of lesser importance and should not have this prominence; they should be omitted. [Reid Detchon, United States of America]	Comment noted section totally updated and revised.
3986	3	30	3	40	Add here and later (e.g., p. 18) from this important statement in Chapter 4 (page 5, lines 6-9): "Avoiding, reducing, and reversing land degradation is urgent for ensuring food security and improving human wellbeing. Early actions will generate both site specific and immediate benefits to affected communities as well as global benefits in terms of climate change adaptation and mitigation in the medium and long term (high confidence)." Also from Chapter 3 (page 4, lines 7-9): "Sustainable land management (SLM) practices in drylands contribute to climate change mitigation and adaptation, increase agricultural productivity, and have substantial co-benefits for the attainment of Sustainable Development Goals (high confidence)." [Reid Detchon, United States of America]	Taken into account - combined with other comment. see 3984
20772	3	30	3	44	Trade can sometimes lead to improvements with land restoration and efforts. Not always though. The counterargument (trade is leading to reduced environmental quality) should be put forward AS WELL. See paper by Ian Sheldon (introduction), which lays out such argument. Sheldon, I. (2006) Trade and Environmental Policy: A Race to the Bottom? Journal of Agricultural Economics https://aede.osu.edu/sites/aede/files/publication_files/Trade%20and%20Environmental%20Policy.pdf [Emmanuelle Quillerou, France]	Noted. Trade statements to be finalised

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
1152	3	31	3	33	Regarding the reference to trade as a significant means of enhancing local food supply, it bears noting that a high percentage of food is consumed in the country in which it is produced (it's of value to note WHAT is traded in high volumes in terms of diversity of foods). See GRAHAM K. MACDONALD, KATE A. BRAUMAN, SHIPENG SUN, KIMBERLY M. CARLSON, EMILY S. CASSIDY, JAMES S. GERBER, AND PAUL C. WEST: "Rethinking Agriculture Trade Relationships in an Era of Globalization." March 2015 / Vol. 65 No. 3 BioScience. Also worth noting re: trade that where trade is currently the answer to a nation's food security, there may be other challenges that if addressed, would enhance a nation's food sovereignty (i.e. closing a yield gap). [Tonya Rawe, United States of America]	Comment noted section totally updated and revised. trade statements to be finalised
25644	3	31	3	36	The argument is not clear. I propose to separate supply-side influences (local action), from demand-side (global trade). Global trade and demand for food, timber and bioenergy can raise the value of such resources, and thus contribute to investments and sustainable management. On the other hand, it may lead to increased pressure and over-exploitation of such resources. I refer you to IPCC SRCL Ch. 4 p11, line 1-5: Certain resources that easily get lost can generally benefit from private land rights and markets to ensure their protection and investment. Other resources that are more communal by nature can be undermined by such approaches. [Jon Magnar Haugen, Norway]	Comment noted section totally updated and revised. supply and demand side separated
110	3	32	3	32	why would global trade in agro-commodities contribute to land restoration and maintenance?-unclear link [Elizabeth Penelope Davies, United States of America]	Comment noted section totally updated and revised.
26860	3	32	3	32	Change "supply" to "supplies" [Knute Nadelhoffer, United States of America]	Accepted - text revised.
15968	3	32	3	33	How? It should be explained [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
1150	3	32	3	33	Why a reference only to (or a focus only on) trade in commodities? Food security is dependent on far more than commodities, and as the report does then pick up on the concept of a food system, it's important to recognize the need for a more diverse food system, the need for more diverse diets, and the overreliance on a select few crops for today's food consumption. (same comment applies to reference to commodities, pg 3, line 41 [Tonya Rawe, United States of America])	Comment noted section totally updated and revised. trade statements to be finalised
9588	3	32	3	40	This sentence does not really fit to the text in bold in the previous sentence. Here we would expect a summary on these differences, and not about means how to alleviate these differences. [Markus Giger, Switzerland]	Comment noted section totally updated and revised.
14870	3	33	3	33	"Indirect land-use changes (ILUC)" should be mentioned. [Florian Claeys, France]	Comment noted section totally updated and revised.
534	3	33	3	33	"Land use displacement" is a new term. It should be included in the glossary, which can build on the explanation provided in the text. However, this term should only be introduced if it has also been used in the underlying chapters. Authors should avoid to introduce new terms for issues that have already been described and where some terminology has already been developed. [Klaus Radunsky, Austria]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
7032	3	33	3	33	In order to enable policy to search for options to reverse land degradation, it would be useful to differentiate between rehabilitation and restoration measures especially in light of land-based adaptation to climate change. For further reading on this matter you may also wish to analyse: Akhtar-Schuster, M., Stringer, L.C., Erlewein, A., Metternicht, G., Minelli, S., Safriel, U., Sommer, S., 2017. Unpacking the concept of land degradation neutrality and addressing its operation through the Rio Conventions. Journal of Environmental Management: 195, Part 1: 4-15. See also the differentiation made in Chapter 4, specifically the definitions provided in section 4.3 for "restoration" and "rehabilitation". [Mariam Akhtar-Schuster, Germany]	Taken into account - combined with other comment. see 14258
14258	3	33	3	33	In order to enable policy to search for options to reverse land degradation, it would be useful to differentiate between rehabilitation and restoration measures especially in light of land-based adaptation to climate change. For further reading on this matter you may also wish to analyse: Akhtar-Schuster, M., Stringer, L.C., Erlewein, A., Metternicht, G., Minelli, S., Safriel, U., Sommer, S., 2017. Unpacking the concept of land degradation neutrality and addressing its operation through the Rio Conventions. Journal of Environmental Management: 195, Part 1: 4-15. See also the differentiation made in Chapter 4, specifically the definitions provided in section 4.3 for "restoration" and "rehabilitation". [Rattan Lal, United States of America]	Rejected . Comment noted section totally updated and revised, but details better in degradation covered in chapter 4.
10350	3	33	3	33	Suggesting trade in bioenergy seems to defeat the purpose for which bioenergy is often advocated, e.g increased energy security, job security etc. [Zitouni Ould-Dada, Italy]	Comment noted section totally updated and revised.
24734	3	33	3	35	"Trade can also lead to..." with high or very high confidence. It is easy to assign high or very high confidence to something that can happen, since this is almost trivial. What authors should try to do instead is to make a more specific statement and then make the uncertainty assessment. E.g. how frequently does trade lead to... or in which cases it regularly leads to etc. [Andreas Fischlin, Switzerland]	Comment noted section totally updated and revised.
5818	3	34	3	35	not well-written! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
25890	3	34	3	40	the explanatory text does not really support the key phrase about regional differences in terms of desertification and degradation. [Hans Poertner and WGII TSU, Germany]	Rejected . point taken but further specific details to be found in ch. 3, ch. 4
26784	3	35	3	35	Agricultural commodities are not generally considered an ecosystem service [Daniel Zarin, United States of America]	Accepted - text revised.
24736	3	36	3	36	The term 'high/medium agreement' does not exist in IPCC uncertainty language. Please complete your assessment as an author team and decide for one of the two. [Andreas Fischlin, Switzerland]	Noted, accepted, uncertainty language added or revised.
112	3	36	3	36	agro-commodities are not an ecosystem service [Elizabeth Penelope Davies, United States of America]	Accepted - text revised.
5542	3	36	3	36	"Ecosystem services" needs to be defined [Sanaz Moghim, Iran]	See new X-chapter box on ecosystem services, developed through chapter 6

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20562	3	37	3	42	sentence very long and hard to understand [Bettina Weber, Germany]	Comment noted section totally updated and revised.
5820	3	38	3	39	"Context specific actions"? And in an overall fair and equitable actions"? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
7474	3	38	3	40	not sure what is meant by this sentence [Joris de Vente, Spain]	Comment noted section totally updated and revised.
10358	3	39	3	39	Climate change and land degradation are two of the major global challenges [Zitouni Ould-Dada, Italy]	Accepted - text revised.
4332	3	39	3	40	remove comma after levels, add comma after adaptation, replace "being" with "acruing as" positive side effects [Samantha Grover, Australia]	Comment noted section totally updated and revised.
24730	3	40	3	40	Use curly braces and do not use phrases such as "sections" or "see also chapters". Referring to an entire chapter is to be avoided, since not helpful given the complexity of IPCC reports and the traceable account can only be found if specific sections where this is contained is given. Here it is even unclear what is meant by "3-5", a section or chapter 3 to 5. Yet, do NOT refer to entire chapters, this is useless to readers. [Andreas Fischlin, Switzerland]	Taken into account - combined with other comment.
3988	3	40	3	40	suggest adding section 1.3 - or deleting the "s" in "sections" [Reid Detchon, United States of America]	Accepted - text revised.
2330	3	40	3	44	the enhancement [Manuel Llansola-Portoles, France]	Comment noted section totally updated and revised.
7476	3	41	3	41	something wrong with this sentence 'is as important as supply for the achievement of sustainable' [Joris de Vente, Spain]	Comment noted section totally updated and revised.
11878	3	41	3	42	The first half of this sentence seems unclear/confusing. Something is missing. Consider revising. [Burba George, United States of America]	Accepted - text revised.
20774	3	41	3	42	This is a perspective clearly heavily based in agriculture. Nothing wring with it of course but limiting land to agriculture is not right for such a report. Forestry, mining, ... They are all land-based economic activities that are different from agriculture and that can drive land degradation and/or restoration. [Emmanuelle Quillerou, France]	True, but some "agricultural focus" arises from the food security aspect in the report's title
7356	3	41	3	42	Change to "Demand for agricultural and wood commondities..." [Marieke Sandker, Italy]	Accepted - text revised.
9692	3	41	3	43	uncelar sentence [Jan Fuglestedt, Norway]	Accepted - text revised.
26862	3	41	3	43	Change "...for the achievement of sustainable land management, for the reversal of desertification and degradation, the reduction of greenhouse gas emissions and to enhance food security..." to "... for achieving sustainable land management, reversing desertification and degredation, reducing greenhouse gas emissions, and enhancing food security" [Knute Nadelhoffer, United States of America]	Accepted - text revised.
17028	3	41	3	43	Please revise the statement to refect that it is how demand and supply are addressed that determines the achievement of the goals enumerated. [Lourdes Tibig, Philippines]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
5822	3	41	3	43	not well-written! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
5932	3	41	3	43	rewrite [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
6822	3	42	3	42	Would the statement be clearer if ", for the reversal of desertification and degradation," is replaced by "for the reversal of desertification and land degradation,"? [Wilfran Moufouma Okia, France]	Comment noted section totally updated and revised.
24718	3	43	3	43	There is no such category as high/medium agreement. Authors need to concur. [Andreas Fischlin, Switzerland]	Noted, accepted, uncertainty language added or revised.
24738	3	43	3	43	The term 'high/medium agreement' does not exist in IPCC uncertainty language. Please complete your assessment as an author team and decide for one of the two. [Andreas Fischlin, Switzerland]	Noted, accepted, uncertainty language added or revised.
5544	3	43	3	44	can be done by everyone not just "high income population" [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
20792	3	44	3	44	There is also a global shift with higher demand for animal proteins, in particular beef which is very detrimental to land and climate. [Emmanuelle Quillerou, France]	Accepted - text revised.
17350	3	44	3	44	Animals rely on pasture land should be clearly emphasized [Fei Lu, China]	Comment noted section totally updated and revised.
26864	3	44	3	44	Change "population" to "populations" [Knut Nadelhoffer, United States of America]	Accepted - text revised.
27090	3	44	3	44	<p>The list of demonstrable positive impacts on land use should prominently include the reduction of bioenergy use, e.g., by inserting after "protein" the following text: ", substituting bioenergy with less polluting energy sources".</p> <p>Reasons:</p> <ul style="list-style-type: none"> - Overwhelming evidence from historic records from diverse world regions show the detrimental effect on land use of bioenergy. The reliance on biomass and peat for energy was responsible for a lot of the detrimental land use changes, the degradation of ecosystems and led to serious resource shortages (e.g., in Europe in the 18th-19th century or Japan in the middle ages). It has even been implicated in the collapse of certain civilisations. - The energy use of biomass is known to be a major driver of deforestation and forest degradation in many parts of the world, in particular sub-Saharan Africa. - The replacement of biomass use for energy ("non-renewable biomass") is a category of carbon offset projects under the Clean Development Mechanism of the Kyoto Protocol. - Crop-based biofuels are well known to put extra demand on land, leading to intensification and the expansion of arable land at the expense of more natural ecosystems of higher carbon stock, whilst their mitigation impact remains doubtful (Do biofuel policies seek to cut emissions by cutting food? BY T. SEARCHINGER, R. EDWARDS, D. MULLIGAN, R. HEIMLICH, R. PLEVIN SCIENCE27 MAR 2015 : 1420-1422) [Zoltán Rakonczay, Belgium] 	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
19264	3	1	4	42	Executive summary could start from 'Decision makers are faced with the.....' and 'Assessing new knowledge on land and climate change' paragraphs, while the remaining messages, which are less relevant to climate impacts and already been addressed by other parallel reports (such as IPBES Land Degradation and Global Assessment of land degradation by UNCCD) could be moved elsewhere or even deleted/shortened to avoid potential distraction. [Binaya Raj Shivakoti, Japan]	We do not use this exact language but have upfront statement about decision makers needs.
9688	3	1	4	42	I think the ES can be more explicit on the critical role of negative emissions and related land use for achieving the Paris goals. And also make the competing and conflicting perspectives more clear. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.
18832	3	1	4	42	The linkage of Executive summary with other sections in this chapter is loose, and Executive summary is not extracted and purified from all sections in this chapter. [Jianguo Wu, China]	Comment noted section totally updated and revised.
3728	3	1	4	42	Not enough on adaptation (says WG III co-chair) [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Now balance mitigation and adaptation better in the Executive summary and in the text
10328	3	1	4	42	Overall, I felt the executive summary is too long, and the language used in some sections is cumbersome, rather than providing a short summary to the key points of the review. For example I consider "Decision makers are faced with the task of developing and implementing policies that are based on many knowns but also many unknowns" to be a rather general point rather than a key message of the report. [John Devaney, Ireland]	Comment noted section totally updated and revised.
26834	3	1	4	42	The Executive Summary should really include a statement on historical climate trends and future projections in drylands, which is one of the focal areas of this report. [Patrick Gonzalez, United States of America]	Rejected . chapter 3 deals specifically w drylands
26836	3	1	4	42	A clear and scientifically robust statement of the anthropogenic cause of climate change would be an effective and necessary start to the chapter, but the Executive Summary is silent on this key point of science relevant to adaptation and mitigation [Patrick Gonzalez, United States of America]	Comment noted section totally updated and revised.
2628	3	1	4	42	IPCC executive summaries are usually around 2 IPCC pages (2*950 words) in length. This executive summary could be strengthened by including more content and by including IPCC uncertainty language within all statements. [Sarah Connors, France]	Noted, copyedit to be completed prior to publication.
1148	3	1	4	42	The executive summary lacks discussion of the current context of food insecurity, which is a critical reference point or point of departure for considering future scenarios. There is more frequently reference to future demand changes due to population and dietary shifts, but these must be seen in light of current levels of food insecurity. [Tonya Rawe, United States of America]	Rejected . specific messages about food security in chapter 5, but (in condensed phrasing) also in revised ES of chapter 1

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24714	3	2	4	42	<p>Confidence statements are missing throughout. I would like to know why. Do authors refuse to make confidence statements in general? It seems so. However, given the statements made, e.g. "Today's demand for land resources is unprecedented, both in terms of magnitude but also in terms of the multitude of different ecosystem services required (robust evidence, high agreement)." or "Alternatively, smaller areas needs are associated with intensive use of water and fertiliser, and possibly detrimental impacts on local water resources and air quality (robust evidence, high agreement)." I would not understand why not giving these statements a very high confidence. It seems the authors did therefore not comply to standard IPCC practice and authors need to consider to follow uncertainty guidance, i.e. Mastrandrea et al., 2010. It might help authors to also read Mach et al., 2017, notably Figure 1. I suggest to use confidence statements whenever possible and at least in the bold parts of the ES. The explanatory text can then contain also agreement, evidence assessments. Note, the latter are particularly helpful in cases of medium confidence.</p> <p>Moreover, every ES bullet needs to have curly braces at the end that refer to the sections in which the traceable account of the assessment can be found. There it must become clear how the authors have derived their uncertainty assessment, e.g. the confidence by discussing the evidence and the agreement.</p> <p>Cited References: ----- Mach, K. J., Mastrandrea, M. D., Freeman, P. T., & Field, C. B., 2017. Unleashing expert judgment in assessment. Glob. Environ. Change, 44(May): 1-14. https://doi.org/10.1016/j.gloenvcha.2017.02.005 Ma601</p> <p>Mastrandrea, M. D., Field, C. B., Stocker, T. F., Edenhofer, O., Ebi, K. L., Frame, D. J., Held, H., Kriegler, E., Mach, K. J., Matschoss, P. R., Plattner, G. K., Yohe, G. W., & Zwiers, F. W., 2010. Guidance note for lead authors of the IPCC Fifth Assessment REport on consistent treatment of uncertainties. IPCC: Intergovernmental Panel on Climate Change: Geneva, Switzerland. 5pp. (https://www.ipcc.ch/publications_and_data/publications_and_data_supporting_material.shtml?search=1) Ma465 [Andreas Fischlin, Switzerland]</p>	Noted, accepted, uncertainty language added or revised.
25638	3	2	4	42	<p>General comment: The introductory statements in all paragraphs are merely descriptive. They should rather give a summary of lessons learned. Examples are provided in the following [Jon Magnar Haugen, Norway]</p>	Comment noted section totally updated and revised.
20820	3	41	4	9	<p>This key finding seems to be more appropriate for chapter 6 as sections 1.4 and 1.5 relate mostly with "Issues" [Carolina Vera, Argentina]</p>	Rejected . It is an important message, and to our minds it is defensible to introduce it in chapter 1, while chapter 6 substantiates it further
3516	3	41	4	9	<p>This paragraph in the executive summary first emphasizes that with respect to SLM, the demand side is as important as the supply side; it goes on to list three major options for reducing the demand pressure. One major option is however missing : reduce the world population. Although this option can only be implemented on a comparatively long term, it is sound and efficient and therefore should at least be mentioned and discussed. [Philippe Waldteufel, France]</p>	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3968	3	41	4	9	Similarly, the emphasis here on consumer demand is not matched by the rest of the report, which after all was charged with addressing "climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems." Food systems are relevant to public policy addressing these topics, but they are not the principal concern of this report. [Reid Detchon, United States of America]	Rejected . consumer demand is adressed in an increasing number of studies that analyse options to reduce greenhouse gas emissions.
25592	3	44	4	9	Can the summary provide examples of succesful sustianable land management practices. Some examples of sustainable intensification are agroforestry and silvopastoral systems. [Laura Schneider, United States of America]	Comment noted section totally updated and revised.
25668	3	2	6	33	<p>The introductory text includes mostly reflections from social science (competition over land etc.), while the fundamental natural processes are not reflected. I would add something like this, modified from the mandate:</p> <p>"Agriculture, Forestry and Other Land Use (AFOLU) fills an ever more integral role for global warming. These sectors influence climate via GHG emissions, removals and other geophysical forcing. The share of emissions is increasing, the estimate included in the IPCC AR5 SPM suggests 21% of global GHG emissions, while approaches and figures for such estimations vary widely. They are also seen as an avenue for mitigation through for instance afforestation or bioenergy. While abstaining from mitigation in this sector has its downsides, various mitigation efforts can also have important downsides. Lands and agriculture are also strongly impacted by global warming, and resulting threats to food security, ecosystems and well-being is an important reason to curb global warming. There is a strong interest for approaches that meet a combination of goals at the same time, for instance soil-based sollutions that improve yields, carbon sinks and water transport. Policies related to these sectors will also play an ever more important role for climate, food security and ecosystems.</p> <p>There is a need to assess the current state of knowledge concerning AFOLU and in particular aspects such as: its full contribution to climate change (due to carbon balance alteration, changes in emissions/uptake of N2O, CH4 and short-lived climate forcers, changes in surface albedo and energy balance), climate change impacts, uncertainties in historical and future land use and land-cover change emissions, as well as its potential contributions and downsides of various approaches towards mitigation and adaptation. A special report can help to improve methodology for emissions estimates based on a synthetic review of the available literature, determine emission trends, and examine their distribution (e.g. across regions and land use & forest types). It could determine which types of action are most important for mitigation both in the short and the long term (e.g. afforestation, avoided deforestation, climate-smart agriculture), identify which regions or sectors are most important, and identify impacts on other sectors. It could also identify the types and regions of land and land use that would be particularly vulnerable to climate change and those where there is greatest potential to adapt to the impacts. Finally, the report will provide a unique opportunity to bring together and synthesize knowledge on the trade-offs and win/win aspects of AFOLU practices and policies, as land-use and land-use change alters not only the climate-regulation services of ecosystems</p>	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
8126	3	1	30	42	<p>This chapter is well detailed and gives a good summary for the start of the whole report. To me it serves the purpose for a Framing and Context piece. However, I find it weak in several aspects. The first aspect is in land ownership. I find it shallow in painting the current picture on land ownership across the world. It however does well in detailing the different land use trends and future projection. I suggest adding a piece on land ownership dynamics especially in North America and Africa as an example before embarking on land use. This I think will resonate directly with the policy implications and strategies that you will suggest at the end. Another important aspect is on Resource efficiency leading to pollution and overconsumption (am merging them together because I think they are intertwined in relation to land as a resource). This introductory chapter is faint in this aspect. It is beneficial to address the land -climate change nexus using these aspects strongly. Resource efficiency and land use is a direct thread that you ought to investigate/assess. In Europe this is an emerging issue and its leading directly to pollution and land degradation. I suggest using an infographic to show for example how land as a resource translates into climate change risk. In this infographic use direct and indirect drivers (or triggers) and propose their mitigation in this chapters as a set piece for a detailed discussion in the respective chapters. The final weak link is on human health and wellbeing. At the end of this assessments/reports all we need to achieve is human health and wellbeing through sustainable use of resources. I suggest that you make this a thread that all aspects of land either affect directly or indirectly. Climate change in itself speaks directly to this and I would suggest that it's made a bit more 'louder' than it is currently painted. My experience with policy making is that policy makers will always look at the links to human health, wellbeing and economic implications first and more keenly than any other aspect of a report. Here there is a chance to bring out the interaction of land to the ecosystem and human health. It is important to link the emerging and re-emerging zoonotic diseases to climate change and land directly. Kindly see these two publications; UNEP_Frontiers_2016_report_emerging_issues_of_environmental_concern.pdf and UNEP Year Book 2014: emerging issues in our global environment UNEP_YearBook_2014 [Franklin Odhiambo, Kenya]</p>	Land ownership section added
1468	3	1	30	42	<p>Executive summary needs to be presented in plain language so that it can easily be understood and followed by the non-technical readers, as well. Each section needs some keywords in bold at the end or beginning of the section. This would make reader to see what has been addressed in the document and clearly mentioned upfront in chapter 1.</p> <p>All the sections highlighted with bold are well presented with relevant references. Referencing job has been done well, however, I made a count of the 30 page of reference list and found 565 (+ or -) references in the text with equal number of pages, 30 pages. However, the total number of references in the list at the end found to be only 441. In other words, 124 references have been missing from the list. I hope my calculation is right and I have not checked the missing references from the list due to lack of time. [Md Moazzem Hossain, Australia]</p>	Accepted. Executive summary revised; references will be double checked
11708	3		30		<p>While this chapter presents a lot of use information it does not yet present a coherent narrative that acts to frame the remainder of the report. Also clear links need to be made back to SR1.5 and SROCC. [Debra Roberts, South Africa]</p>	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16574	3		30		Some paragraphs are too much biased towards single references. Please revise. [Merja Tölle, Germany]	Comment noted section totally updated and revised.
21130	3	6			migration and migration trends are also unpredictable and play important role in urban growth [Hasnat Aslam, Pakistan]	Comment noted section totally updated and revised.
16538	3	8			Maybe add a sentence about where and which regions are especially vulnerable. [Merja Tölle, Germany]	Comment noted section totally updated and revised.
20558	3	9			write "land loss" instead of "land mitigation" [Bettina Weber, Germany]	Accepted - text revised.
1858	3	9			Page 3 Line 9 delete 'see' [Mastura Mahmud, Malaysia]	Accepted - text revised.
7630	3	11			Clearer to read without brackets: 'Global status of land use [Natasha Hall, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised.
7632	3	11			Unclear: 'many knowns but also many unknowns', could be improved to be clearer: e.g. 'based on the known and unknown.' [Natasha Hall, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised.
1860	3	12			Page 3 Line 12. Section 1.3, Chapter 6. delete ', see also' [Mastura Mahmud, Malaysia]	Accepted - text revised.
1862	3	17			pg 3 Line 17. Introduce the full 'Land Base Management' before the acronym LBM [Mastura Mahmud, Malaysia]	Accepted - text revised.
400	3	17			The Executive Summary can be clarified by avoiding the excessive use of freight-trains (i.e. long strings of nouns acting as modifiers) in which the relationship between the various elements is obscure. For example, land based climate change mitigation (LBM) features can be clarified by inserting a few prepositions or hyphens to specify the relationships between and among the various elements of this term. The abbreviation LBM suggests that this term can be simplified to Land-based mitigation to climate change [Paul Glaser, United States of America]	Comment noted section totally updated and revised.
1864	3	20			Page 3, Line 20. AR5 (IPCC, 2013) [Mastura Mahmud, Malaysia]	Accepted - text revised.
16540	3	20			Maybe add one sentence about why it is not well established. [Merja Tölle, Germany]	Comment noted section totally updated and revised.
26422	3	23			The sentence "requirements for e.g. bioenergy crops or afforestation/reforestation..." appears unbalanced if not put into wider context of options for energy provision including CO2 recycling and synthetic fuels by technological means (see SR1.5 and recent papers in Joule (https://doi.org/10.1016/j.joule.2018.05.006) and Science: (DOI: 10.1126/science.aas9793). [Hans Poertner and WGII TSU, Germany]	Comment noted section totally updated and revised.
17718	3	24			If biomass production for advanced biofuels is confined to more marginal soils there does not have to be much competition with food production. However, the biodiversity aspect could still be somewhat affected. I note that there is some comment on this in chapter 6. If it is useful I could provide a few sentences on this. [Donald Smith, Canada]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
17720	3	25			Again, with advanced biofuel crops this does not have to occur [Donald Smith, Canada]	Accepted - text revised.
1866	3	26			Page 3 Line 26. 'robust' should be in italics [Mastura Mahmud, Malaysia]	Accepted - text revised.
20560	3	27			AFOLU' written for the first time -> explain abbreviation [Bettina Weber, Germany]	Taken into account - combined with other comment.
5282	3	27			from reducing soil carbon losses and /or increasing soil carbon sequestration/ [Daniel Danano Dale, Italy]	Comment noted section totally updated and revised.
1868	3	27			Pg 3, Line 27: introduce Agriculture, Forestry and Other Land Use (AFOLU) acronym [Mastura Mahmud, Malaysia]	Accepted - text revised.
1870	3	27			Page 3 Line 27. Acronym for AFOLU not introduced in this chapter. [Mastura Mahmud, Malaysia]	Accepted - text revised.
1872	3	29			Page 3, Line 29. (Sections 1.2, 1.3; Chapters and 6) [Mastura Mahmud, Malaysia]	Accepted - text revised.
5284	3	30			between regions / or among regions in the world - there is need to rewrite the statement in line 30 and 31 [Daniel Danano Dale, Italy]	Taken into account - combined with other comment.
1874	3	30			Page 3 Line 30. separate 'world regions' [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
8354	3	30			keep space between world and regions [Shijo Joseph, India]	Noted, copyedit to be completed prior to publication.
8356	3	37			may need to use 'the' before assessment. [Shijo Joseph, India]	Noted, copyedit to be completed prior to publication.
5286	3	39			Climate change and land degradation are two of the major global challenges [Daniel Danano Dale, Italy]	Accepted - text revised.
1876	3	40			Page 3, Line 40. (Section 1.4; Chapters 3-5) [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
10360	3	40			The statement "Demand for agricultural commodities is as important as supply for the achievement of sustainable land management, for the reversal of desertification and degradation, the reduction of greenhouse gas emissions and to enhance food security (robust evidence, high/medium agreement)." This expression is not clear. Maybe better replaced by "Demand for agricultural products is growing at higher pace than the efforts to reverse land degradation and land under sustainable management [Zitouni Ould-Dada, Italy]	Accepted - text revised.
17722	3	44			Change "shifts" to "dietary shifts" [Donald Smith, Canada]	Accepted - text revised.
5280	3				to keep warming below 20C [Daniel Danano Dale, Italy]	Comment noted section totally updated and revised.
26866	4	1	4	1	"have all" to "all have" [Knut Nadelhoffer, United States of America]	Noted, copyedit to be completed prior to publication.
4334	4	1	4	1	all have, not have all [Samantha Grover, Australia]	Noted, copyedit to be completed prior to publication.
5546	4	1	4	1	"multiple benefits" ? [Sanaz Moghim, Iran]	Accepted - text revised.
20478	4	1	4	1	There should be a section on the role of research institution and their potential contribution to the science based approach of tackling climate change and land use. [Wesam Al Madhoun, Malaysia]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20480	4	1	4	1	There should be a section on the regional and global cooperation to share knowledge and success stories among them which will contribute positively to tackle these challenges. [Wesam Al Madhoun, Malaysia]	Rejected . chapter 7
24740	4	2	4	2	The term 'medium/robust evidence' nor 'high/medium agreement' exists in IPCC uncertainty language. Please complete your assessment as an author team and decide for one of the two. [Andreas Fischlin, Switzerland]	Noted, accepted, uncertainty language added or revised.
6824	4	2	4	2	Not sure what is meant by (medium/robust evidence, medium/high agreement)? The text will gain in clarity if a single certainty qualifier is used for evidence and for agreement [Wilfran Moufouma Okia, France]	Noted, accepted, uncertainty language added or revised.
25416	4	2	4	3	Incomplete sentence [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
20776	4	2	4	4	"Therefore managing land sustainably requires not only shifts in production patterns in response to changes in consumption preferences.".... but also ? [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
10034	4	2	4	4	The sentence starting "Therefore managing land sustainably..." does not make sense. I guess what is meant is "...but also changes in consumption preferences". Please check. [Reinhard Prestele, Germany]	Taken into account - combined with other comment.
3284	4	2	4	4	Incomplete statement [Suresh Kumar, India]	Noted, copyedit to be completed prior to publication.
18904	4	3	4	3	It suggested to remove "not only" to improve comprehension [Carlos Matias Figueroa, Mexico]	Taken into account - combined with other comment.
3990	4	3	4	3	replace "in response to" with "but also" [Reid Detchon, United States of America]	Taken into account - combined with other comment.
4336	4	3	4	3	replace "not only" with "more than just" [Samantha Grover, Australia]	Taken into account - combined with other comment.
18906	4	4	4	4	Change "applied" to "used" [Carlos Matias Figueroa, Mexico]	Comment noted section totally updated and revised.
11770	4	4	4	4	It would be better to write "to assess future global environmental changes" instead of "to assess future climate and global environmental changes". In fact, global environmental changes include climate change issues... [Jacques Andre Ndione, Senegal]	Accepted - text revised.
4338	4	4	4	6	The sentence beginning Today's scenarios is too long and doesn't make sense. Try this: Today's scenarios that are applied to assess future climate and global environmental changes include assumptions about such changes in consumption patterns. However, pathway analysis to support societal transition to achieve these changes is lacking. [Samantha Grover, Australia]	Comment noted section totally updated and revised.
26868	4	5	4	6	This sentence is too long and complex. Suggest ending the sentence here "...about such consumption changes." then converting the final phrase into a sentence, "Pathway analysis to support decisions of how these changes can be achieved, however, is lacking." [Knute Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
1830	4	5	4	6	re: "pathway analysis to support decisions of how these [consumption] changes can be achieved is lacking"; social sciences have significant insight into such, even if further research could be useful [Rianne ten Veen, Netherlands]	Noted no action needed.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20778	4	6	4	8	The Global Mechanism of the UNCCD has developed a score card to identify such barriers to sustainable land management. This tool could be applied more but it does exist. There is a lot of inhibiting factors that was set up as part of this score card. Specific inhibitors in one reion/area/plot may not be identified, but the overall list is. Your texte does not reflect this. [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
26870	4	6	4	8	Change "The inhibiting factors preventing the full transition to sustainable land management (SLM) still have to be identified, in order to understand why SLM has not yet been adapted, and pathways to overcome transitional boundaries enabled (sections 1.4, 1.5, see also chapter 5-7)"/" to "The factors preventing full transition to sustainable land management (SLM) have not been identified, thereby limiting understanding of why SLM has not yet been adapted and impeding identification of pathways to overcome transitional boundaries (sections 1.4, 1.5, see also chapter 5-7)." [Knut Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
20662	4	6	4	8	This could be due to limited research in land use change areas, which could determine the rationale of the land use decision, because most of modelling work in this areas missed the integration of social component [Mahamadou Laouali Amadou, Niger]	Noted no action needed.
536	4	6	4	9	The last part of the quite long sentence staring with "The inhibiting factors ... lacks clarity. One option would be to split this long sentence in several parts. E.g.: The inhibiting factors preventing the full transition to sustainable land management (SLM) still have to be identified. Once there is a reasonable understanding why SLM has not yet been achieved it should be possible to develop pathways to overcome those barriers to a transition to SLM. [Klaus Radunsky, Austria]	Comment noted section totally updated and revised.
4340	4	8	4	8	replace "adapted" with "adopted", add in "to enable" between and and pathways eg and to enable pathways to overcome transitional boundaries. Delete "enabled" from the end of the sentence. [Samantha Grover, Australia]	Comment noted section totally updated and revised.
24744	4	8	4	9	Do NOT refer to entire chapters, this is useless to readers and the traceable account of your assessment can't be found. [Andreas Fischlin, Switzerland]	Accepted - text revised.
24742	4	10	4	11	This statement of fact is so trivial, it is not worth making. You should also refrain from insinuating what policy-makers are doing, since you might be totally wrong. I suggest to delete. [Andreas Fischlin, Switzerland]	Accepted - text revised.
25842	4	10	4	11	Please consider rephrasing the first sentence to better reflect the urgency and the the complexity described later on in this paragraph. [Hans Poertner and WGII TSU, Germany]	Comment noted section totally updated and revised.
3730	4	10	4	11	This is a classic content-free statement that could apply to any policy field - education, health, diplomacy and defence! "In the face of many unknowns, rapid but flexibly applied land management that help avoid lock-in can prepare for a future that includes many knowns but also many unknowns related to climate and other drivers". Just a try [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
2332	4	10	4	11	This sentence reads odd # Decision makers are faced with the task of developing and implementing policies that are based on many knowns but also many unknowns.# It could be better if it says something similar to # Decision makers are faced with the task of developing and implementing policies that are based on many evidences and many uncertainties.# [Manuel Llansola-Portoles, France]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3068	4	10	4	11	Role of ethic in development and uncertainties data in decision making should be considered. [Mostafa Jafari, Iran]	Comment noted section totally updated and revised.
5824	4	10	4	11	not well-written! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
5934	4	10	4	11	cannot follow! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
26482	4	10	4	22	add confidence statement [Hans Poertner and WGII TSU, Germany]	Noted, accepted, uncertainty language added or revised.
26872	4	11	4	11	delete "of the" [Knut Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
5548	4	11	4	11	"existing issues", like what? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
2860	4	11	4	22	is it possible to qualify some of the statements below? as medium evidence/high agreement etc. [Cordula Ott, Switzerland]	Accepted - text revised.
24248	4	13	4	15	Please further elaborate on the relation between "poor governance regimes" and "socio-economic backdrop of unsustainable land use practices" while briefly referring to how both these variables "coexist". [Barron Joseph Orr, Germany]	Comment noted section totally updated and revised.
24250	4	13	4	15	Please consider including (i) uncertainty language with evidence and agreement scale (suggestion for both evidence and agreement: medium) and/or (ii) respective reference(s) for this important argument. [Barron Joseph Orr, Germany]	Noted, accepted, uncertainty language added or revised.
20664	4	13	4	15	I may suggest to clearly highlight the coexistence of the western and traditional regulations on land rights and tenure in this context especially West African countries [Mahamadou Laouali Amadou, Niger]	Rejected . important to highlight land rights/tenure in general, but regional-details better covered in chapter7
1156	4	13	4	15	Land resources are also highly linked to hunger (food insecurity) and poverty. These factors interact (along with tenure, rights, governance, and conflict) to shape or drive the manner of land use. [Tonya Rawe, United States of America]	Comment noted section totally updated and revised.
5826	4	13	4	17	not well-written! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
5936	4	13	4	17	needs to rewrite [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
2334	4	14	4	14	No need for land in front of each word [Manuel Llansola-Portoles, France]	Comment noted section totally updated and revised.
24878	4	14	4	15	Unsustainable land use happens even w/ good governance but with poor time scale planning and economic drivers [Dale Lockwood, United States of America]	Comment noted section totally updated and revised.
26874	4	15	4	15	"which" to "that" [Knut Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
26876	4	16	4	16	Change "... has the option to combine interventions for both adaptation and mitigation, and avoid..." to "can combine interventions for both adaptation and mitigation, and thereby avoid..." [Knut Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
24880	4	17	4	17	Consider replacing "Rapid, but flexibly adjustable actions" with "Adaptive management" [Dale Lockwood, United States of America]	Comment noted section totally updated and revised.
9694	4	17	4	17	I suggest adding "e.g." before "carbon emission only" [Jan Fuglestedt, Norway]	Accepted - text revised.
538	4	17	4	17	The wording in brackets (carbon emission only) lacks clarity. It seems that these words should refer to "climate change mitigation". It is highly recommended to use language include in one of the SDG goals/targets - a terminology already agreed by policy makers and to which policy makers are becoming more and more used to and also used in line 33 of the same page. [Klaus Radunsky, Austria]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
1832	4	17	4	17	"single-objective interventions (carbon emission only)." - add "such as" after opening bracket [Rianne ten Veen, Netherlands]	Comment noted section totally updated and revised.
728	4	17	4	17	add "e.g." in front of 'carbon emission only' [Rolf Sommer, Kenya]	Comment noted section totally updated and revised.
4342	4	17	4	18	add a comma after adjustable, replace "even" with "ever" [Samantha Grover, Australia]	Accepted - text revised.
2864	4	17	4	20	include both, local and global perspective. For example: global economy/trade with extractive impact on localities.. it is urgent that halt such negative impact ... [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
7294	4	17	4	20	It is highly debatable whether rapid urbanization exacerbates negative impacts on land-use and land use change, one could equally argue that rapid urbanization reduced pressure on land use change [Marieke Sandker, Italy]	Comment noted section totally updated and revised.
114	4	18	4	18	infrastructure - roads, railways, hydrovias, hydroelectric is driving land use change and tropical deforestation and is the next significant proximate driver after agriculture and urbanisation [Elizabeth Penelope Davies, United States of America]	Comment noted section totally updated and revised.
7034	4	18	4	18	You may wish to consider other demographic dynamics and not only population growth that require rapid, but flexibly adjustable actions (e.g. rural-urban shift, forced human displacement). [Mariam Akhtar-Schuster, Germany]	Taken into account - combined with other comment. see 14260
14260	4	18	4	18	You may wish to consider other demographic dynamics and not only population growth that require rapid, but flexibly adjustable actions (e.g. rural-urban shift, forced human displacement). [Rattan Lal, United States of America]	Comment noted section totally updated and revised.
26878	4	19	4	19	"cross-country" to "inter-country". [Knute Nadelhoffer, United States of America]	Accepted - text revised.
2336	4	19	4	19	This sentence could be simplified #and cross-country migration exacerbate negative implications for land use, atop of climate change, and can also have large negative feed-backs to climate change.# [Manuel Llansola-Portoles, France]	Taken into account - combined with other comment.
3918	4	19	4	19	atop to be changed into a top [Tarig Ibrahim, Sudan]	Noted, copyedit to be completed prior to publication.
26880	4	20	4	20	End the sentence at "climate change". Then convert the last phrase to a sentence. However, see next comment. [Knute Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
26882	4	20	4	20	Can't the factors mentioned in lines 18 and 19 also have positive feedbacks to climate? If so, reword this. [Knute Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
5550	4	20	4	20	I believe "negative feed-backs" should be positive based on the text! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
16010	4	20	4	21	The meaning of this sentence is not clear [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
2866	4	20	4	42	...this paragraph justifies the whole reporting. This paragraph delivers elements of the mandate of the report... emphasize it, make it more clear. The arguments provided can be integrated in Chapter 1.2. Vision/Mandate. Especially also consider LBM as part of all global efforts.. [Cordula Ott, Switzerland]	Comment noted section totally updated and revised. included now in section 1.2
24746	4	21	4	22	Do NOT refer to entire chapters, this is useless to readers and the traceable account of your assessment can't be found. [Andreas Fischlin, Switzerland]	Accepted - text revised.
10456	4	21	4	22	explain which is the window for reversing current trends to avoid a lock-in of capital and technology [Zitouni Ould-Dada, Italy]	Comment noted section totally updated and revised.
25642	4	23	4	23	Need for knowledge is a no-brainer. Rather highlight the lessons/points made in line 38 through 42: "As food, energy and water security continue to rank high..." [Jon Magnar Haugen, Norway]	Comment noted section totally updated and revised.
2338	4	23	4	23	I do not like the use of timely in this sentence, maybe opportune would fit better [Manuel Llansola-Portoles, France]	Comment noted section totally updated and revised.
5552	4	23	4	23	what does "timely" mean [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
3070	4	23	4	24	Facilitation of Transfer of technology to improve knowledge should be mentioned. [Mostafa Jafari, Iran]	Comment noted section totally updated and revised.
3992	4	23	4	25	simplify sentence to read: In 2023 the parties to the Paris Agreement will revisit and evaluate progress on Nationally Determined Contributions (NDCs) as part of a global stocktake. [Reid Detchon, United States of America]	Comment noted section totally updated and revised.
4344	4	23	4	25	Try rewording the sentence: By 2023, parties to the Paris Agreement will have revisited and evaluated progress on Nationally Determined Contributions (NDCs), by way of the global stocktake. [Samantha Grover, Australia]	Comment noted section totally updated and revised.
11696	4	23	4	42	Material better suited for chapter text rather than Executive Summary which should only address most strategic and impactful assessment findings. [Debra Roberts, South Africa]	Comment noted section totally updated and revised.
25892	4	23	4	42	Already the first paragraph of the ES is about the relevance and timeliness of this report. This paragraph also is too long. [Hans Poertner and WGII TSU, Germany]	Comment noted section totally updated and revised.
1888	4	23	4	42	Last paragraph, pg 4, lines 23 to 42. Comment: Hence the report must be in a language that can be understood and accepted by the (that transcends all the) stakeholders [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
6826	4	23	4	42	Lacking certainty language [Wilfran Moufouma Okia, France]	Noted, accepted, uncertainty language added or revised.
24750	4	24	4	24	In this context Parties is to be capitalized [Andreas Fischlin, Switzerland]	Accepted - text revised.
14760	4	24	4	24	Please clarify the phrase "global stock take parties to the Paris Agreement." [Paul Glaser, United States of America]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24752	4	25	4	26	Governments have not requested this report, the Panel of the IPCC has decided to prepare this report. Moreover, IPCC must and should not be confounded with the UNFCCC. Governments send delegations to both bodies who act there as their representatives. [Andreas Fischlin, Switzerland]	Comment noted section totally updated and revised.
4346	4	28	4	28	replace "opportunity of updating" with "opportunity to update" [Samantha Grover, Australia]	Accepted - text revised.
9696	4	28	4	30	Important point but what does "accompanying" mean here? Not the right word I think. I expect the SRCL to go deeper into to issues that are beyond what SR1.5 could do. [Jan Fuglestedt, Norway]	Depth is indeed important; role of chapter 1 is the framing, additional, detailed information is mostly provided by chapter 2-7
24754	4	29	4	29	This sentence is difficult to read and sounds awkward: "the issues specified in the 29 report's title". I doubt that is the case, since the actual issues are not really well covered by the title. [Andreas Fischlin, Switzerland]	Comment noted section totally updated and revised.
26884	4	29	4	29	Change "has arisen" to "have arisen" [Knut Nadelhoffer, United States of America]	Accepted - text revised.
14872	4	30	4	32	Do not forget to mention UNFCCC, jointly with UNCBD and UNCCD. [Florian Claeys, France]	Accepted - text revised.
9590	4	30	4	34	sentence appears to be incomplete [Markus Giger, Switzerland]	Comment noted section totally updated and revised.
7036	4	31	4	31	Please replace UNCBD with CBD (Convention on Biological Diversity). [Mariam Akhtar-Schuster, Germany]	Accepted - text revised.
14262	4	31	4	31	Please replace UNCBD with CBD (Convention on Biological Diversity). [Rattan Lal, United States of America]	Accepted - text revised.
4348	4	31	4	31	international convention frameworks, not "international conventional frameworks" [Samantha Grover, Australia]	Accepted - text revised.
11772	4	31	4	32	Why focusing only on CBD and UNCCD Conventions? It would be relevant to focus Multilateral Environmental Agreements (MEAs). [Jacques Andre Ndione, Senegal]	Comment noted section totally updated and revised.
20666	4	34	4	37	And this is where some approaches such as Social-Ecological System Approach SES comes in due to the possibilities it offers in terms of integrating several components (data from several sectors) [Mahamadou Laouali Amadou, Niger]	Noted no action needed.
540	4	35	4	35	It is no question that governance is key. However, it would be great to include reference to specific sub-chapters, that have a focus on governance issues. [Klaus Radunsky, Austria]	Comment noted section totally updated and revised. cross reference to sub-sections and chapter 7
542	4	36	4	37	The sentence lacks clarity. What is the meaning of "Governments are looking for new approaches that may militate the use of land as a policy tool? Is the key point not that governments usually have the power to decide on the use of land and that those decisions need to consider the impact on climate resilience and on exposure to hazards and risks? [Klaus Radunsky, Austria]	Comment noted section totally updated and revised.
15054	4	37	4	37	to reduce exposure to risks [Ahmed Imam, Egypt]	Accepted - text revised.
25710	4	37	4	37	Too complicated and not to the point. Actually, what is the point of this sentence? [Bernhard Brümmer, Germany]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
5554	4	37	4	37	"use of land" as a negative meaning! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
25418	4	37	4	42	Sentence is very unwieldy and hard to follow [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
26886	4	37	4	42	This is too long and complex. Suggest replacing this last sentence with "As food, energy and water security continue to rank high on the development agenda, the promotion of synergies towards sectoral policies becomes effective adaptation and mitigation set of strategies o reduce the risks of anthropogenic climate forcing. Fostering greater collaboration among scientists, policy makers, private sector and land managers to address a complex global problem is paramount (sections 1.2, 1.4, 1.5, and all 42 chapters of this report)." [Knut Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
5556	4	38	4	38	what does author want to say by "to rank high" [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
20780	4	38	4	39	replace "promotion of synergies towards sectoral policies" by: "promotion of synergies between sectoral policies and promotion of policies multiple economic sectors". The ecosystem service framework typically aims to bundle different economic sectors together for assessment, to go beyond the sectoral silos that exist in policy making. Going beyond sectoral (as well as disciplinary divides) is key for environmental-related problems such as climate change since they affect multiple sectors at the same time and allows to capture some of the trade offs between the sectors. [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
4350	4	38	4	42	This sentence is too long and unclear. In particular, the phrase in the middle "becomes effective adaptation and mitigation set of strategies" does not make sense [Samantha Grover, Australia]	Accepted - text revised.
7296	4	39	4	39	Rephrase, incorrect sentence [Marieke Sandker, Italy]	Accepted - text revised.
3994	4	39	4	39	replace "towards sectoral policies becomes effective" with "among these sectoral policies contributes to an effective" [Reid Detchon, United States of America]	Comment noted section totally updated and revised.
1834	4	40	4	41	"bring greater collaboration among scientists, policy makers, private sector and land managers" - replace "land managers" by "land owners and users": land use and land ownership not always in the same hands and this can affect management significantly (see e.g. work by TreeAid on this) [Rianne ten Veen, Netherlands]	Accepted - text revised.
10458	4	41	4	41	should also include consumers and civil society. It is important to assess new knowledge, but reference should also be made with regards to traditional knowledge systems, including local populations, indigenous peoples as well as women [Zitouni Ould-Dada, Italy]	Comment noted section totally updated and revised.
24748	4	41	4	42	Do NOT refer to entire chapters, this is useless to readers and the traceable account of your assessment can't be found. [Andreas Fischlin, Switzerland]	Comment noted section totally updated and revised.
1886	4	41	4	42	Page 4, Lines 41-42. (Sections 1.2, 1.4, 1.5, - delete 'and all chapters of this report') [Mastura Mahmud, Malaysia]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24252	4	28	5	29	Please write out AR5 and include/confirm title of the second IPCC report referred to herein -- so reader does not have to search for such pieces of information. [Barron Joseph Orr, Germany]	Comment noted section totally updated and revised.
24254	4	38	5	42	Phrase lists too many aspects (food, water and energy as sectors related to climate and at the same time policies and anthropogenic climate forcing?). It makes it difficult to understand the sentence, please consider elaborating on the relation between such aspects and/or splitting it into two sentences, so as to become clear what is hereby meant to be conveyed. A first step would be to replace "towards" with "among". [Barron Joseph Orr, Germany]	Thank you for the positive comment.
5292	4	1			remove all (have all demonstrable positive) because all do not demonstrate positive as there are some negative aspects as well [Daniel Danano Dale, Italy]	Taken into account - combined with other comment.
5294	4	2			there is expression which says not only but there no others explained except changes in consumption pattern [Daniel Danano Dale, Italy]	Accepted - text revised.
1878	4	2			Page 4, Line 2. 'agreement' in italics [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
8856	4	6		8	reference needed [Amanullah Amanullah, Pakistan]	Rejected . references not cited in the ES, however cross references to chapter sections included
2856	4	6			full' transition : is it transformation? see Glossary [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
5296	4	6			these changes can be achieved is lacking [Daniel Danano Dale, Italy]	Comment noted section totally updated and revised.
5298	4	6			the statement from line 6 -9 is not linked with the preceding discussion [Daniel Danano Dale, Italy]	Comment noted section totally updated and revised.
1880	4	8			Page 4 , Line 8. (Sections 1.4, 1.5; Chapters 5-7) [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
1882	4	8			Page 4 Line 8. Capitalize first letter of chapter [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
2858	4	10			the first sentence rises expectations not covered in the paragraph. Make clear: what is unknown ... how to deal with the unknown and how to tackle the urgency to act despite the given unknown and complexity: 'Rapid, but flexible adjustable actions' as one solution [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
8858	4	15			correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
2862	4	15			... this is a local perspective, but localities especially also suffering under global trends as global hunger for land and natural resources, ... esp. energy and water. Take in the discussion of global-local interconnectedness [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
17724	4	19			Change "cross" to "inter" [Donald Smith, Canada]	Taken into account - combined with other comment.
1884	4	21			Page 4, Line 21. (Sections 1.2, 1.4; Chapter 7) [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
402	4	24			please clarify the phrase "global stock take parties to the Paris Agreement." [Paul Glaser, United States of America]	Accepted - text revised.
816	4	24			please clarify the phrase "global stock take parties to the Paris Agreement." [Paul Glaser, United States of America]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
8116	4	38			Is 'human health' supposed to be here as well. It is now a high priority agenda especially in developing african nations together with food, energy and water security [Franklin Odhiambo, Kenya]	Accepted - text revised.
17726	4	39			Change "becomes" to "become" [Donald Smith, Canada]	Accepted - text revised.
9594	5	23	3	29	It does not become clear what the difference of this report with these other reports is supposed to be. [Markus Giger, Switzerland]	Rejected. Not clear
8612	5	1	5	1	where is Part 2? [Delphine Deryng, Germany]	Comment noted section totally updated and revised.
25894	5	1	5	1	If this is 'Part 1', where is Part 2? [Hans Poertner and WGII TSU, Germany]	Comment noted section totally updated and revised.
18830	5	1	5	1	Only Part 1 – Vision, there is no part 2 or part 3 ,,,, it is weird title. [Jianguo Wu, China]	Noted-revised
16920	5	1	5	1	"Concept" is a more appropriate title for part of an assessment report. To quote Helmut Schmidt: "Anyone who has visions should go to the doctor." [Pauline Midgley, Germany]	Accepted title will be revised
3382	5	1	5	5	The greatest changes in land use have occurred through human intervention and activities. "The change of land use is a challenge to which human beings must interfere," it is false. Today, due to the unconventional and sometimes inappropriate use of human primordial and non-renewable resources in some parts of the globe, we are seeing the disappearance of aquifers, lakes and underground water, which causes desertification and the spread of arid areas. It has happened on the ground and as a result of land use change. [Hanieh Zargarlollahi, Iran]	Noted text will be revised and substantiated
26838	5	1	5	22	The first section is a section critical for any IPCC chapter. Regrettably, this section has too much commentary and not enough scientifically referenced statements. The ideas are important and valid, but require more substantiation. Please work to find scientific references and quantitative statements for the assertions made in this first draft. [Patrick Gonzalez, United States of America]	Noted, text will be revised and substantiated
14874	5	2	5	2	The place of deforestation in the scope of the report should be better acknowledged. [Florian Claeys, France]	Noted, to be revised
3996	5	2	5	2	replace "starting" with "starting point" [Reid Detchon, United States of America]	Accepted - text revised
27092	5	2	5	2	"starting" should be deleted or possibly replaced by a more appropriate formulation [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
1160	5	2	5	29	The scope and starting section fails to discuss current food and nutrition insecurity, which is a critical starting point for the discussion ahead. This baseline should be part of the vision and scope discussion. The focus in this section is on climate and land, and perhaps some focus on biodiversity. Yet, the Paris Agreement references the importance of safeguarding food security. [Tonya Rawe, United States of America]	Noted, texted will be consolidated and cross-referenced with other chapters
26888	5	3	5	3	Change "has to" to "must" [Knut Nadelhoffer, United States of America]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
7038	5	3	5	3	Land use change is not per se a major challenge. The problem is the increasing intensity and expansion of land under use. Changing land use to avoid, reduce or reverse land degradation can provide a major opportunity for land-based climate change adaptation and land-based climate change mitigation. You may also wish to analyse the following publication on this matter: Cowie, A.L., Orr, B.J., Castillo Sanchez, V.M., Chasek, P., Crossmann, N.D., Erlewein, A., Louwagie, G., Maron, M., Metternicht, G.I., Minelli, S., Tengberg, A.E., Walter, S., Welton, S. 2018. Land in balance: the scientific conceptual framework for Land Degradation Neutrality. In: Environmental Science and Policy. 79: 25-35. [Mariam Akhtar-Schuster, Germany]	Rejected . see above
9592	5	3	5	3	I think it not land use change per se, but land degradation which is the major challenge. The change in land use itself is one of the drivers of this. The next sentence in the draft is agreed. [Markus Giger, Switzerland]	Repeated - will be addressed
14264	5	3	5	3	Land use change is not per se a major challenge. The problem is the increasing intensity and expansion of land under use. Changing land use to avoid, reduce or reverse land degradation can provide a major opportunity for land-based climate change adaptation and land-based climate change mitigation. You may also wish to analyse the following publication on this matter: Cowie, A.L., Orr, B.J., Castillo Sanchez, V.M., Chasek, P., Crossmann, N.D., Erlewein, A., Louwagie, G., Maron, M., Metternicht, G.I., Minelli, S., Tengberg, A.E., Walter, S., Welton, S. 2018. Land in balance: the scientific conceptual framework for Land Degradation Neutrality. In: Environmental Science and Policy. 79: 25-35. [Rattan Lal, United States of America]	Noted, references will be reviewed to consolidate text
10362	5	3	5	3	Land use change is taken only as challenge, but it could also be an opportunity to environmental rehabilitation [Zitouni Ould-Dada, Italy]	Repeated - will be addressed
8128	5	3	5	4	This is a big claim. Is there a confirmation for this? I suggest adding a citation or quotation source in case it's a true statement proven scientifically [Franklin Odhiambo, Kenya]	Noted w references will be added
1158	5	3	5	4	Along with climate change and land use change, hunger and poverty are major challenges that humanity has to address to transition to a more sustainable pathway -- as sustainability as three pillars: environmental, economic, and social. [Tonya Rawe, United States of America]	Accepted - text revised.
6828	5	3	5	12	Lacking references to back the statements [Wilfran Moufouma Okia, France]	Noted, References will be added
4352	5	4	5	4	replace "pathway" with "existence" [Samantha Grover, Australia]	Noted, will be revised
10364	5	4	5	4	Climate change and its corollaries. Land degradation is not always the result of climate change, it could also be the reverse (vice versa) [Zitouni Ould-Dada, Italy]	Repeated - will be addressed
3680	5	4	5	5	"Corollary" implies climate change is the only cause. Re-word? [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Repeated - addressed above
4378	5	4	5	6	Land degradation and desertification are not corollaries of climate change. These are outcomes of extensive and intensive agriculture, urbanisation and urban sprawl and unsustainable agriculture and industrialisation. [Darshini Mahadevia, India]	Noted, text will be revised

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3286	5	4	5	6	"Climate change and its corollaries land degradation and desertification...." is an incorrect statement because latter two are not corollaries of climate change. Both, land degradation and desertification occur even without climate change. It has been happening for centuries but climate change is a recent phenomena and has further accentuated these two processes. Hence, this statement needs reframing. [Suresh Kumar, India]	Noted, text will be revised to reflect the multiple stressors aggravating CC impacts on land
25712	5	5	5	5	Avoid the term corollary here; land degradation and desertification could be caused by other drivers, too, in particular overuse. [Bernhard Brümmer, Germany]	Repeated-addressed above
7040	5	5	5	5	Loss of biodiversity is part of the process of land degradation and desertification. If it is to be highlighted here explicitly you may wish to change the sentence according to the following logic: "... land degradation and desertification, which include loss of biodiversity or changes to the species composition, and decline in soil and water quality and quantity ..." See also the definition of land degradation provided in the glossary of the SRCL. [Mariam Akhtar-Schuster, Germany]	Comment noted section totally updated and revised.
14266	5	5	5	5	Loss of biodiversity is part of the process of land degradation and desertification. If it is to be highlighted here explicitly you may wish to change the sentence according to the following logic: "... land degradation and desertification, which include loss of biodiversity or changes to the species composition, and decline in soil and water quality and quantity ..." See also the definition of land degradation provided in the glossary of the SRCL. [Rattan Lal, United States of America]	Accepted, text will be revised to include biodiversity loss
1836	5	8	5	9	Re: "challenges of meeting food and nutritional security and providing basic services for large numbers of populations in regions where such stressors are already experienced today" - this is regularly more of a food distribution than production issue, so focus of solution is less to look at production levels but geopolitics and food distribution (e.g. land used to grow food for export in order to earn hard currency to pay off foreign debts) [Rianne ten Veen, Netherlands]	Accepted, text will be revised to cross-reference with other chapter
6516	5	9	5	9	was thinking could put it this way when written up to words numbers of population. " This could be worst in regions where stressors are already experienced today. [Ojong.E nee Enokenwa Baa, South Africa]	Noted, text will be revised
3338	5	10	5	10	In accordance of the new reference bellow, I suggest to add these sentences. Moreover, wars and conflicts result in massive immigration to developed countries that apply the right of asylum. This transfer of population contributed to the difficulties of Europe's leading economic power to meet its commitments to reduce greenhouse gas emissions (BMU, 2018). BMU (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit), 2018, Klimaschutzbericht 2017 - Zum Aktionsprogramm Klimaschutz 2020 der Bundesregierung, http://www.bmu.de/fileadmin/Daten_BMU/Pool/Broschueren/klimaschutzbericht_2017_aktionsprogramm.pdf [Farid RAHAL, Algeria]	Noted, reference will be reviewed and used to consolidate text
25650	5	10	5	10	The expression "acceleration of wasteful use of natural resources" seems unfounded and I suggest more neutral wording: "During the past fifty years, natural resources have been put under increasing pressure both in terms of ..." [Jon Magnar Haugen, Norway]	Accepted, text will be reviewed and consolidated

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3288	5	10	5	10	"... Unsustainable acceleration of wasteful use of natural resources...". My question is that is there anything like sustainable acceleration of wasteful use of natural resources? After all wasteful use is a wasteful use and it is on increase whether sustainable or unsustainable is never an issue. The issue is to stop it. So I suggest to remove the word, "unsustainable" [Suresh Kumar, India]	Accepted, text will be reviewed and consolidated
27094	5	10	5	10	"unsustainable acceleration of wasteful use" should read "acceleration of unsustainable use" [Zoltán Rakonczay, Belgium]	Repeated see above
19266	5	10	5	17	Not directly related to land and climate change and against the spirit of the IPCC report, suggested deletion [Binaya Raj Shivakoti, Japan]	Noted, text will be revised
10366	5	11	5	11	wasteful use of natural resources. Not necessarily all sorts of natural resources use could be considered wasteful. Use of natural resources could also be for useful purposes but it could contribute for degradation [Zitouni Ould-Dada, Italy]	Repeated- text will be revised
2868	5	11	5	12	wording: destruction of ecosystems? [Cordula Ott, Switzerland]	Accepted, revised .
16904	5	13	5	13	provide citation for MDGs [Pauline Midgley, Germany]	Noted, reference will be added
26890	5	13	5	14	Change "However, by 2003 global rates of consumption and waste production were estimated..." to "By 2003, however, global rates of consumption and waste production were estimated..." [Knut Nadelhoffer, United States of America]	Accepted - text revised.
25714	5	13	5	15	Why this focus on waste absorption capacities? Is this the major land-use related challenge? [Bernhard Brümmer, Germany]	Rejected . See above
14876	5	13	5	15	If you want to use some dramatic general public figures, you should use "overshoot day", also made by WWF and updated each year. [Florian Claeys, France]	Comment noted section totally updated and revised.
9702	5	13	5	15	This is a very strong statement and there is no assessment of how valid this is - and only one reference. It may be due to my own lack of knowledge about this study, but I also wonder if this reference is solid enough in terms of scientific rigour. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised. Text will be checked
16202	5	13	5	15	The WWF report you are citing talks about "humanity's total footprint exceeded the productive capacity of the biosphere by 25 percent". Footprint is not synonymous to consumption as you are here implying. The ecological footprint according to this report includes all cropland, grazing land, forest and fishing grounds required to produce the food, fiber and timber it consumes. WWF 2010 does not give any reference for this estimate but also does not suggest that this is an own estimate. Given lack of information on what this number exactly stands for and how it has been estimated please be cautious when citing it and consider to refer to a more sound and robust source. For more recent and more robust estimates you may refer to FAO's report "The future of food and agriculture – Trends and challenges" (available at http://www.fao.org/publications/fofa/en/) [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised. Text will be revised and consolidated
21316	5	13	5	15	This sentence "however...WWF 2010" is a strong affirmation...but no further evidence is provided to indicate if this statement is supported by other scientific publications/evidences. Also no details is given concerning the specific scenario used to derive those number. Probably also the year 2003 is wrong; [Martial Bernoux, Italy]	Accepted - text revised. Text will be referenced

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
27096	5	13	5	15	Sentence ("However ... (WWF2010)") should be deleted. The source is unlikely to be a scientific one, and the number of meaningless. There is no reason to believe that a 20% lower rate of consumption and waste production would be possible for the planet to "replenish" or "absorb". Non-renewables are not replenished, regardless of the rate, and certain emissions would not be non-negligible even at a much lesser rate. [Zoltán Rakonczay, Belgium]	Rejected . See above
16200	5	14	5	14	To what consumption are you referring? In case it is food consumption beware that statistics at global level refer to apparent consumption. Also there are caveats in generalizing estimates of quantities of food actually consumed or wasted by private households from household surveys, depending on the representativeness of those surveys and when the surveys were carried out. [Lorenzo Giovanni Bellù, Italy]	Noted, text will be revised
25716	5	15	5	15	Avoid references to grey literature wherever possible. [Bernhard Brümmer, Germany]	Grey literature which is not well supported will be deleted
24882	5	15	5	15	"provide, prelenish, repair..." should be provide, replenish, and repair..." [Dale Lockwood, United States of America]	Accepted - text revised.
3682	5	15	5	15	More recent reference? [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Rejected . See above
26892	5	15	5	17	Change last sentence in paragraph to read as "With the current state of resource degradation, many of the sustainable development goals (SDGs) as adopted in 2016 will be difficult to achieve." [Knute Nadelhoffer, United States of America]	Accepted - text revised.
16906	5	16	5	16	provide citation for SDGs [Pauline Midgley, Germany]	Comment noted section totally updated and revised.
3998	5	16	5	17	replace "which have been adopted in 2016 (SDGs) will be proving difficult" with "which were adopted in 2015 (SDGs) will be difficult" ... [Reid Detchon, United States of America]	Accepted - text revised.
6596	5	17	5	17	SDGs were adopted by the UN in september 2015 not in 2016 as indicated [Cornelia Rumpel, France]	Comment noted section totally updated and revised.
7042	5	17	5	17	Please check whether the SDGs were adopted in 2016 or in 2015. [Mariam Akhtar-Schuster, Germany]	Noted, copyedit to be completed prior to publication.
14268	5	17	5	17	Please check whether the SDGs were adopted in 2016 or in 2015. [Rattan Lal, United States of America]	Noted, copyedit to be completed prior to publication.
27250	5	18	5	18	Agree that a transformational change is needed. What that transformation looks like, essential elements, pathways, are missing from the rest of the report. [Doreen Stabinsky, United States of America]	Accepted - text revised. Elements for transformational changes will be discussed
25420	5	18	5	18	This could be regarded as policy-prescriptive [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
6830	5	18	5	18	The glossary points to "transformative change" not "transformational change". There is a need for consistency in the concept used across the report [Wilfran Moufouma Okia, France]	Accepted - text revised.
25718	5	18	5	19	Missing questionmark, delete „and oceans“ [Bernhard Brümmer, Germany]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3550	5	19	5	21	The list of what we need from terrestrial ecosystems is much longer. We need e.g. water (not a "food"), but also services like regulating climate and mitigating climate change, help by bees to pollinate fruit trees etc. I suggest a separate short section with an extensive coverage of our needs. [Zoltán Somogyi, Hungary]	Accepted, text will be revised
27098	5	20	5	20	"biofuels" should be replaced by "fuels". "Human societies" demand energy, but not of a particular form. Biofuels are not produced because anyone would need them as such, but as a policy choice motivated by the desire to replace (more efficient) fossil fuels, in the mistaken belief that biofuels would somehow be less polluting. [Zoltán Rakonczay, Belgium]	Will be revised in the text
3290	5	20	5	22	".....land for settlements.... (Ellis and Ramankutty,2008)....". Please include other purposes for which land is being increasingly required and these include industrial expansion,mining, oil exploration. [Suresh Kumar, India]	Text will be revised and consolidated
24884	5	21	5	21	add comma after spiritual purposes [Dale Lockwood, United States of America]	Comment noted section totally updated and revised.
26894	5	21	5	21	Change "purposes" to "needs". [Knut Nadelhoffer, United States of America]	Noted, copyedit to be completed prior to publication.
10460	5	21	5	21	the relation between land and water should also be considered [Zitouni Ould-Dada, Italy]	Interlinkages will be explored
1838	5	21	5	22	Re: "Increasing demand for all of these purposes will put greater stress on land management and sustainability." - add reference to significant aspect of this increase is not due to need, but greed: too oft "increasing demand" is assumed to refer to population growth, not changes in consumption patters. [Rianne ten Veen, Netherlands]	Comment noted section totally updated and revised. Argument will be discussed
15056	5	24	5	25	This includes not only risks and threats to agriculture and forestry, but also the role of land and forest management [Ahmed Imam, Egypt]	Comment noted section totally updated and revised.
25720	5	24	5	26	Correct grammatical structure [Bernhard Brümmer, Germany]	Noted, copyedit to be completed prior to publication.
5096	5	26	5	26	Just IPCC Second Assessment Report or Fifth? [Oksana Lipka, Russian Federation]	Comment noted section totally updated and revised.
4000	5	26	5	26	insert "the" - to read: the IPCC ... [Reid Detchon, United States of America]	Accepted - text revised.
24886	5	27	5	28	Should read "IPCC Special Reports, as well as in reports that target environmental policies addressing issues other than climate change" [Dale Lockwood, United States of America]	Comment noted section totally updated and revised.
9918	5	29	5	29	Box 1.1 will be very useful. Try to keep it focused and relatively short; which may be a challenge given all the issues and sub-issues. [Jan Fuglestedt, Norway]	Accepted - text revised. Box will be revised and consolidated
1894	5	29	5	30	Page 5, Line 29 to 30. Box 1.1 is incomplete. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
1896	5	29	5	30	Why is this draft report sent for review when the work is clearly not completed? [Mastura Mahmud, Malaysia]	Work will be benefit from review comments to consolidate and enhance the report
1898	5	29	5	30	Page 5, Line 29 to 30. Box 1.1. Consider in particular the AR5, SREX, 1.5 degree report, IPBES reports. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3072	5	29	5	30	The role of AFOLU should be mentioned with sub-sectors [Mostafa Jafari, Iran]	Comment noted section totally updated and revised.
24256	5	30	5	30	Consider in particular the AR5, SREX, 1.5 degree report, IPBES reports (including the LDRA - https://www.ipbes.net/assessment-reports/ldr), and reference to more recent publications could be added, especially to Orr et al. (2017): Scientific Conceptual Framework for Land Degradation Neutrality https://www.unccd.int/sites/default/files/documents/2017-08/LDN_CF_report_web-english.pdf ; Cowie et al. (2018): Land in balance: The scientific conceptual framework for Land Degradation Neutrality https://doi.org/10.1016/j.envsci.2017.10.011 and UNCCD (2017): Global Land Outlook, first edition. Bonn, Germany https://www.unccd.int/sites/default/files/documents/2017-09/GLO_Full_Report_low_res.pdf [Barron Joseph Orr, Germany]	Accepted - text revised. 1.5 report will reviewed
18908	5	30	5	30	It would be advisable to include the role of the AFOLU Sector to absorb black carbon and its local climate change mitigation implications [Carlos Matias Figueroa, Mexico]	Rejected . Will be addressed
12490	5	31	5	31	<p>1-2-1-1- Perception Quality of Climate Change Hazards (PQCCH): A New Approach to Climate Change Hazards Perception Ebrahim Moghimi, Professor, Geomorphology , Natural Geography Department, Faculty of Geography, University of Tehran, Iran, emoghimi@ut.ac.ir</p> <p>When we study living environment and stories of communities and their perception of climate changing hazards, we learn that perceiving climate changing hazards was not a mere conceptual domain. It rather showed human ability to turn thoughts into action [1]. The way people and governments interpret climate changing hazards and respond to it, showed the quality of their perception. This depends in the first place on the type of climate change and hazards and in the second place, on individual and social psychology, cultural and economic components and most importantly, learning and teaching and this is not necessarily the same in all societies. Some communities are more aware of a particular type of climate change hazards and completely unaware of the other types. Do you know the communities that belong to one of these two groups? The present paper deals with the question of what are the perceptions of the components of a community, government or government and, generally speaking, a nation. What do people citizens, managers and the government perceive of the climate change hazards? The process of perception is a delicate process. External stimuli received by a person require organization, learning and action in order to recognize and perceive a phenomenon. Perception of climate change hazards comes from certain previous and new regular learning systems and practical experience to reduce it. Immunization against fire or water and building to reduce hazard, for example, is realized through education and learning from the most basic level to excellent levels (the power of perception) and participating in appropriate action (the power of action). What do the government and people perceive of climate change hazard and what measures do they take to reduce it? Studying the perception of individuals and communities can bring significant benefits to development and living policies based on climate change hazard reduction. [3]</p> <p>Perception quality of climate change hazards (PQCCH) is a delicate and selective process and is prior to action and happens differently in common and expert people. The way common people perceive climate change hazard should be different from that of an expert who uses scientific methods [2]. The recognition of hazards increases gradually due to diligent research</p>	Comment noted section totally updated and revised. New terminologies will be reviewed

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
10680	5	1	9	19	Instead of a vision, this section should offer a clear description of the objective of the entire report and of this chapter. It is not clear why such a report on land and food security is needed by IPCC from reading chapter 1. [Anne Mottet, Italy]	Accepted, the chapter will be reframed
2846	5	1	9	19	Right now, vision not clear; and mandate somehow hidden. Provide Vision and Mandate in a special paragraph: either at the beginning or at the end of chapter 1.2. Take together elements of vision and mandate that show up in the three paragraphs (1.2.1.; 1.2.2; 1.2.3), but also develop missing elements, for example: What is the idea on how to foster transformation? Where to find leverage? [Cordula Ott, Switzerland]	Comment noted section totally updated and revised
2848	5	1	9	19	Concept, approach, goal: (1) should prepare and reflect all chapters – thus be clear about the concept and line of argument. Within the paragraphs of (1), the conceptual base is partially weak; as indicated by the fact that key sentences (often with references) are set one after the other, sometimes without a logic connection. There is a need to improve the line of argument within a systemic approach. Improve structure: Key terms, key trends, key approaches, what now... [Cordula Ott, Switzerland]	Accepted chapter restructured.
4380	5	2	9	19	There is a need to reframe the scope and starting sub-section. Land is the basic resource to which all other resources are linked and on which all anthropogenic activities are based. Its degradation therefore impacts all other resources and anthropogenic activities. [Darshini Mahadevia, India]	Accepted. Text will be revised to reflect the central role of the land
4382	5	2	9	19	Term land degradation requires explanation. Desertification is one form of land degradation. Although the two terms have been defined on pages 13 & 14, lines 7- 8 on page 14 states "desertification is purely human-induced land degradation" .. [Darshini Mahadevia, India]	Noted, will be revised and definitions clarified
4384	5		17		Many concepts and their relationships need to be clearly spelled out at the beginning. As already mentioned in comment 3 above. Besides, land degradation has various stressors. How does climate change directly and indirectly link with land degradation is not stated clearly. There could have been a section dealing with it. Same way, links of desertification, a one type of land degradation, also require links with various stressors and how climate change has both direct and indirect impacts on desertification [Darshini Mahadevia, India]	Accepted - text revised. Chapter is being re-structured
27548	5	1	27	33	The work done here is substantive as delves on all issues concerned, this is highly commendable. [Daniel Mailumo, Nigeria]	Thank you for the positive comment.
4388	5		30		The entire chapter requires refocussing. From addressing conceptual issues and coverage issues mentioned above, we are not getting sense of the framing of issues, differentiation of issues from different regional and economic development contexts, and way forward. The way forward suggested is SLM, which has a very limited approach. It is also not clear whether land has been treated as only natural resource or one with very strong human and human societies' links. [Darshini Mahadevia, India]	Accepted - text revised. Chapter and glossary will reviewed
5312	5	1			The challenges related to land use, climate change, degradation, desertification and [Daniel Danano Dale, Italy]	Comment noted section totally updated and revised.
25896	5	2			so far, this section does not explicitly state the scope of the report (or the chapter) [Hans Poertner and WGII TSU, Germany]	Noted, section will be revised and consolidated
1890	5	2			Page 5 Line 2. Suggest only 'Scope' is used. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
5302	5	3			Land use change is taken only as challenge always but it could also be an opprtrunity to environmental rehabilitataion [Daniel Danano Dale, Italy]	Repeated - addressed above
5314	5	3			last paragraph 2nd line in the box - solutioun - solution [Daniel Danano Dale, Italy]	Accepted - text revised.
6954	5	4		4	Land degradation and desertification are not only climate change corollaries but independent phenomena caused by unsustainable land management deeply exacerbated by climate change, as stated in other paragraphs. [Anna Luise, Italy]	Repeated-addressed above
5304	5	4			Climate change and its corollaries. Land degradation is not always the result of climate change, it could also be the reverse (vice versa) [Daniel Danano Dale, Italy]	Repeated-addressed above
9344	5	4			delete "the foreseeable future" [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
2166	5	5			page 5, Line 15, reference was stated as (WWF, 2010). The correct reference should be: WWF 2009. [Mastura Mahmud, Malaysia]	Noted-edited
9346	5	6		7	delete"societies are witnessing complex and profound change" [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
9348	5	7			delete "the general [Kennedy Ondimu, Kenya]	Accepted - text revised.
8118	5	10		12	Again this is a claim that should be backed by scientific evidance...any sources? [Franklin Odhiambo, Kenya]	Noted, text will be referenced
5306	5	11			wasteful use of natural resources. Not neccessarily all sorts of natural resources use could be considered wasteful. Use of natural resources use could also be for useful purposes but it coluld could contribute for degradation [Daniel Danano Dale, Italy]	Rejected . see above
9350	5	16			insert " unsustainable consumption patterns and" after state of [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
838	5	17			SDGs have been adopted in 2015, not 2016 [Christophe Cudennec, France]	Noted
2870	5	18			see comment Glossary: there only Transformation and Transformative Change... we need to halt destructive trends and make use and human-environment relationship sustainable [Cordula Ott, Switzerland]	Accepted chapter restructured.
11692	5	18			Be careful of language that can be interpreted as being policy prescriptive [Debra Roberts, South Africa]	Comment noted section totally updated and revised.
840	5	19			also linked to freshwater resources displayed through land systems / landscapes [Christophe Cudennec, France]	Accepted - text revised.
2872	5	19			I don't understand : 'ecosystems linked to land, forests, and oceans' [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
9352	5	19			insert "wetlands" after forests [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
1892	5	22			Page 5 Line 22. Input 'Report (IPCC, 1996)' after 'Assessment Report'. [Mastura Mahmud, Malaysia]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
8120	5	29		30	consider consulting the Global Environment Outlook reports by UNEP as well. At the moment the GEO-6 assesment is almost final and its Land chapters (both states and treand and the Land and soil chapters will be a great adition to this informative box) [Franklin Odhiambo, Kenya]	GEO will be consulted
8860	5				refernces should be placed in the list at the end [Amanullah Amanullah, Pakistan]	Comment noted section totally updated and revised.
5300	5				Part 1 vision (1.2.1) [Daniel Danano Dale, Italy]	Comment noted section totally updated and revised.
3384	6	1	6	17	With regard to economic growth, it can be said that, although in many parts of the world, these changes in temperature and climate change have been high, climate change is not negative in all parts of the world, but in some areas, such as Greenland, Which is covered with ice, today, with the warming of the earth, while the ice was flooded, economic activity and agricultural potential were created, and the proceeds from these activities would be better to face up to and appropriate solutions to Changes in the climate have taken place elsewhere in the world, which has caused great losses. [Hanieh Zargarlollahi, Iran]	Chapter restructured to allow for consistency and avoid duplication
2630	6	1	6	17	This opening paragraph could be misconstrued as interpreting the meaning behind the Paris Agreement. Try to stick to directly quoting the text to avoid mis-interpretations, which will be commented on in the Government review of the SOD. [Sarah Connors, France]	Accepted - text revised. Text from Paris Agreement will be used
3684	6	2	6	17	The title is "where are we heading". We are not heading towards 1.5-2 degrees we are heading towards ~3 degrees or more as UNEP Gap reprot etc (and the 1.5 report) says. We should not assume that just because the Paris Agreement has been ratified the temperature goal will be met. My narrative at this point would be: we have already warmed by 1 degree; we could pass through 1.5 by 2040 if current emisisions continue (1.5 report); NDCs put us on a least cost path towards ~3 degrees; holding T to +1.5 would require unprecedented social and economic changes or large scale deployment of -ve emission technologies (with land implications) later in the century [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Noted. The chapter is restructured
9596	6	2	6	33	Chapter 1.2.2. would benefit from rethinking..I would propose not to start with the Paris agreement. The central argument should be to highlight the land use and land managment as a critical issue during the 21th century (why? and what are consequences if managed? I.e. destabliing factor with wide ramifications, highly conflictive, messy, and potentially wide reaching consequences and catastrophic shifts). This is currently only addressed on line 26. As it is the core of the document I would adress it first. the Paris agreement is then the current answer of the global system to these challenges [Markus Giger, Switzerland]	Comment noted section totally updated and revised. Sections are restructured

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
1162	6	2	6	33	The section on where we are heading lacks any of the reported projections, varying though they may be, of future levels of food and nutrition security (hunger and malnutrition) in light of climate change. A lengthy discussion is not necessarily needed, but reference to projections, variance, geographic concentration, etc. is important -- as the current challenge + the projected growth in the challenge + the geographic distribution of the challenge will create even more pressure on land, potentially where it is already under undue pressure. FAO, the World Bank, IFPRI and CCAFS have all reported on the projections and/or pathways to impact. [Tonya Rawe, United States of America]	Comment noted section totally updated and revised.
140	6	3	6	4	The information between the dashes does not flow well in the sentence, The Paris Agreement was a turning point in its aspiration to bring world economies to a temperature 3 guardrail of below 2oC –even only 1.5oC- warming. [Beth Middleton, United States of America]	Noted, text will be edited
27100	6	3	6	4	The sentence is ambiguous and should be rephrased. Some may interpret that "turning point" as a stepping up of effort, whilst others as abandoning serious, quantitative reduction efforts based on legally binding commitments based on shared objectives. In any event, "only" should be deleted, as 1.5 would mean a heroic effort that is barely attainable, but would still lead to very significant, potentially devastating impacts. In no sense should it be framed in a diminutive way. [Zoltán Rakonczay, Belgium]	Sections will be revised and sentences cleared
3552	6	3	6	4	Warming relative to what? Please always tell it [Zoltán Somogyi, Hungary]	Comment noted section totally updated and revised.
8614	6	4	6	4	replace "below 2°C" by "well below 2°C" to be consistent with the wording of the Paris agreement. [Delphine Deryng, Germany]	Accepted - text revised.
9704	6	4	6	4	strange wording (" - even only..."). I suggest you use the wording in the Paris Agreement. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.
10462	6	4	6	4	not clear: of below 2°C - even only 1.5°C warming [Zitouni Ould-Dada, Italy]	Noted-text will be reviewed to use the wording of Paris Agreement
7044	6	4	6	5	Shouldn't this sentence also include the following aspect (see bold words included): "Efforts to move towards achieving such a goal will have tremendous implications ..." The issue of achieving and maintaining would be a next set of tremendous efforts. [Mariam Akhtar-Schuster, Germany]	Rejected. See above
14270	6	4	6	5	Shouldn't this sentence also include the following aspect (see bold words included): "Efforts to move towards achieving such a goal will have tremendous implications ..." The issue of achieving and maintaining would be a next set of tremendous efforts. [Rattan Lal, United States of America]	Comment noted section totally updated and revised.
20784	6	4	6	6	"Achieving such a goal will have tremendous implications on both our consumption and production patterns as well as investments to support a carbon neutral economy" --> I would reverse the "causal" relationship, to give it a different meaning. "Achieving such a goal will require adapting our consumption and production patterns as well as investments to develop and support a carbon neutral economy." [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
730	6	4	6	6	Sounds odd, as if consumption and production pattern are (passively) affected. But, indeed these (actively) need to change to achieve the mentioned goal. [Rolf Sommer, Kenya]	Comment noted section totally updated and revised.
5558	6	4	6	6	how it can be possible "Achieving ...on both our consumption and production patterns" [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
17352	6	5	6	6	Low carbon economy might be better than carbon neutral economy. [Fei Lu, China]	Comment noted section totally updated and revised.
19268	6	6	6	6	Full form of NDC? [Binaya Raj Shivakoti, Japan]	Comment noted section totally updated and revised. To be edited
27102	6	6	6	6	Replace "will" with "should". Little is known about the effectiveness of NDCs in creating a new economy. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
24888	6	6	6	7	Phrase "new world order" is very loaded and has strong political context - strongly suggest different word choice. [Dale Lockwood, United States of America]	Comment noted section totally updated and revised.
20786	6	6	6	7	NDCs are enabling but we do need a lot more instruments to ensure a new climate economy is set up. NDCs are for government action but there are other types of action governments can take, and other actors that need to be mobilised effectively for actual impact. [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
27104	6	6	6	7	Delete second half of sentence strating with "and a new world order". NDCs are voluntary instruments with no enforcement mechanism to ensure their implementation. Also, their stated ambition is far from sufficient to achieve "sustainability" or "climate resilient development". There is no factual underpinning of the statement and it contradicts best available science. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
3554	6	7	6	9	According to the website http://www.climate-lab-book.ac.uk/spirals/ , we are already almost at a 1.5 degree increase. By the time the report is out ... - shouldn't this be mentioned? [Zoltán Somogyi, Hungary]	Comment noted section totally updated and revised.
9706	6	7	6	10	This sentence need i) more nuances and ii) more references than only this paper. There are many papers in the literature that raises various questions regarding the possibility of meeting the Paris goals. The authors should add these here. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised. Text will be edited
14962	6	8	6	8	The reference "Grassi et al. 2017" is misused in this sentence. Rogelj et al. 2016 and Höhne et al. 2017 should be preferred in this context. - Höhne, N., Kuramochi, T., Warnecke, C., Röser, F., Fekete, H., Hagemann, M., ... & Gonzales, S. (2017). The Paris Agreement: resolving the inconsistency between global goals and national contributions. <i>Climate Policy</i> , 17(1), 16-32. - Rogelj, J., Den Elzen, M., Höhne, N., Fransen, T., Fekete, H., Winkler, H., ... & Meinshausen, M. (2016). Paris Agreement climate proposals need a boost to keep warming well below 2 C. <i>Nature</i> , 534(7609), 631. [Florian Claeys, France]	Comment noted section totally updated and revised. References will be checked and cited where relevant
25652	6	8	6	9	The wording is ambiguous. There may be concerns over: - failure to meet the goals - land based interventions towards 2oC may have detrimental side effects. [Jon Magnar Haugen, Norway]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
15682	6	10	6	10	Include general gap between Paris Goal and iNDCs (in: http://cait.wri.org/indc/#/ or: https://climateactiontracker.org/global/cat-emissions-gaps/) [Maria del Pilar Salazar Vargas, Mexico]	Comment noted section totally updated and revised.
16204	6	10	6	12	Please explain who is outlining the pathways to achieve the goals of the Paris Agreement? Is it the literature and if yes, which sources? The sources you are citing were published before the Paris Agreement and so they cannot highlight pathways to achieve the Paris Agreement per se. Is it perhaps the NDCs? [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised.
14878	6	10	6	13	In this sentence, the reference Grassi et al. 2017 should be used to highlight that 25% of the mitigation pledges in NDCs are based on land sector, especially forests. [Florian Claeyss, France]	Comment noted section totally updated and revised.
27106	6	10	6	13	Bioenergy that competes for land with food or biodiversity cannot be presented as "mitigation". Bioenergy can "mitigate" only to the extent it is based on "additional" biomass (Haberl, H. et al. 2012. Correcting a fundamental error in greenhouse gas accounting related to bioenergy. Energy Policy 45 (2012) 18–23). That is, it should be based on otherwise unused wastes or residues (which would decompose in the absence of the energy use, emitting their C contents to the atmosphere, thus bioenergy could reduce these emissions) or come from plant growth that would otherwise not happen (e.g., land that would otherwise be unproductive). If biomass for energy competes with food (i.e., if it comes from land that would otherwise be used for food production), then the bioenergy so produced is unlikely to "mitigate" climate change and more likely to do the opposite. Thus, it should not be presented as a "mitigation effort", even though the motivation behind it may be an intention to reduce overall emissions (based on flawed assumptions and/or misguided policies). [Zoltán Rakonczay, Belgium]	Noted, text will be revised to reflect this
26896	6	11	6	11	Insert a comma after "reforestation". [Knut Nadelhoffer, United States of America]	Noted, copyedit to be completed prior to publication.
4002	6	11	6	11	replace "will compete" with "may compete" - Comment: In some cases, the changes will be complementary, e.g., reforestation will help biodiversity. [Reid Detchon, United States of America]	Comment noted section totally updated and revised.
27108	6	11	6	11	It is unclear what "reforestation" refers to. If it is the creation of forest on another land use/land cover type, then "afforestation" would be a more appropriate word. If it refers to the regeneration of recently harvested forests, then it is part of routine forest management and should not be presented as "mitigation". [Zoltán Rakonczay, Belgium]	Terminologies will be used consistently
5560	6	11	6	12	"bioenergy or reforestation will compete with water and ..." why compete with water and food ... [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
20192	6	12	6	14	I do not think that land based mitigation strategies have only recently received policy attention. At least, it should be more precisely contextualized. [Kaoru Kitajima, Japan]	Comment noted section totally updated and revised.
15684	6	13	6	13	Include natural climate solutions could be useful, view for example: https://global.nature.org/initiatives/natural-climate-solutions/natures-make-or-break-potential-for-climate-change [Maria del Pilar Salazar Vargas, Mexico]	Noted reference will be checked and used if relevant

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
9708	6	14	6	14	Re "has been perceived" is too vague. Please be more clear. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.
9710	6	15	6	15	This is a strong statement and there is only one reference. [Jan Fuglestedt, Norway]	Sentence will be revised and references added
7046	6	15	6	15	Please check: Land may not only be a "... prime sector for mitigation ..." but also for adaptation. [Mariam Akhtar-Schuster, Germany]	Rejected .
14272	6	15	6	15	Please check: Land may not only be a "... prime sector for mitigation ..." but also for adaptation. [Rattan Lal, United States of America]	Comment noted section totally updated and revised.
732	6	15	6	15	meaning of "prime sector" not clear [Rolf Sommer, Kenya]	Comment noted section totally updated and revised.
26898	6	15	6	17	Revise sentence to read, "As outlined below (see also chapters 2,6,7), land as a prime sector for mitigation must be considered against several development and national priorities including energy and food security, conservation, and pollution control (Harvey and Pilgrim 2011). [Knut Nadelhoffer, United States of America]	Noted, copyedit to be completed prior to publication.
5828	6	15	6	17	not well-written! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
5938	6	15	6	17	it is not well-written! [Sanaz Moghim, Iran]	Noted, copyedit to be completed prior to publication.
20822	6	15	6	30	Hereinafter in the rest of the chapter, the use of references published before 2014 should be well justified. [Carolina Vera, Argentina]	Comment noted section totally updated and revised.
9712	6	18	6	18	Regarding "linked to climate change": Here you don't say "man made". I hope the reprot can be very careful to be clear about when you talk about climate change and when you talk about man-made climate change. [Jan Fuglestedt, Norway]	Text will be reviewed to ensure consistent use of terms
6518	6	18	6	19	adding frequent storms to the list of extreme weather events as this is becoming more prevalent in communities [Ojong.E nee Enokenwa Baa, South Africa]	Comment noted section totally updated and revised.
26520	6	18	6	20	Needs some citations [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted, revised .
16206	6	18	6	20	Please name the source of the statement you are making. How do you know that it is climate change that causes a higher number of extreme weather events? Is it a cause-effect linkage that you are referring to? If not what other type of linkage do you have in mind? [Lorenzo Giovanni Bellù, Italy]	Statement will be references
17030	6	18	6	20	Please note that sea level rise is not just due to melting permafrost and glaciers. There is the contribution of the expansion of the ocean waters as the sea temperatures increase due to it being a sink of greenhouse gas emissions. [Lourdes Tibig, Philippines]	Comment noted section totally updated and revised.
17694	6	18	6	20	delete this first Paragraph its seem to me odd [Sawsan Mustafa, Sudan]	Comment noted section totally updated and revised.
19270	6	18	6	25	Not directly related to land and climate change and against the spirit of the IPCC report, suggested deletion [Binaya Raj Shivakoti, Japan]	Comment noted section totally updated and revised.
8122	6	18	6	25	This paragraph is important in highlighting the effects of climate change to humans. Health is not captured boldly. I suggest adding human and ecosystem health here as the effects of climate change to bring it closer to the policy makers [Franklin Odhiambo, Kenya]	Accepted human health will be stressed

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
15686	6	19	6	19	Could be added intense storms [Maria del Pilar Salazar Vargas, Mexico]	Rejected .
4004	6	19	6	19	delete "cyclones," - Comment: The science is not settled on increased frequency of cyclones. [Reid Detchon, United States of America]	Comment noted section totally updated and revised.
21318	6	19	6	20	The affirmation that "sea rise level from melting permafrost and glacier" is WRONG and not consistent with other IPCC reports which showed that sea rise level is due mostly to other drivers such as ice caps melting and oceanic thermal dilatation [Martial Bernoux, Italy]	Rejected .
734	6	19	6	29	does melting of permafrost really cause sea level rise? [Rolf Sommer, Kenya]	Comment noted section totally updated and revised.
15058	6	20	6	20	Furthermore the challenges to societies are not confined [Ahmed Imam, Egypt]	Comment noted section totally updated and revised.
20564	6	20	6	25	grammar issue? Sentence is very long! [Bettina Weber, Germany]	Taken into account - combined with other comment.
26900	6	20	6	25	This last sentence is too long to be easily understood. Suggested revision is "The challenges to societies are not confined to living with limited natural resources, but also to a cascading set of problems related to a higher incidence of poverty as resource dependent populations become increasingly fragile (Mysiak et al. 2016; FAO 2015; Lesk et al. 2016; Min et al. 2011; Lloret et al. 2011; Warren et al. 2014). This has the potential to disrupt livelihoods, economies and infrastructure, and to reverse the achievements of the SDGs. Failing to meet these challenges will likely impede progress towards the Paris Agreement and other national, regional and global agreements and frameworks (Fankhauser and Stern 2016). [Knut Nadelhoffer, United States of America]	Accepted - text revised.
20194	6	21	6	21	Perhaps, "resource-dependent" should be "natural-resource dependent people in rural areas". [Kaoru Kitajima, Japan]	Comment noted section totally updated and revised.
4354	6	22	6	22	replace "fragile" with "insecure" [Samantha Grover, Australia]	Rejected .
5830	6	23	6	25	not well-written! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
5940	6	23	6	25	hard to understand! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
16208	6	25	6	25	Source Frankhauser and Stern, 2016 is not in the list of references [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised.
16210	6	26	6	27	Stakeholders have always competed for land use. Please be explicit why competition will increase and amplify in the 21st century. [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
2418	6	26	6	33	Perhaps here would be a good point to introduce the concept of Earth Observation (remote and in situ) as a means to monitor changes in land use and land characteristics, including land degradation and desertification, and assess the impact of the societal response (e.g., efforts at land mitigation and adaptation). Earth Observation also provides a means to monitor changes in soil characteristics such as droughts, which have high societal impact. The authors could mention also the tool of reanalyses (provided using data assimilation techniques which combine observational and model information and their errors), of which ERA-interim Land and ERA5-land are examples, and which provide a method to evaluate models and assess temporal changes in Earth System parameters, including parameters associated with the land. Finally, the authors could mention also recent long-term (order 30+ years) arising from the ESA Climate Change Initiative (ESA CCI), including that for soil moisture. Like reanalyses, the ESA CCI datasets provide a method to evaluate models and assess temporal changes in essential climate variables (ECVs). [William Lahoz, Norway]	Accepted, revised .
26902	6	27	6	27	Change "compete" to "vie". [Knut Nadelhoffer, United States of America]	Accepted - text revised.
25422	6	27	6	28	Incomplete sentence [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
16910	6	27	6	29	this long sentence is hard to understand - I think there is either something missing or a word too many. Deleting "for" before "sustainability" at least makes it a grammatical sentence but is that what is meant? [Pauline Midgley, Germany]	Comment noted section totally updated and revised.
5832	6	27	6	29	not well-written! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
5942	6	27	6	29	hard to follow! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
25214	6	27	6	30	The sentence starting with irrespective of the use.. Is incomplete, should be recasted [Abiud Kaswamila, United Republic of Tanzania]	Comment noted section totally updated and revised.
20566	6	27	6	30	sentence very long and hard to understand [Bettina Weber, Germany]	Comment noted section totally updated and revised.
25654	6	27	6	30	Incomplete sentence. [Jon Magnar Haugen, Norway]	Rejected .
16012	6	27	6	30	The meaning of this sentence is not clear [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Rejected .

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
26904	6	27	6	33	These sentences are too long, awkward, and poorly linked. Also, the first sentence does not adequately capture the message of the citation. Consider changing to "Given the centrality of land as a global resource, decisions regarding tradeoffs in land use management for provision of sustainable energy versus food security must also consider feedbacks of production goals and related land use practices (such as greenhouse gas emissions and consumption) to the climate system (Harvey and Pilgrim 2011). Moreover, misguided use of land, a non-renewable resource, has the potential to destabilise sectors such as agriculture, energy, forestry and thereby affect climate mitigation in significant ways. Land use change and management decisions must be viewed as important policy drivers to support climate change mitigation while simultaneously considering provision of human food security, sustainable energy, and ecological services (Harahap et al. 2017)." [Knut Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
1840	6	28	6	28	Re: "food or energy": as such it is presented as if these are alternatives, whilst wise land use (e.g. In permaculture style) can meet varied needs simultaneously in many cases. [Rianne ten Veen, Netherlands]	Comment noted section totally updated and revised.
27110	6	28	6	28	why "food or energy" are the two options? Virtually all the managed forest and a significant part of agricultural land is managed for the production of industrial raw materials. Very little agricultural land is managed for energy, excepts the vast amounts of food production that is diverted to energy (grain ethanol, rapeseed and palm oil for biodiesel), but these are undesirable on the long run due to their dismal energy balance and low or non-existent mitigation potential. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
4006	6	29	6	29	delete "for" [Reid Detchon, United States of America]	Taken into account - combined with other comment.
27112	6	29	6	29	replace "remain" with "should be". Security of (food) supply has been a key consideration in land use, but sustainability has not been, and especially not for energy use. It has been central to academic debates, but not to land management. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
27114	6	29	6	29	"land use management" is an odd term. It should be either land use (as in land use planning), or land management (as in management decisions). [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
7048	6	30	6	30	Clarificaton required: What is meant by land being a "non-renewable resource"? [Mariam Akhtar-Schuster, Germany]	Rejected .
14274	6	30	6	30	Clarificaton required: What is meant by land being a "non-renewable resource"? [Rattan Lal, United States of America]	Accepted - text revised.
27116	6	30	6	30	It is wrong to blame land as a resource for destabilising these sectors. The opposite is more correct: the mentioned sectors risk destabilising the land resource. In the sentence, "land as a non-renewable resource" should be replaced with "land is a non-renewable resource and the loss of productive land as well as its unsustainable use..." [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
5562	6	30	6	31	"indeed, land as a non-renewable resources" not right, author may mean land use not land! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16014	6	30	6	31	How, it should be explained [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
25656	6	30	6	32	The term "non-renewable resource" is imprecise and leads to a weak argument. I would claim that land surface is a "finite resource". The contents on this land (soils, water, vegetation) are a conditionally renewable resource. [Jon Magnar Haugen, Norway]	Rejected .
20794	6	30	6	33	"Indeed, land as a non-renewable resource has the potential to destabilise sectors such as agriculture, energy, forestry and in turn affect climate mitigation in significant ways, if land use change and management are not seen as important policy drivers to support climate change mitigation and to do so with human security and ecological considerations (Harahap et al. 2017)." --> double negative makes it harder to comprehend the core message, especially as the sentence is very long. It needs both simplifying a couple of additions. Suggestion: "Land has the potential to destabilise sectors such as agriculture, energy, forestry, and MINING, which could in turn affect global climate trends in significant ways. Land use change and management should be seen as important policy drivers to support climate change mitigation, considering human security and ecological considerations. Sectoral policies should be reviewed so as to allow for multiple national goals to be met (Harahap et al. 2017)" [Emmanuelle Quillerou, France]	Accepted chapter restructured.
9714	6	30	6	33	This sentence is i)too long and ii) rather strong and has only one reference. Please reconsider this sentence. [Jan Fuglested, Norway]	Accepted chapter restructured.
25424	6	30	6	33	Sentence should begin "the nature of land as a finite resource" - land is not non-renewable and land itself should not be the subject of the sentence [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
16212	6	30	6	33	The source you are citing refers to a specific country. Please try to support your statement with sources that cover the entire world or with more than one sources. [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised.
19272	6	31	6	31	not only mitigation but also adaptation? [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured.
25160	6	31	6	31	add water as one of destabilised sectors - example of how this is important is the water crisis in Cape Town [Mohammed Yahya Said Yahya, Kenya]	Accepted chapter restructured.
5834	6	31	6	33	"in significant ways", needs evidence [Sanaz Moghim, Iran]	Accepted chapter restructured.
19274	6	32	6	32	...support mitigation and adaptation, and? [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured.
3292	6	33	6	33 to do so with human security" may be replaced with ".... to do so with security of all living beings including human..". This is so because we are considering entire living system of the earth. [Suresh Kumar, India]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
14880	6	34	6	34	Some global figures about climate change and land sector should be used in this introductory section. In particular, the latest figures of "Global carbon budget" would be very useful. The latest version is Le Quéré et al. 2017. - Le Quéré, C., Andrew, R. M., Friedlingstein, P., Sitch, S., Pongratz, J., Manning, A. C., ... & Boden, T. A. (2017). Global carbon budget 2017. Earth System Science Data Discussions, 1-79. [Florian Claeys, France]	Accepted chapter restructured.
15688	6	34	6	34	to add in diagram on the right: conservation and sustainable use [Maria del Pilar Salazar Vargas, Mexico]	Accepted chapter restructured.
25212	6	2			put space before the word even [Abiud Kaswamila, United Republic of Tanzania]	Noted, copyedit to be completed prior to publication.
3568	6	2			The title is inappropriate. There is a lot of stuff in the section that does not fit this title; and there is a lot of over lap between this section and 1.3 [Zoltán Somogyi, Hungary]	Comment noted section totally updated and revised.
11694	6	4			The term guard rail is not used in the Paris Agreement [Debra Roberts, South Africa]	Noted-text will be reviewed to use the wording of Paris Agreement
1648	6	6			spell out "NDC" [Tobias Rütting, Sweden]	Accepted, revised.
10348	6	10		12	Not all types of bioenergy would necessarily compete with water or food security or biodiversity. It depends how and in what form is bioenergy used. [Zitouni Ould-Dada, Italy]	Noted text will be revised to reflect this
6472	6	12			include cultural heritage in this list [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
1902	6	12			pg 6, line 12. Typo consistency. No comma after al. as in the previous citations for Creutzig et al., 2015; and Popp et al., 2014; [Mastura Mahmud, Malaysia]	Noted, copyedit to be completed prior to publication.
1904	6	15			Page 6, Line 15. (and Chapters 2, 6, 7) [Mastura Mahmud, Malaysia]	Noted, copyedit to be completed prior to publication.
842	6	16			energy, food and water [Christophe Cudennec, France]	Comment noted section totally updated and revised.
26424	6	18			slow onset events such as ocean acidification need to be included here for comprehensive context. [Hans Poertner and WGII TSU, Germany]	Comment noted section totally updated and revised.
21132	6	19			trend and intensity of winter storms also change [Hasnat Aslam, Pakistan]	Comment noted section totally updated and revised.
9354	6	19			insert " dust storm" after drought [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
844	6	20			sea level rise is not only caused by melting glaciers and permafrost, but also dilatation of oceans and seas [Christophe Cudennec, France]	Rejected .
11282	6	20			"sea level rise..." add "from sea water expansion due to warming, and melting..." cf SROCC [Debra Roberts, South Africa]	Rejected .
16542	6	20			Maybe add here or somewhere else in the text that the warming is accelerated in higher latitudes, which enhances the ice melting there. [Merja Tölle, Germany]	Rejected .

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
10464	6	21			it is not clear if and how the cascading set of problems related to a higher incidence of poverty here mentioned are a related to climate change [Zitouni Ould-Dada, Italy]	Comment noted section totally updated and revised.
2162	6	23			Pg 6, line 23. Reference 'Warren et al. 2014' should be changed to 'Deryng et al. 2014' [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
8864	6	26			refernce wrong [Amanullah Amanullah, Pakistan]	Comment noted section totally updated and revised.
8862	6			18	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
11774	7		5	7	It would better to edit this figure in lanscape position [Jacques Andre Ndione, Senegal]	Comment noted section totally updated and revised.
24258	7	1	7	1	The two figures contained herein can benefit from considering/integrating the Scientific Conceptual Framework for Land Degradation Neutrality (see Orr et al. 2017: 28, Figure 1). I understand the text uderneath the figures will be added. In this case one could consider including the agreed definition of land degradation neutrality: "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems" (decision 3/COP.12, UNCCD, 2015). Land degradation neutrality approaches encompass both sustainable land management and restoration/rehabilitation. [Barron Joseph Orr, Germany]	Accepted, revised .
20796	7	1	7	1	These figures will target visual people. Not the others. Also, it shodul be designed in black and white as colours mask some of the information (instead of highlighting it as is intended in the first place). [Emmanuelle Quillerou, France]	Accepted, revised .
17354	7	1	7	1	Climate change have interactions with degradation and desertification. In addition, is it possible to put the four boxes in the right basket of the balance? [Fei Lu, China]	Accepted, revised .
9716	7	1	7	1	I good figure capturing the scope of the SR would be very useful. You may consider involving graphic designers like in SR1.5 [Jan Fuglestedt, Norway]	Accepted, revised .
18834	7	1	7	1	figure is bad,the figure should give the clear frame and scope of the report. [Jianguo Wu, China]	Accepted, revised .
15970	7	1	7	1	Figures are not easy to be interpreted [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted, revised .
20376	7	1	7	1	in the challenges section, there should be coverage for the complications in the conflicts zones and the impact on the land use change and crops productions. [Wesam Al Madhoun, Malaysia]	Accepted, revised .
20378	7	1	7	1	There should be also coverage on the differences between the developed and less developed countries and their capabilities to adapat and cope with climate change impacts. [Wesam Al Madhoun, Malaysia]	Accepted, revised .

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25426	7		7		The left hand draft figure is promising, but currently does not include GHG emissions and mentions adaptation but not mitigation. I really don't get the right-hand figure [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
24260	7	1	8	4	figure and narrative graphical framing is not clear enough , a concept diagram should indicate land-water-biodiversity-climate -human population and behavior (consumption, production)-enabling environment , role of SLM under an integrated planning frame balancing all land use types for multiple benefits of ecosystem services [Barron Joseph Orr, Germany]	Accepted, revised .
1906	7	0			Page 7, No numbering of Figure. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
1908	7	0			Page 7, Figure lacks clarity: Fonts used are quite small. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
1910	7	0			pg 7. This Figure is not referenced in any previous text on page 6. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
9356	7	1			in the Diagram check spelling of the word Restoration and if possible change it to read " Restoration" [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
9358	7	1			in the Diagram consider inserting "fair" before the word trade. This is important because fair trade practices can guarantee sustainable ecosystems [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
8866	7	6		7	reference wrong [Amanullah Amanullah, Pakistan]	Accepted, revised .
26426	7				nice start of figure. While a conceptual figure makes sense for the framing, do not forget that most figures across the report should also and mostly present results of the assessments, e.g. such figures on process would need to be upfront. [Hans Poertner and WGII TSU, Germany]	Accepted chapter restructured.
14280	8	1	8	1	As the authors work this narrative into a graphic, I think it would greatly strengthen the box to adopt the DPSIR framework since it is already somewhat in that structure. That is a framework that will be recognizable to policy makers. [Rattan Lal, United States of America]	Accepted chapter restructured.
818	8	1	8	4	I hate to quibble but I would argue that climate is the primary driver for the changes in the land system on both long and short time scales. Of particular importance are changes in seasonal precipitation patterns and also temperatures. The climatic drivers can be modified locally and regionally by geologic factors (geomorphic and tectonic). Of course during the Industrial era and particularly after WWII human societies have the engineering capacity to somewhat override these natural environmental drivers [Paul Glaser, United States of America]	Accepted chapter restructured.
24262	8	3	8	3	Please consider specifying: formal and informal institution so that it is clear it is referred to rules/ norms and not to entities/organisations. [Barron Joseph Orr, Germany]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25722	8	3	8	3	The narrative seems to be too condensed. The list of land use types is incomplete (mining, settlement, infrastructure) and neglects combinations (agroforestry, mixed cropping and grazing). The drivers are incomplete, too, social aspects are missing. Enabling conditions are somewhat vague; the exact meaning of land competition remains elusive. [Bernhard Brümmer, Germany]	Accepted chapter restructured.
25724	8	3	8	3	The list of SDGs in the box is not in sync with the figure on the previous page. [Bernhard Brümmer, Germany]	Accepted chapter restructured.
25726	8	3	8	3	Many typos in the box (drivers, at instead of as,...) [Bernhard Brümmer, Germany]	Accepted chapter restructured.
24890	8	3	8	3	Last sentence in the second paragraph of the box should also include 13 (climate), 6 (water) and 15 (life on earth) [Dale Lockwood, United States of America]	Accepted chapter restructured.
25194	8	3	8	3	Need to change 'reservesand' to 'reserves and and' in the fourth line inside the box [Denis Asizua, Uganda]	Accepted - text revised.
20788	8	3	8	3	I am very surprised to see land competition and intensification listed in the text box as "enabling conditions". They are usually seen as adverse to achieving any kind of environmental output (because of market failures). [Emmanuelle Quillerou, France]	Accepted chapter restructured.
20790	8	3	8	3	"The food system, linked to land via ecosystem, services, is" --> remove comma between ecosystem and services. [Emmanuelle Quillerou, France]	Noted, copyedit to be completed prior to publication.
18664	8	3	8	3	4th line in the box: reservesand --> reserves and [Hiroaki Kondo, Japan]	Accepted - text revised.
20494	8	3	8	3	3. In the table, "reviseand unmanged " should be revised as "revised and unmanaged" [Huai Jianjun, China]	Accepted - text revised.
3686	8	3	8	3	It would be good to include specific reference to all five of the elements of the report in this framing. LD, desertification and food security as they are effectively policy goals. GHG fluxes would be useful to mention as linking land-atmosphere and SLM as the means by which the policy goals can be achieved [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
878	8	3	8	3	"The food system, linked to land via ecosystem, services, is defined..." You do not need the coma after "ecosystem" [Jose Luis Vicente Vicente, Germany]	Accepted - text revised.
880	8	3	8	3	"driviers", maybe you mean "drivers" [Jose Luis Vicente Vicente, Germany]	Noted, accepted, uncertainty language added or revised.
882	8	3	8	3	"propse", maybe you mean "propose" [Jose Luis Vicente Vicente, Germany]	Noted, accepted, uncertainty language added or revised.
884	8	3	8	3	"solutiosn", maybe you mean "solutions" [Jose Luis Vicente Vicente, Germany]	Noted, accepted, uncertainty language added or revised.
17032	8	3	8	3	Drivers include only food demand-how about food supply? [Lourdes Tibig, Philippines]	Accepted chapter restructured.
15690	8	3	8	3	add "zero hunger" (goal 2) as another SDGs related to land use and ecosystem services [Maria del Pilar Salazar Vargas, Mexico]	Accepted chapter restructured.
15692	8	3	8	3	Change "driviers" and "propse sustainable solutiosn" [Maria del Pilar Salazar Vargas, Mexico]	Noted, accepted, uncertainty language added or revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25174	8	3	8	3	What does unmanaged [Mohammed Yahya Said Yahya, Kenya]	Comment noted section totally updated and revised.
5098	8	3	8	3	The land system contributes to global warming by producing GHG fluxes and is impacted by climate change through several drivers (demographics, economics, technology, and policies)' - the main climate change effects are missed: changes in temperature and precipitation, in some cases - in wind activity, and, of course, extreme weather events, which can lead to dramatic land degradation, especially in mountainous areas [Oksana Lipka, Russian Federation]	Accepted chapter restructured.
5100	8	3	8	3	The land use and related ecosystem services contribute to several SDGs, including 6 (water), 9 (energy), 13 (climate) and 15 (life on earth).' - please add 'SUSTAINABLE DEVELOPMENT GOAL 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture'. [Oksana Lipka, Russian Federation]	Accepted chapter restructured.
1842	8	3	8	3	Re: "(food demand, demographics, economics, technology, policies and institutions)" - add: "land speculation": increasingly relevant, beyond 'normal' economics of supply & demand [Rianne ten Veen, Netherlands]	Accepted chapter restructured.
5564	8	3	8	3	I suggest that it is better to add culture to several drivers [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
3294	8	3	8	3	Please add land use categories like mining, oil exploration, urbanisation and industrialisation in the box provided. Please correct the spellings of " drivers" in para 2 and " solution" in para 3 in the box [Suresh Kumar, India]	Accepted chapter restructured.
15972	8	3	8	3	Box: "The food system, linked to land via ecosystem, services, is defined...." There is a comma between ecosystem and services that should not be there [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
15974	8	3	8	3	Box: "Both food production and consumption contribute to global warming via GHG emissions and are impacted by climate change directly (through yields, food quality, increased variability) and indirectly (through the main food drivers)". Examples of the food drivers should be provided [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised.
1164	8	3	8	3	Text box says "The land system contributes to global warming....and is impacted by climate change through several drivers (demographics, economics, technology, and policies)." This sentence should include social dynamics, as these impact people's ability to access appropriate resources and knowledge to sustainably use land in the face of climate change and other factors, such as food insecurity and poverty. [Tonya Rawe, United States of America]	Accepted chapter restructured.
1166	8	3	8	3	Text box refers to the SDGs to which land use and related ecosystem services contribute. SDGs 1 and 2 should also be listed, given reference to provision of food (in the first few lines of the exec summary) as among different ecosystem services. Land is also part and parcel of agriculture based livelihoods, hence SDG1. Similarly, the text box refers to the SDGs to which food system outcomes can contribute. Those outcomes include environmental footprint, in which case, SDGs 6 and 15 should also be listed as those to which food system outcomes can contribute. [Tonya Rawe, United States of America]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
1168	8	3	8	3	Text box refers to an outcome of food systems as "food and nutrition security." This full reference is appreciated, as it emphasizes that food security is not just about caloric intake. Please retain this full reference that includes nutrition security. [Tonya Rawe, United States of America]	Accepted chapter restructured.
24264	8	3	8	4	In the box, line1-line 5 of the first paragraph revised as: The land system, characterised by land use types (cropping, grazing, forestry, wetlands, reserves and unmanaged), and land-based ecosystem services, is influenced by land competition and land intensification induced by several drivers (food demand, demographics, economics, technology, and enabling conditions (policies and institutions). The land system contributes to global warming by producing GHG fluxes and is impacted by climate change. Land desertification and degradation are two critical consequences of human-directed unsustainable land use, that are also contribute to carbon emission and affected by climate change. The land use and related ecosystem services contribute to several SDGs, including1(proverty), 2.(hunger) 6 (water), 9 (energy), 13 (climate), 15 (life on earth) and 16 (peace and security). [Barron Joseph Orr, Germany]	Accepted chapter restructured.
19276	8	3	8	4	This sentence 'The land use and related ecosystem services contribute to several SDGs, including 6 (water), 9 (energy), 13 (climate) and 15 (life on earth)' may not be necessary here. Spelling mistake 'solutiosn', 'propse' [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured.
25898	8	3	8	4	First sentence of the box: what about residential land, industrial land, etc.? [Hans Poertner and WGII TSU, Germany]	Accepted chapter restructured.
11776	8	3	8	4	This text bow should have a number [Jacques Andre Ndione, Senegal]	Accepted - text revised.
9718	8	3	8	4	First para in the box, line 5: Several drivers for how climate change can impact on land systems. But I think the physical effects (temp., precip, wind etc) are missing. [Jan Fuglestedt, Norway]	Accepted chapter restructured.
9720	8	3	8	4	second para in the box, line 9: Several drivers for how climate change can impact on land systems. But I think the physical effects (temp., precip, wind etc) are missing. [Jan Fuglestedt, Norway]	Accepted chapter restructured.
25428	8	3	8	4	The box really needs to mention land tenure, preferably in its first paragraph [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
18604	8	3	8	4	perhaps an overview diagram showing components of each the land and food system, with supply and demand sizes, and enableline conditions mediating flow. [Justin Borevitz, Australia]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25332	8	3	8	4	The condensed narrative suggests that aim of this report is to investigate climate, land and food interlinages to propose sustainable solutions to ensure that future global warming is at or below 2°C above pre-industrial levels. Capping warming AT or below 2°C is very different from capping warming to WELL BELOW 2°C, pursuing to limit warming to 1.5°C, which is the aim of the Paris Agreement. It would be very important to make the overall SRCL report consistent with the Paris Agreement goals. Otherwise the findings for policymakers could be dangerously misleading or simply useless, because as the IPCC Special Report on 1.5°C will show, there's a big difference in capping warming at 2°C versus capping it at 1.5°C. [Kaisa Kosonen, Finland]	Accepted chapter restructured.
16214	8	3	8	4	Please define what is "food environment" (inside the box). [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
20668	8	3	8	4	Please check the word 'drivers' in the second paragraph [Mahamadou Laouali Amadou, Niger]	Accepted - text revised.
20670	8	3	8	4	Please check the word 'solutions' in the last paragraph [Mahamadou Laouali Amadou, Niger]	Accepted - text revised.
7050	8	3	8	4	Regarding a condensed narrative: End of first para: After mentioning SDG 15 its target 15.3 "striving to achive a land degradation neutral world by 2030" should be mentioned explicitly as it target the issue of striving to achieve land degradation neutrality. [Mariam Akhtar-Schuster, Germany]	Accepted chapter restructured.
7052	8	3	8	4	Regarding a condensed narrative: End of second para: You may wish to consider SDG 9 as well. Rationale: As indicated in previous pages (see for instance p. 5 lines 10 and 11): "wasteful use of natural resources both in terms of production and consumption patterns" are considered a problem. Any transformation towards more sustainable production and consumption patterns would also need to consider infrastructural issues (see also page 18, lines 37-38). [Mariam Akhtar-Schuster, Germany]	Accepted chapter restructured.
21320	8	3	8	4	End of the first paragraph in the box " The land use ...(life on earth)"SDG 2 is missing, probably the most important SDG to state here [Martial Bernoux, Italy]	Accepted chapter restructured.
21322	8	3	8	4	The box is using definition of food system...not the one for Food security...thus the reader is lost and hardly can relate this narrative to Chapter 5 on "food security" [Martial Bernoux, Italy]	Accepted chapter restructured.
21324	8	3	8	4	Last sentence in the box: Is this here the overall aim of this IPCC SR? I believe not...thus rewrite accordingly [Martial Bernoux, Italy]	Accepted chapter restructured.
7874	8	3	8	4	I hate to quibble but I would argue that climate is the primary driver for the changes in the land system on both long and short time scales. Of particular importance are changes in seasonal precipitation patterns and also temperatures. The climatic drivers can be modified locally and regionally by geologic factors (geomorphic and tectonic). Of course during the Industrial era and particularly after WWII human societies have the engineering capacity to somewhat override these natural environmental drivers. [Paul Glaser, United States of America]	Accepted chapter restructured.
14276	8	3	8	4	Regarding a condensed narrative: End of first para: After mentioning SDG 15 its target 15.3 "striving to achive a land degradation neutral world by 2030" should be mentioned explicitly as it targets the issue of striving to achieve land degradation neutrality. [Rattan Lal, United States of America]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
14278	8	3	8	4	Regarding a condensed narrative: End of second para: You may wish to consider SDG 9 as well. Rationale: As indicated in previous pages (see for instance p. 5 lines 10 and 11 "wasteful use of natural resources both in terms of production and consumption patterns" are considered a problem. Any transformation towards more sustainable production and consumption patterns would also need to consider infrastructural issues (see also page 18, lines 37-38). [Rattan Lal, United States of America]	Accepted chapter restructured.
4008	8	3	8	4	In box, second paragraph, line 1: delete comma between "ecosystem" and "services"; second paragraph, line 3, replace "at that" with ", which"; line 5, correct spelling of "drivers"; line 9, change "food quality" to "nutritional value"; third paragraph, line 2, fix typos: "propose sustainable solutions" [Reid Detchon, United States of America]	Accepted - text revised.
142	8	4	8	4	Add space between "reserves_and"; Correct spelling of "drivers" [Beth Middleton, United States of America]	Accepted - text revised.
14882	8	4	8	4	Rewriting work should be envisaged for the box, in particular by introducing the different land categories, not forgetting the ecological and biophysical aspects of the relationship between lands and climate change, highlighting the importance of dietary changes and food waste reduction, and ensuring that there is a reflection on the 17 SDGs (as in SR15). [Florian Claeys, France]	Accepted chapter restructured.
16088	8	4	8	4	Summary box to be fully revised. The box "Condensed narrative of the graphical framing of the linkages between climate change, land use and thde food system" may be intended, as specified in the title, to highlight challenges related to the very elements of this special report. However it presents "land systems" without actually providing a clear definition of what they are, and "food systems" as two almost separated systems. Unfortunately, only tiny (mostly implicit and generic) linkages are made between the two systems, notably, one in the paragraph re land systems: "the land system is influenced by several drivers (food demand, demographics...)" and the other in the paragraph re food systems: "Food systems , linked to land via ecosystem services...". In fact this box should be used to provide a clear picture of the conceptual framework of the report, by highlighting the main linkages of food systems with the so called land system, including explaining how the changing and increasing food demand puts a pressure on land, the role of technologies in determining the land intensity (land per unit of output) of food production processes etc. This box should mention how degradation and desertification fit into this picture, as a consequence of both climate change, due to economy-wide GHG emissions, and land mis-management (overuse etc). [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
16090	8	4	8	4	Irrelevant sentence. The last sentence of the box "Condensed narrative of the graphical framing of the linkages between climate change, land use and thde food system" may not fit here. It seems related to the SR on 1.5-2 C. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.

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2340	8	4	8	4	The word biophysics appears here for the first time in the text but it is used across the whole chapter. The only definition that I found of the word #is the science of the application of the laws of physics to biological phenomena#. However, some specific literature uses biophysics as a combination of biological and physical phenomena in the areas of land use and climate change. I think it would be easier to the reader to say biological and physical changes instead of using a word that can be confusing. [Manuel Llansola-Portoles, France]	Accepted chapter restructured.
27118	8	4	8	4	The box fails to point out the central role of productive land and its primary productivity as a unique source of all land carbon services (be it sequestration or the production of raw materials) and therefore the imperative to protect (maintain/enhance) the area and quality (resilience, productivity) of productive land. The irreversible loss of productive land should be explicitly identified as a key concern. [Zoltán Rakonczay, Belgium]	Accepted chapter restructured.
2420	8	5	8	5	In box just above, typo. Should be "propose". [William Lahoz, Norway]	Accepted - text revised.
5102	8	5	8	6	The definition of ecosystems is wrong. Please use: Ecosystem, the complex of living organisms, their physical environment, and all their interrelationships in a particular unit of space. https://www.britannica.com/science/ecosystem [Oksana Lipka, Russian Federation]	Accepted chapter restructured.
26906	8	5	8	9	Revise to read, "Ecosystems are a dynamic, interacting combinations living (e.g. plants, animals, microorganisms) and non-living components (minerals, water, organic and inorganic matter, gases) that function to provide humans with what are referred to as ecosystem services (Mace et al. 2012; Millennium Ecosystem Assessment 2005), or nature's contribution to people (Diaz et al. 2018). These provisioning, regulating, supporting, or cultural services are critical for the well-being of all populations in the world." [Knut Nadelhoffer, United States of America]	Accepted chapter restructured.
16932	8	5	8	9	Here, more than just ecosystems, I would refer to social- ecological systems in which humans are part of. The way it is framed now the subparagraph seems that ecosystems and people are two separate entities, and people just benefit from ecosystems. I see them instead as connected in the same systems. See relevant literature cited here in p.9, lines 8-9. [Vincenza Ferrara, Italy]	Accepted chapter restructured.
19278	8	5	8	17	Suggest deletion, not related to climate change, it is not adding any value and whatever is written are already addressed by other UN reports [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured.
15060	8	6	8	6	The benefits that people obtain from [Ahmed Imam, Egypt]	Accepted chapter restructured.
20798	8	6	8	7	"The benefits people obtain from these ecosystem functions have been termed ecosystem services" Replace by: "The benefits people obtain from these ecosystems have been termed ecosystem services" (remove the word "functions" and add an s to "ecosystems"). This is because ecosystem functions are mostly associated with supporting ecosystem services. and not the other 3 types of ecosystem services. [Emmanuelle Quillerou, France]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24266	8	8	8	9	to delete the last word of "or" and insert "and aesthetic" after culture, referencing the Millennium Assessment report on 5 ecosystem services. [Barron Joseph Orr, Germany]	Accepted chapter restructured.
2874	8	8	8	9	.. beyond this, ecosystems guarantee planetary health and evolutionary change... two levels: a humancentric approach and an earth system approach: problem of destruction or degradation of ecosystems as base for human development and base for planetary health, evolution and renewing ... [Cordula Ott, Switzerland]	Accepted chapter restructured.
4010	8	9	8	9	insert "the" to read: "all the population" [Reid Detchon, United States of America]	Accepted - text revised.
15694	8	9	8	10	Also here could be added the natural climate solutions, as an strategy that can provide additional mitigation at the time to improve health of ecosystems (https://global.nature.org/initiatives/natural-climate-solutions/natures-make-or-break-potential-for-climate-change) [Maria del Pilar Salazar Vargas, Mexico]	Accepted chapter restructured.
16216	8	10	8	10	Please explain what you mean by "human security" and "health and resilience of land resources". (Resilience of land resources to what?) [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised.
4012	8	10	8	10	replace "impacts" with "impact" [Reid Detchon, United States of America]	Accepted - text revised.
736	8	10	8	10	"Land use and misuse" - first time misuse is added (probably unnecessarily); better to streamline the exact wording throughout the document; [Rolf Sommer, Kenya]	Comment noted section totally updated and revised.
9722	8	10	8	11	A strong statement that has only one reference. Needs stronger basis. [Jan Fuglestedt, Norway]	Accepted chapter restructured.
26908	8	10	8	14	Revise to, "Land use and misuse are strongly linked to food security, health, and resilience of land resources, as well as serving to drive poverty, migration and conflict (Cordingley et al. 2015). Humanity stands at a crossroads as we witness rapid deterioration, depletion and degradation of ecosystems and the services provided on which we rely at national, regional and global scales (Mace et al. 2012; Newbold et al. 2015)." [Knute Nadelhoffer, United States of America]	Accepted chapter restructured.
5836	8	10	8	14	we are not just "witnessing", we are doing as well, it is better to change the entire sentence [Sanaz Moghim, Iran]	Accepted chapter restructured.
16218	8	12	8	12	Humanity has always been standing at a crossroad. It is better if such expressions are avoided but instead more specific information is given to the readers explaining the concern the authors presumably felt like conveying. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
738	8	12	8	12	"...we are..." - sudden change in style using 'we', better stick to third-person throughout [Rolf Sommer, Kenya]	Accepted - text revised.
6834	8	12	8	12	Not sure of the added value of writing "deterioration, depletion and degradation of the ecosystem", wouldn't "deterioration of the ecosystem" capture the authors' main thinking? [Wilfran Moufouma Okia, France]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16016	8	12	8	13	The meaning of this sentence is not clear [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
4356	8	12	8	14	This sentence is wrong, because humans have always relied on ecosystems. Remove the words "have come to" before "rely on" to make this sentence correct [Samantha Grover, Australia]	Accepted chapter restructured.
15062	8	13	8	13	the every services [Ahmed Imam, Egypt]	Accepted chapter restructured.
16220	8	13	8	13	What are the national, regional and global scales that we have come to rely on and what is wrong with that? Who is we? The people in the world or perhaps some specific group of people the authors belong to? [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
17696	8	14	8	14	add natural before resources [Sawsan Mustafa, Sudan]	Accepted - text revised.
16222	8	14	8	15	What are the current vulnerabilities you are referring to? [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
14282	8	14	8	15	It would be important to highlight what kind of economies are more dependant on natural resources (post conflict, weak socio-economic situation, developing countries etc). [Rattan Lal, United States of America]	Comment noted section totally updated and revised.
19602	8	14	8	15	Except for economic issues, vital dependencies such as the shortage of urban water supply can be added. Refrences: Water 2015, 7, 1264-1290; doi: 10.3390/w7031264, "Impact of Population Growth and Climate Change on the Freshwater Resources of Lamu Island, Kenya", Cornelius Okello, Bruno Tomasello, Nicolas Greggio, Nina Wambiji and Marco Antonellini Water 2012, 4, 28-44; doi:10.3390/w4010028, "Climate Change Impacts on Water Supply and Demand in Rheraya Watershed (Morocco), with Potential Adaptation Strategies", Saloua Rochdane, Barbara Reichert 2, Mohammed Messouli, Abdelaziz Babqiqi and Mohammed Yacoubi Khebiza [sadegh ziayan, Iran]	Accepted chapter restructured.
15976	8	14	8	15	"Diminishing resources of land, water, forests, etc. are exacerbating current vulnerabilities,...". How? It should be explained [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured. Point accepted – this has been demonstrated throughout the chapter in terms of human interactions with these resources is creating greater degradation and scarcity
25594	8	14	8	17	I understand the importance of providing statements regarding the vulnerability of land resources, but there may be an opportunity for mentioning restoration and landscape resilience (through management and/or natural regeneration), for example theories of forest transition, tropical forest regrowth? See the following citations: Poorter, L. F. Bongers, T. M. Aide, A. M. Almeyda Zambrano, P. Balvanera, J. Becknell, V. Boukili, P. H. S. Brancalion, E. N. Broadbent, R. L. Chazdon, D. Craven et al. 2016. Biomass resilience of Neotropical secondary forests. Nature 530: 211-214. Chazdon et al., Carbon sequestration potential of second-growth forest regeneration in the Latin American tropics. 2016. Science Advancements, 1-10. [Laura Schneider, United States of America]	Accepted chapter restructured.

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1170	8	14	8	17	Reference is made to economies and countries which are highly dependent on natural resources or most vulnerable to the risk of land degradation. This reference should go beyond the macro concepts of economies and countries to speak to the higher levels of dependence on natural resources and vulnerability to land degradation among agriculture-dependent households living in poverty. [Tonya Rawe, United States of America]	Accepted chapter restructured.
4358	8	15	8	15	after resources, add ", such as South East Asia and Africa" [Samantha Grover, Australia]	Accepted chapter restructured.
27120	8	15	8	15	End of the sentence should be deleted after "vulnerabilities". It is wrong to pretend that there would be regions that are not highly dependent on natural resources. All economies (and all individual humans) are 100% dependent on natural resources. In fact, those who are most removed from primary production (i.e., urbanites in the service sectors) depend on more natural resources than those directly living off the land, as they have a similar direct claim on natural resources (through food, clothing, etc) and a much higher indirect claim (through the resource needs of the sophisticated infrastructure within which they function). [Zoltán Rakonczay, Belgium]	Accepted chapter restructured.
18910	8	17	8	17	change "is expected to" to "water will increase by" [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
4014	8	17	8	17	replace "is expected to" with "will" - (You are reporting an estimate.) [Reid Detchon, United States of America]	Accepted - text revised.
6832	8		8		Box is not labelled and there are number of typos that need correction. In addition, it would be useful for the definition of land system and land use type to be cascaded down into the Glossary. [Wilfran Moufouma Okia, France]	Comment noted section totally updated and revised.
26522	8	14	9	5	Really needs some citations [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted- text revised.
9724	8	16	9	1	These two sentences need a reference. [Jan Fuglestedt, Norway]	Accepted chapter restructured.
2362	8	17	9	1	By 2030, the demand for food is expected to increase by at least 50%: what is the source? Do we consider a business-as-usual pathway? If yes, it is important to mention it and refer to chapter 5 (5-72 line 5): "business as usual trends are unsustainable". [Anne-Laure Sablé, France]	Accepted chapter restructured.
20824	8	17	9	1	The statement lacks of a reference [Carolina Vera, Argentina]	Accepted- text revised.
846	8	17	9	1	These estimations need to be supported by literature references [Christophe Cudennec, France]	Accepted chapter restructured.
16092	8	17	9	1	Add reference to FAO 2017 (FOFA - TAC) for projections of agriculture. Revise and reference projections of agricultural production. It is unclear where the projections of food, energy and water come from. reports and increase of agricultural production of 48.6 percent from 2012 to 2050 (FAO, 2017. The future of food and agriculture - Trends and challenges. Rome). Other authors report increase of 38 percent to 2030 (Alexandratos and Bruinsma, 2012 World agriculture towards 2030 -2050 ESA working paper 12-03, FAO, Rome). [Lorenzo Giovanni Bellù, Italy]	Accepted- text revised.

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16224	8	17	9	1	What is the source for the estimated increase of demand for food, energy and water by 2030? How were the numbers produced, that you are citing? What is the underlying scenario and what are the assumptions of this scenario? [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
16912	8	17	9	1	provide reference for these % estimates [Pauline Midgley, Germany]	references useful some or all added.
16038	8	17	9	1	A reference should be added to support the data [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
1172	8	17	9	1	Reference is made to increasing demand for food, energy and water -- it is not clear what is being held steady. i.e. is the assumption that these are the % increases in demand for each, given current trajectories for population? For diet change? For sustainable development (i.e. better access to more diverse diets where that is needed)? [Tonya Rawe, United States of America]	Accepted chapter restructured.
20672	8	17	9	3	Please lets provide the reference for this statement [Mahamadou Laouali Amadou, Niger]	Accepted- text revised.
26910	8	17	9	5	Revise to, "Demands for food, energy, and water by 2030 are estimated to increase by at least 50%, 45% and 30%, respectively. Increased competition for land and conflicts over land use through time and across regions is impacting governance, with consequences for land acquisition, land tenure and rights, and food security. Meeting food, water and energy needs will require global land use management and land cover decisions to be centrally placed within energy and climate related solutions. Importantly, policy attention must be paid to the rehabilitation and maintenance of land, as well the restoration and sustaining of ecosystem services." [Knute Nadelhoffer, United States of America]	Accepted chapter restructured.
1920	8	0			Page 8, Paragraph 3 of Box, spelling of 'propse'. [Mastura Mahmud, Malaysia]	Accepted - text revised.
1924	8	0			Page 8, Paragraph 3 of Box, spelling of 'solutiosn'. [Mastura Mahmud, Malaysia]	Accepted - text revised.
1926	8	0			Table 1.1.1 does not exist, but Table 1.1. exists on pg 10 [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
9360	8	3		4	insert land administration under enabling conditions [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
9362	8	3		16	define land degradation and desertification [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
11698	8	3			Include SDG11 as one of the key SDGs impacted by land use [Debra Roberts, South Africa]	Accepted chapter restructured.
17728	8	3			Second paragraph, line 3 of text box: Change at to as. [Donald Smith, Canada]	Accepted - text revised.
17730	8	3			Second paragraph line 5 of text box: Change to "driviers" to "drivers". [Donald Smith, Canada]	Accepted - text revised.
17732	8	3			Third paragraph line 2 of text box: Change "solutiosn" to "solutions". [Donald Smith, Canada]	Accepted - text revised.
1912	8	3			Page 8. Line 3. The function of the Box and the underlined text in the Box is not clearly defined. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.

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1914	8	3			Sub-section 1.2.3 starts with a Box, with no explanation. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
1916	8	3			Pg 8, Line 3. Box ? Please Justify why the underlined words [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
7666	8	3			First use of the term GHG but without a definition. Most will know it means 'Greenhouse gas', but the first time it is used it should be defined. [Natasha Hall, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised.
8358	8	3			In the Box, keep space between reserves and and (line 2). [Shijo Joseph, India]	Noted, accepted, uncertainty language added or revised.
8360	8	3			In the Box, the spelling of drivers is not correct (line 14). [Shijo Joseph, India]	Noted, accepted, uncertainty language added or revised.
8362	8	3			In the Box, the spelling of soluuiou is not correct (line 22). [Shijo Joseph, India]	Noted, accepted, uncertainty language added or revised.
3556	8	3			This narrative does not respect time and structure. Please separate past (observed) changes, effects, linkages and projected ones (risks, dangers) [Zoltán Somogyi, Hungary]	Accepted chapter restructured.
3558	8	3			"drivers" instead of "driviers" [Zoltán Somogyi, Hungary]	Accepted - text revised.
21134	8	8			Human and physical geography are also important parameters or drivers [Hasnat Aslam, Pakistan]	Comment noted section totally updated and revised.
1918	8	8			Page 8 Line8 of paragraph 1 in the Box. Suggest placing 'Goal' before the number 6. [Mastura Mahmud, Malaysia]	Accepted - text revised.
20568	8	9			replace 'of all population' by 'of the global population' [Bettina Weber, Germany]	Accepted - text revised.
8130	8	9			Add 'health' before well-being in the sentence [Franklin Odhiambo, Kenya]	Noted, accepted, uncertainty language added or revised.
1922	8	10			Page 8 Line 10 of paragraph 2 in the Box. Suggest placing 'Goal' before the number 1. [Mastura Mahmud, Malaysia]	Accepted - text revised.
11286	8	13			It may be worth stating clearly, when 'ecosystem services' is first used, that this (well entrenched) term may give the false impression that ecosystems only add to what humans require to exist, whereas actually they are the foundation of our existence. They are not the plumbing of the house, they are the very house we live in. And it is not entirely clear yet how much degradation constitutes a tipping point, beyond which everything collapses. [Debra Roberts, South Africa]	Accepted chapter restructured.
6584	8	14			"Diminishing resources of land, water, forests, etc." Suggest that list could be different land cover or uses, but not mix land with forests and other land cover/uses. [Anna Haines, United States of America]	Accepted chapter restructured.
6582	8				in box misspelling - driviers should be drivers [Anna Haines, United States of America]	Accepted - text revised.

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11284	8				Line 2 of box text: could you add as a driver something about our moral responsibility to preserve species? This is a major driver behind nature conservation: preserving the diversity of life on earth (SDG15). And where would 'land availability' come in? Under 'enabling conditions'? There is only so much land, and only so much area under different biomes, some of which are more desirable for human use than others - and therefore under more pressure (as indeed gets discussed in Section 1.3.2). Water also needs to appear in this box/figure. Both under the food system (drinking, irrigation), and of course as a resource that keeps our entire socio-economic system going (industry etc). [Debra Roberts, South Africa]	Accepted chapter restructured.
404	8				Box: I hate to quibble but I would argue that climate is the primary driver for the changes in the land system on both long and short time scales. Of particular importance are changes in seasonal precipitation patterns and also temperatures. The climatic drivers can be modified locally and regionally by geologic factors (geomorphic and tectonic). Of course during the Industrial era and particularly after WWII human societies have the engineering capacity to somewhat override these natural environmental drivers. [Paul Glaser, United States of America]	Accepted chapter restructured.
14964	9	1	9	1	The reference from which these figures are quoted should be provided. [Florian Claeys, France]	Accepted chapter restructured.
2422	9	1	9	1	What is the baseline date for the three percentage rates of increase? [William Lahoz, Norway]	Accepted chapter restructured.
19280	9	1	9	12	Suggest deletion, not related to climate change, it is not adding any value and whatever is written are already addressed by other UN reports [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured.
15064	9	2	9	2	regions and scales will impact land governance, [Ahmed Imam, Egypt]	Accepted chapter restructured.
4016	9	3	9	3	replace "would" with "will" [Reid Detchon, United States of America]	Accepted - text revised.
20674	9	3	9	5	Important to underline the need of approaches required for achieving this objectives [Mahamadou Laouali Amadou, Niger]	Accepted chapter restructured.
1174	9	3	9	5	Sentence referring to the need for global land use and land use cover to be placed within energy & climate-related solutions....in order to meet food, water, and energy needs -- If we are to meet food and water needs, then the solutions & policies have to be more comprehensive than "energy & climate-related", given broader drivers of (or barriers to) sustainable development, poverty alleviation, and food security. This sentence defaults to climate/energy/environment, when the global discourse widely recognizes (and the chapter recognizes in other parts) that none of these issues can be divorced from others. [Tonya Rawe, United States of America]	Accepted chapter restructured.
10466	9	3	9	5	the different policies related to food, water, energy and climate should be articulated facilitating an integrated approach [Zitouni Ould-Dada, Italy]	Accepted chapter restructured.
17698	9	4	9	4	delete ennergy [Sawsan Mustafa, Sudan]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3688	9	6	9	6	At one level SLM is tautological. If you manage land sustainably you will achieve sustainable development. A bit obvious. Be a bit more prosaic and refer to the types of things that SLM entails? [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
27122	9	6	9	6	"sustainable land management" should not be capitalised (not a proper name), and its acronym should be avoided. The acronym wrongly suggests that "SLM" is a set of established practices, whereas the concept is vague to the extreme and not objectively constrained. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
24268	9	6	9	8	Please consider including the following directly related reference: Sanz et al 2017. Sustainable Land Management contribution to successful land-based climate change adaptation and mitigation. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany. https://www.unccd.int/sites/default/files/documents/2017-09/UNCCD_Report_SLM_web_v2.pdf [Barron Joseph Orr, Germany]	references useful some or all added.
25162	9	8	9	9	Could you have references that quantify SLM success that are based on approaches suggested by Ostrom - other any other suggested approaches [Mohammed Yahya Said Yahya, Kenya]	Accepted chapter restructured.
14884	9	8	9	10	In addition to ecosystem-based approaches, natural climate solutions should be highlighted. - Griscom, B. W., Adams, J., Ellis, P. W., Houghton, R. A., Lomax, G., Miteva, D. A., ... & Woodbury, P. (2017). Natural climate solutions. Proceedings of the National Academy of Sciences, 114(44), 11645-11650. [Florian Claeys, France]	Accepted chapter restructured.
20676	9	8	9	12	I fully agree with this point of view, I am thinking most the failure of ecosystem management we experienced especially in under-developed regions may be due to the lack of considerations of the social-ecological systems approaches in implementing SLM programme. I realise today most of institutions including research institutions and Universities leading research on this topic mislead the SES approach [Mahamadou Laouali Amadou, Niger]	Accepted chapter restructured.
1176	9	8	9	12	The logic of these 2 sentences is not clear. How do ecosystem-based approaches(alone) to climate change, land degradation, and loss of biodiversity and to address food, energy, and water projects (rather than more comprehensive ecosystem & community-based or sustainable enable us to alleviate poverty problems? This oversimplifies the issue, when in fact, these ecosystem-based approaches or tools must be coupled with community-based approaches or inclusive and participatory approaches that reflect the human element of poverty. [Tonya Rawe, United States of America]	Accepted chapter restructured.
3920	9	10	9	11	(Epple et al. 2016) . to be change into (Epple et al. 2016). [Tarig Ibrahim, Sudan]	Noted, copyedit to be completed prior to publication.
21236	9	11	9	11	Dot is slided [Erhan Akca, Turkey]	Noted, copyedit to be completed prior to publication.
18666	9	11	9	11	A period at the head of this line should be shifted to the end of previous line. [Hiroaki Kondo, Japan]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
17324	9	11	9	11	The dot at the start of the line needs to be edited. [Jhan Carlo Espinoza, France]	Noted, copyedit to be completed prior to publication.
1844	9	11	9	11	Re: "using ecosystem-based tools" - this ignores the human aspect of matters, including but not limited to the cultural and spiritual values people have connected to the land so 'ecosystem' needs to include the indigenous humans in the region. [Rianne ten Veen, Netherlands]	Accepted chapter restructured.
740	9	11	9	11	"ecosystem-based tools" means little, unless better explained [Rolf Sommer, Kenya]	Accepted chapter restructured.
25198	9	11	9	12	The complexities surrounding this statement compromise sustainable land management in the community where I live. From my personal observation, its clear the need for food and energy varies between the rural poor and middle income earners. The rural poor lack food but have access to wood fuel while the middle income earners can afford food but have to depend on the rural poor for wood fuel in the form of charcoal because of either high cost or low coverage of electricity. Subsequently, the rural poor earn a living from trees. This interdependence has made implementation of by-laws and policies protecting tree coverage close to impossible as the invariable needs for food and energy of the two socioeconomic groups seem to be hard to compromise. From this observation, I strongly agree on the view that integrated tools are requisite to ensure SLM, however, mechanisms of making such tools readily available to rural local governments and the local scientists to ensure quick assessments and development of logical policies and by-laws needed to be incorporated in such a report. [Denis Asizua, Uganda]	Accepted chapter restructured.
9726	9	11	9	12	More than one reference is needed here. [Jan Fuglestedt, Norway]	Accepted chapter restructured.
6520	9	11	9	12	adding gender inequality in relation to land acquisition after poverty problems... as this is a major setback in ensuring SLM [Ojong.E nee Enokenwa Baa, South Africa]	Accepted chapter restructured.
26912	9	13	9	15	Revise to "This report presents an opportunity, as viewed through a climate change lens, to reassess the contributions of land and land use both as opportunities and as threats to multiple vulnerabilities that can interact to derail sustainable development and the attainment of SDGs (UN 2015). [Knute Nadelhoffer, United States of America]	Accepted chapter restructured.
19282	9	13	9	19	The objective is not clear when compared to the objective at the bottom of the box (page 8, line 3-4) "The aim of this IPCC Special Report is to investigate these linkages and relationships using existing scientific evidence and to propose sustainable solutions to ensure that future global warming is capped at or below 2°C above pre-industrial levels". I am skeptical if IPCC should be writing something like this. [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured.
16226	9	13	9	19	The entire paragraph summarises points that were neither introduced nor explained above (e.g. multiple vulnerabilities). Please revise the text. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
27124	9	14	9	14	a "threat to vulnerabilities" should be welcomed, as it would be good to defeat vulnerability. [Zoltán Rakonczay, Belgium]	Thank you for the positive comment.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
27126	9	14	9	14	"derailing" of sustainable development is not possible as sustainable development is just a vague and distant (and unscientific) goal, but not something that is happening. Development to date has been profoundly unsustainable. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
25430	9	15	9	17	Sentence hard to follow without further explanation [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
9728	9	16	9	16	Not all readers understanding what "shrinking carbon budget" means. I suggest you explain / rephrase. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.
1846	9	17	9	18	Re: "policy makers and development practitioners" - what about adding "private sector"; they have more power/ ability to affect change than development practitioners [Rianne ten Veen, Netherlands]	Accepted - text revised.
20800	9	17	9	19	"The report can help in enabling policy makers and development practitioners to reconfigure potential solutions pathways in which land can be perceived as part of the solution." Although it would be nice, a report never "enables" anyone on its own. Exchange with policy makers and scientists can help derive solutions is needed. A report never does. Suggestion: "This report can help rethink potential solutions pathways in which land can be perceived as part of the solution and integrated." [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
26914	9	17	9	19	Revise to, "The report is meant to enable policy makers and development practitioners to reconfigure potential pathways in which land can be considered and managed as part of the solution to sustaining food and energy security while also serving to minimize climate change. [Knut Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
3922	9	18	9	18	solutions pathways to be changed into solution pathways [Tarig Ibrahim, Sudan]	Accepted - text revised.
7054	9	18	9	19	You may wish to consider including land users. The sentence would read (inclusion in bold): "... in which land and land users can be perceived as part of the solution." [Mariam Akhtar-Schuster, Germany]	Comment noted section totally updated and revised.
14284	9	18	9	19	You may wish to consider including land users. The sentence would read (inclusion in bold): "... in which land and land users can be perceived as part of the solution." [Rattan Lal, United States of America]	Comment noted section totally updated and revised.
19284	9	21	9	21	The heading '1.3 Key issues related to land use, and land cover and land use change' could be replaced to something similar to sub-heading 1.3.4 Land-based climate change mitigation and adaptation strategies... (page 15, line 6) by adding words 'climate change' [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured.
6836	9	21	9	21	I wonder whether it makes sense to merge section 1.2.3 into 1.3? [Wilfran Moufouma Okia, France]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
27128	9	21	9	21	It is unclear what "land use, land cover and land-use change" is supposed to be, how it is different from LULUCF (or the part of AFOLU that corresponds to LULUCF) or what the added value of introducing this new term would be. If the emphasis is on differentiating land use from land cover, then changes in both would be important (not only land use change, but also land cover change). However, it does not seem useful to refer to land use and land cover in the title, as the two are seldom clearly separable. LULUCF only mentions "land use", but clearly, land cover is most often used as a proxy for that. Changing the acronym will not add anything in substance, but can lead to considerable confusion by obfuscating the difference in real terms (like emissions and removals) by a change in terms which may or may not implicate a change in substance. [Zoltán Rakonczay, Belgium]	Accepted chapter restructured.
14886	9	23	9	23	Some information should be provided for grasslands and for wetlands. [Florian Claeys, France]	Accepted - text revised.
5566	9	24	9	24	what does author mean by "one way or another" [Sanaz Moghim, Iran]	Deleted
27130	9	24	9	25	Insert "directly" after "impacted", as all land is significantly impacted by human activities. This could be elaborated by adding at the end of the sentence (after "untouched") the following: "although impacted by factors such as anthropogenic climate change, CO2 fertilisation, deposition of N and other nutrients, etc.". [Zoltán Rakonczay, Belgium]	Accepted - text revised.
16228	9	24	9	34	In this paragraph you are citing statistics from different sources, none of which is taken from a dedicated database but instead are taken from articles, which presumably analyse information given in databases. Academic praxis suggest to check the original source and not to base statements on secondary source. So please follow this praxis and check yourselves the dedicated databases. Furthermore, when you say "today", which time period do you have in mind exactly? Saying today and citing a source published in 2013 obviously does not refer to today but to the time period analyzed in the 2013 publication, right? To avoid unnecessary confusion, please specify the time period you are referring to and cross check the information of your citations with what is recorded in dedicated databases. At this end it would be very informative and useful to give an overview of databases reporting land use statistics and explain to your readers their differences and shortcomings. [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised. Reference to secondary sources is necessary due to the long time frame. Reference to FAO is inserted
16094	9	24	9	42	Inconsistent statements. This paragraph contains inconsistent statements re land use that require fixing, notably: Lines 24-25: "Three quarters of global 130 million squared kilometers ice-free land is impacted one way or another by human activities, approximately a quarter remains untouched". Lines 40-42: "At the global level average, around 10% of the total ice-free land surface was estimated to be under intensive management, two thirds under moderate and the remainder under extensive management". From the last sentence it appears that all the ice-free land is under some form of management. This contradicts the statement of lines 25-25 which says that a quarter of ice-free land remains "untouched". [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised.
18912	9	25	9	25	remove "approximately a quarter remains untouched" seems redundant [Carlos Matias Figueroa, Mexico]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
10102	9	25	9	26	The areal extent of land-use impact is not a key result of Erb et al. (2017) and should be removed. [Reinhard Prestele, Germany]	Accepted - text revised. Corrected to Erb et al., 2018
15066	9	26	9	26	Where is Table 1.1.1? [Ahmed Imam, Egypt]	Comment noted section totally updated and revised.
18668	9	26	9	26	Table 1.1.1 --> Table 1.1 [Hiroaki Kondo, Japan]	Accepted chapter restructured.
15978	9	26	9	27	A percentage or a figure should be presented here [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account - combined with other comment.
1848	9	27	9	28	Re: "Forests would cover a substantial fraction of the earth surface (55-58 Mkm ²) in the absence of land use" (my emphasis - this ignores the factually present integral situations such as land use by forest people such as in the Amazon, whilst [Rianne ten Veen, Netherlands])	Accepted - text revised.
10468	9	27	9	28	not clear: Forests would cover a substantial fraction of the earth surface in the absence of land use, but have been reduced 20%-42%. Does this mean tah forests don't represent a land use?? [Zitouni Ould-Dada, Italy]	Taken into account - combined with other comment. - forests represent a land cover type that exists also in the absence of land use. See untouched forests.
17000	9	27	9	29	"Forest [...] have been reduced by 20%-42% [...]" => since when? [Romain Courault, France]	Accepted - text revised.
26916	9	27	9	31	Revise to, "Forests would cover a substantial fraction of the earth surface (55-58 Mkm ²) in the absence of conversion to other land uses, but have been reduced by 20%-42% by conversion (Erb et al. 2017; Luyssaert et al. 2014). Considerable uncertainties are associated with estimates on the extent of forests (Table 1.1), the range mainly depending on methods used, threshold definitions, e.g. minimum tree cover or tree height (Schepaschenko et al. 2015), and proportions of forest area under some form of use or management." [Knut Nadelhoffer, United States of America]	Accepted - text revised.
3690	9	28	9	28	20-42% with reference to what baseline? [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account - combined with other comment.
16230	9	28	9	28	When and where did forests reduce by 20%-42%? What is the starting and the end point? Why is there a variation for historical data that can be observed (you are using past tense so most probably you refer to the past!)? If the data do not underlie historical observations but instead calculations, please explain what is calculated and how. [Lorenzo Giovanni Bellù, Italy]	Taken into account - combined with other comment.
2424	9	28	9	28	What is the baseline date for this reduction in forest cover? [William Lahoz, Norway]	Accepted chapter restructured.
21136	9	29	9	30	uncertainties associate with spectral signature or electromagentic reflectence also have high impact on forest extent estimation [Hasnat Aslam, Pakistan]	Accepted chapter restructured.
10104	9	31	9	31	You may consider to add Sabatini et al. (2018) to support the '[...] and the forest area under some form of use or management' statement. It is targeted only toward Europe, but global approaches are to my knowlede not published yet. Full reference: Sabatini, F. M., S. Burrascano, W. S. Keeton, C. Levers, M. Lindner, F. Pötzschner, P. J. Verkerk, J. Bauhus, et al. 2018. Where are Europe's last primary forests? Edited by Franz Essl. Diversity and Distributions. Wiley/Blackwell (10.1111). doi:10.1111/ddi.12778. [Reinhard Prestele, Germany]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25432	9	31	9	34	I can see that this paragraph relates to land cover classifications and land-use is dealt with in the next paragraph, but it is still odd to say that "other wooded lands" are largely "untouched" when large areas of African savana with sparse but significant tree cover are used for grazing, especially when the table on the following page gives prominence to "Permanent pastures on natural grassland/savanna" [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised. good point, thank you
4360	9	31	9	34	Other Wooded Lands here sounds like it includes savanna. Savanna should be mentioned explicitly. Most savanas are not "untouched" but low intensity rangelands [Samantha Grover, Australia]	Accepted - text revised. good point, thank you
16232	9	32	9	32	5% of what? [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised.
16234	9	33	9	36	Please define the terms "untouched area", "net primary production", "NPP". For the latter please explain what are the differences with the term "NPpot", which you introduced in line 35. [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised.
17700	9	34	9	34	for livestock use utilized instead of consumed [Sawsan Mustafa, Sudan]	Accepted . revised
18914	9	35	9	35	Add "from" between appropriates and one [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
3692	9	35	9	35	Maybe casually tell the reader NPP of what, e.g. chemical energy. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised. a definition of NPP is given
26918	9	35	9	35	Change, "appropriates" to "appropriate". [Knute Nadelhoffer, United States of America]	Accepted - text revised.
4018	9	35	9	35	either say "society appropriates" or "societies appropriate" [Reid Detchon, United States of America]	Accepted . Revised
2426	9	35	9	35	appropriate. [William Lahoz, Norway]	Accepted - text revised.
10682	9	35	9	42	"Around 3 quarter of these flows are consumed by livestock". This is not in accordance with a more recent publication from FAO estimating the total feed intake of livestock to about 6 billion tonnes dry matter, or 20% of Global human appropriation of biomass. Mottet, Anne, Cees de Haan, Alessandra Falucci, Giuseppe Tempio, Carolyn Opio, and Pierre Gerber. "Livestock: On our plates or eating at our table? A new analysis of the feed/food debate." Global Food Security 14 (2017): 1-8. In addition, the sentence is not clear [Anne Mottet, Italy]	Accepted chapter restructured. The reference was added, and more info of HANPP. Thank you for the note, which made us rephrase the passage. Note that the Mottet et al. figure of 6GtC/yr refers to direct biomass consumption (in Krausmann et al. it is 7 Gtdm/yr), the 30 Pg dm/yr HANPP refers to biomass consumption, biomass losses and alternations of NPP - so while it is true that 6 Gt/yr is 20% of HANPP, it is at the same time also misleading, because grazing-land induced NPP alterations are not taken into account. Taking this into account, the livestock-induced HANPP would be larger, rather 25%. But as the matter is too complex for the few lines of space, we rephrased the passage for more clarity, stating only the most important headline figures.
16236	9	35	9	42	When referring to net primary production and to land use, please specify the time period. Also please explain what are "cropland processes" (is it perhaps growing crops? cultivating land?) and "biomass flows" (from where to where is biomass flowing?) [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
26772	9	36	9	36	It could be precised that it is "terrestrial" NPPpot [Knud Christensen, Denmark]	Accepted - text revised.

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15068	9	37	9	37	(Bajželj et al. 2014; Haberl et al. 2014a) [Ahmed Imam, Egypt]	Accepted - text revised.
18670	9	37	9	37	Missing ']' [Hiroaki Kondo, Japan]	Accepted - text revised.
10106	9	37	9	37	Looks like references were cut off here after 'Haberl et al. 2014a'. Please check. [Reinhard Prestele, Germany]	Accepted - text revised.
3924	9	37	9	37	Haberl et al. 2014a; . to be changed into Haberl et al. 2014a). [Tarig Ibrahim, Sudan]	Accepted - text revised.
1178	9	39	9	40	Reference is made to the variation in the intensity of land use within and among different land use types. Can more be said here? What is the variance? Where is the intensity of use higher? What other factors are present (e.g. poverty, industrial or subsistence models of agriculture, poor governance)? [Tonya Rawe, United States of America]	Accepted - text revised.
10036	9	40	9	42	The numbers of ice-free land surface under management in this statement do not agree with the numbers in the reference. Erb et al. (2016a) mention one-tenth, half, and one-fifth under intense, medium, and extensive management, respectively. Please check. [Reinhard Prestele, Germany]	Accepted - text revised. Thanks for pointing this out. Unfortunately, in Erb et al the text is not correct, in the SI data are given correctly
25900	9	41	9	42	specify how 'intensive management' etc., are defined. [Hans Poertner and WGII TSU, Germany]	Accepted - text revised.
26920	9	41	9	42	Revise as, "Globally, about 10% of the total ice-free land surface is estimated to be under intensive management, two thirds are under moderate management, and the remainder is under extensive management (Erb et al. 2016a). [Knut Nadelhoffer, United States of America]	Accepted chapter restructured.
2428	9	42	9	42	Which year corresponds to these estimates? Table 1.1 indicates this – I suggest you reference the Table in the text. [William Lahoz, Norway]	Accepted - text revised.
10686	9	22	10	4	Given that livestock is the largest user of land (27% of all land according to table 1.1), more should be said about this subsector, and how it interacts with land in various agroecosystems, from consuming crops as feed in intensive/industrial production systems to grazing large areas of uncroppable rangelands in pastoralist areas (LAC, SSA, and central Asia) [Anne Mottet, Italy]	Accepted - text revised. Thank you very much. The point was taken up, but word limits do not allow to go into detail
11778	9	22	10	4	UNCCD published the Global Land Outlook in 2017, during the Ordos UNCCD CoP and recently (2018) JRC published the World Atlas of Desertification; both references can improve this section... [Jacques Andre Ndione, Senegal]	Accepted - text revised.
9598	9	2	11	2	chapter 1.3.1. should refer intensively to the new publication by Cherlet et al 2018. Cherlet, M., Hutchinson, C., Reynolds, J., Hill, J., Sommer, S., von Maltitz, G. (Eds.), World Atlas of Desertification, Publication Office of the European Union, Luxembourg, 2018, where a very important body of literature has been analysed to respond to the issues treated in chapter 1.3.1 [Markus Giger, Switzerland]	Accepted- text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20802	9	21	11	2	Where is mining? Open cast mining has a massive impact on land and potentially on climate change, so it should be included explicitly. The ELD Initiative is currently working on a site in West Africa where a mine is "eating up" orchards at a fast pace. These orchards have been successfully established on degraded land as part of a rehabilitation programme before mining began. We are talking about 30,000 ha that could be affected in total, so not a small impact. McNeill and Quillérou had a look at farmer revenues before and after mining in South Africa (not profits because cost data was not available). See McNeill, T, Quillérou, E (2016) Making money after mining: farming on rehabilitated open cast mines can lead to increased revenues – but it needs to be maintained. The Solutions Journal, Special issue on "Sustainable Land Solutions", September-October, 74-79. [Emmanuelle Quillerou, France]	Accepted - text revised.
27576	9	1		3	It is now settled that Land is a cross-cutting issue that impacts directly on the enjoyment of a number of human rights. For many people, land is a source of livelihood, and is central to economic rights. Land is also often linked to peoples' identities, and so is tied to social and cultural rights. Failure to effectively prevent and mitigate environmental degradation and the negative impact of climate change could drastically reduce access to land, especially for marginalized groups. (OHCHR; Odigie-Emmanuel, O.L. "Implication of Climate Change for Human Rights in Nigeria", Human Rights Review, Vol 2 No 2 (2011)) ABU and National Human Rights Commission. This needs to be integrated and well articulated in the framing and context in more details. [Omoyemen Lucia Odigie-Emmanuel, Nigeria]	Accepted chapter restructured.
1650	9	1			needs reference [Tobias Rütting, Sweden]	Accepted- text revised.
6586	9	5			rehab and maintenance of land is a very broad phrase. Could say rehab of degraded land uses, such as forests, and maintenance of healthy (undegraded) land uses. [Anna Haines, United States of America]	Accepted chapter restructured.
9364	9	5			add after land " through Land Degradation Neutrality (LDN) targets (land cover, productivity and soil organic carbon) [Kennedy Ondimu, Kenya]	Comment noted section totally updated and revised.
2876	9	6		12	more coherently discuss links: SLM is strongly poverty-related, especially when we look at the situation of smallholders [Cordula Ott, Switzerland]	Accepted chapter restructured.
25216	9	10			Towards the end of citation there should be a fullstop - Epple et al 2016. [Abiud Kaswamila, United Republic of Tanzania]	Noted, copyedit to be completed prior to publication.
9366	9	12			delete " problems" after poverty [Kennedy Ondimu, Kenya]	Accepted - text revised.
5318	9	14			land use as both an opportunity and a threat to multiple vulnerabilities. This is right. The statement is not in agreement with what is said in 1 and line 3 above (blue highlight) [Daniel Danano Dale, Italy]	Accepted, revised .
6474	9	18		19	within this context (land being perceived as part fo the solution) there is scope to include reference to cultural heritage and learning from the past as well as contemporary practice. [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3560	9	21			the title should only mention land use and land use change. Land cover is just a biophysical characteristic that keeps changing over time due to a number of reasons, including natural causes (e.g., seasonal changes). [Zoltán Somogyi, Hungary]	Accepted chapter restructured.
2878	9	22			combine 1.3.1.1. and 1.3.1.2. and 1.3.1.3. as they overlap. A good structure would increase readability and understanding (for example: past/status/trends.. differentiate ecological and social impacts... pressure/projection/scenarios ==> implications [Cordula Ott, Switzerland]	Accepted chapter restructured.
848	9	24			"three quarters are" not "is" [Christophe Cudennec, France]	Accepted - text revised.
17734	9	28			Change "land use" to "human land use" [Donald Smith, Canada]	Accepted - text revised. land use is per definition human land use. Activities of
16544	9	35		42	This paragraph needs revision. It does not read fine. [Merja Tölle, Germany]	Taken into account - combined with other comment.
17736	9	35			"Appropriates" to singular [Donald Smith, Canada]	Accepted - text revised.
25218	9	37			insert comma after the last citation i.e. Harbel et al 2014 [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
1928	9	37			Pg 9. Line 37. close bracket after 'Haberl et al. 2014a' [Mastura Mahmud, Malaysia]	Accepted - text revised.
16546	9	37			Citation and/or closing brackets are missing. [Merja Tölle, Germany]	Accepted - text revised.
144	9	39			(Bajželj et al. 2014; Haberl et al. 2014a; Change to: (Bajželj et al. 2014; Haberl et al. 2014a). [Beth Middleton, United States of America]	Accepted - text revised.
16548	9	40		42	Move this sentence to the former paragraph above. [Merja Tölle, Germany]	Accepted . revised
15070	10	1	10	2	clarify the calculations (put the equations) & references [Ahmed Imam, Egypt]	Accepted chapter restructured.
27132	10	1	10	2	- What is the difference between "land use" and "land management"? - Why is "land cover" not mentioned here (if mentioned in the heading of 1.3), and why is "land management" not mentioned in the heading of 1.3, if it is materially important for the underlying data? - What does "land cover change" stand for in the table? - It seems that "Forests" include "Forests under use", but this is not clear from the headings. It would make more sense if "forests" would be presented in one place, subdivided into unmanaged, managed natural and artificial (plantation) forests. - "Planted forests" is an unfortunate category as many modified natural forests are planted (replanting is a common form of forest regeneration and has been practiced for centuries. Thus double counting between "planted" and "human-modified natural" forests is inevitable (if the headings are followed), or the separation arbitrary (if they are wrongly presented as mutually exclusive, as in the table). It would be more appropriate to refer to "plantations" (which is probably what the number presented refers to). - The sub-categories "on xxx" (like on forest, etc) need explanation. They seem to refer to the "original" land cover types, but then many of the changes took place centuries/millenia ago. It is at least confusing (but potentially misleading) to present these as "land cover change" or "land use change", as those categories are commonly understood to include recent transitions, and not preindustrial ones. [Zoltán Rakoncay, Belgium]	Accepted chapter restructured. Table completely restructured, updated

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
19286	10	1	10	3	Why data on 2000 is referred in Table 1.1 for the report to be published in 2018/2019? [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured.
18602	10	1	10	3	great table, but 18 years old now. indent the sub types of 'on forest, on grassland etc. Also low and high are reversed for agriculture [Justin Borevitz, Australia]	Accepted chapter restructured.
16238	10	1	10	3	Please synchronize the caption of the table with the information given in it. If you report information around 2000 instead of at 2000, please specify the period. It is not clear why you are reporting a low and a high value given that you are reporting historical data. If these are not observations but estimations, please explain what is estimated and how. Furthermore it is not clear why for some categories the high value is smaller than the low value (e.g. "agriculture" or "land management without land cover change"). [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
1656	10	1	10	3	The categorization is disputable. A classification of wilderness as "un-productive" is rather outdated, for example. [Simone Lovera-Bilderbeek, Paraguay]	Accepted chapter restructured. Table was revised. But the label uproductive and wilderness means two different things: wilderness is land not directly used, it can be productive (positive NPP above a certain threshold) or unproductive (NPP below a certain threshold). The quoted paper use a threshold of 20gC/m2/yr aboveground NPP as this threshold. This is made explicit.
10684	10	1	10	4	Missing reference for table [Anne Mottet, Italy]	Accepted - text revised.
25196	10	1	10	4	Its indicated the table will be updated but it appears some figures are inconsistent, e.g. for agriculture, the 'Low' figure (71.2) is higher than the 'High' figure (60.3), the same applies to land management without land cover change [Denis Asizua, Uganda]	Accepted chapter restructured.
18672	10	1	10	4	The part with "***" shown in the foot note of the Table does not appear in the Table contents. In the summary in the Table the values of 'High' is less than that of 'Low' in Agriculture and Land management without land cover change. Is this right? [Hiroaki Kondo, Japan]	Accepted chapter restructured.
4362	10	1	10	4	Table 1.1 "non-productive" is a problematic category. Does it mean no primary productivity, no plant or microbial growth at all? If yes, then state that. Does it mean not productive in terms of producing anything that humans value? Then "non-productive including snow" - does this mean permanent snow cover, or seasonal? seasonally snow covered lands can be productive, in terms of primary productivity as well as value to humans [Samantha Grover, Australia]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
116	10	1	10	11	Table 1.1. "Unproductive is perjorative and not a scientific term. Indigenous peoples live in quite alot of what is termed "wilderness". I assume this type of wilderness is not defined as "unproductive", particularly if it is tropical forests, as this is an important keystone for the survival of these peoples as well as providing the foundation for our climate - so it is very productive. In Line 11-. According to Chapter 2 - Reforestation does not "compensate" for natural forest loss. See p 2-16 24 "Afforestation and reforestation reverse the flow of carbon and remove carbon from the atmosphere as forests grow, but as tree plantations go through harvest cycles, the long-term result of conversion from natural forests to man-made forests is a long-term net reduction in the size of terrestrial carbon storage [compared to with natural forests]" [Elizabeth Penelope Davies, United States of America]	Accepted - text revised.
24892	10	2	10	2	Serious issues with the numbers in this table. The sum of the contributions do not equal the total for Cropland High, Forests under use, total for Low, High and Low, Wilderness and non productive land total Low and High. The percents for Summary Agriculture Low and High appear to be switched or off. [Dale Lockwood, United States of America]	Accepted chapter restructured.
9600	10	2	10	2	According Cherlet et al., the extent of global cropland is estimated to range between 15 and 28 Mio km2 showing the wide range of results of such global studies. Cherlet, M., Hutchinson, C., Reynolds, J., Hill, J., Sommer, S., von Maltitz, G. (Eds.), World Atlas of Desertification, Publication Office of the European Union, Luxembourg, 2018 [Markus Giger, Switzerland]	Accepted chapter restructured. Note that Cherlet is citing Ramankutty et al in a not-correct version
16096	10	2	10	3	Mismatch in Table 1.1 Extent of global land use. The total of Sub-categories of land use does not always match with the reported figure for the categorie. E.g. Cropland, total 15.1 Mkm2. subcategories: On forest 8.7, on natural grassland/savanna 4.7, on shrub and tundra 1.7. For this category, the total matches. Permanent pastures, total 28.0. Sub-categories: on forest 3.1, on natural grassland/savanna 1.3; on shrub and tundra 4.3. total 25.7, which does not match with the reported total of 28. In addition, it is not clear what it means e.g. Cropland "on" forest, natural grassland etc. Is this the original status of cropland, say, used to be forest? If yes, what is the reference period? This requires a note to the table to clarify. In addition, regarding this table; comma-separators fro decimals should be replaced with dots. Low-High levels should be explained. What does it mean? Figures come from different publications? [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised.
14286	10	2	10	3	Please provide additional information on the source of these data and the year of the update. It is important to obtain the most recent data for these assessment reports. [Rattan Lal, United States of America]	Accepted chapter restructured. Table is restructured, updated, with new references
17356	10	2	10	4	To me, it is not clear that how the numbers of "Land cover change" and "Land management without land cover change" were esitimated or calculated. Maybe one or two sentence to explain that could promote the readability. [Fei Lu, China]	Comment noted section totally updated and revised.
25434	10	2	10	4	It is very unclear what the "wilderness" categories include [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25176	10	3	10	3	Could you add references that defines the land use and land management classes [Mohammed Yahya Said Yahya, Kenya]	Accepted - text revised.
24270	10	5	10	5	Reference to more recent publications could be added, especially World Atlas of Desertification (https://wad.jrc.ec.europa.eu/landproductivity) and/or UNCCD 2017 Global Land Outlook. According to these publications, between 1999 and 2013, approximately 20.4 % of the Earth's vegetated land surface showed persistent declining trends in land productivity. Africa, Australia and South America show, proportionally, declines or stressed productivity dynamics for larger areas that the rest of the globe. The vegetated continental land surface that shows a decline or unstable land productivity reaches approximately 22 % in Africa, 37 % in Australia and Oceania and 27 % in South America. These studies also indicate that 20 % of the world's croplands show declining or stressed land productivity. [Barron Joseph Orr, Germany]	Accepted chapter restructured.
27134	10	5	10	5	Section 1.3.1.2 should prominently present loss of productive land, especially to urbanisation. [Zoltán Rakoncay, Belgium]	Accepted - text revised.
19590	10	6	10	6	Add stat on current total global cropland coverage (X% from small vs large baseline is huge difference) [Rianne ten Veen, Netherlands]	Accepted chapter restructured.
16240	10	6	10	7	It is not clear why you are reporting estimates for the historical increase of cropland taken over from two different sources the time you can refer yourselves to FAOSTAT and derive the data you need directly. If there are no observations, you need to explain what has been estimated and why. [Lorenzo Giovanni Bellù, Italy]	Rejected. FAOstat goes only back to 1961. Predecessors of FAO give numbers, but they need to be consistently integrated and datagaps closed. The two papers quoted to exactly this, but follow different approaches, which explains the variance. Additionally, also FAO data are not observations sensu stricto, but a hybrid of census and estimates based on different sources, mainly national reporting.
6522	10	6	10	7	After stating the % of estimated cropland is it possible to state the reason for such an increase by giving a case analysis for an example? [Ojong.E nee Enokenwa Baa, South Africa]	Accepted chapter restructured. The figure 1.2 now displays major trends per world regions
27136	10	6	10	7	The sentence on the expansion of cropland should recognise the alarming loss of cropland by adding at the end (after "per year") the following: "despite some of the most fertile croplands being lost to urbanisation". [Zoltán Rakoncay, Belgium]	Accepted - text revised.
17326	10	6	10	19	Some examples are given herer (e.g Brazilian Cerrado). Please include the rate of deforestation in the entire Amazonia (not limited to Brazilian Amazon). [Jhan Carlo Espinoza, France]	Rejected. Due to the limits in word count, we could not include too many particularities. Figure 1.2 takes up some parts of the comment, though
10368	10	8	10	8	grazing land has more or less stabilised if not slightly reduced.. This expression may be true in the case of developed world but in th case of poor countries, since population depending on land use is increasing grazinglands are significantly reduced. (grazinglands are converted to cultivated lands) [Zitouni Ould-Dada, Italy]	Rejected. These trends are not really visible in data - eventually, it all communicates with grazing intensitiy. Regional details are not displayed due to limits in word count, but the role of grazing land can be inferred in new figure 1.2
10108	10	9	10	9	Incorrect reference. Alexander et al. (2017a) does not deal with past trends in permanent pasture and grazing land. [Reinhard Prestele, Germany]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
27138	10	9	10	13	The sentence on forest loss should clarify whether it refers to gross loss of forest (i.e., deforestation) or net loss (i.e., the balance of deforestation and forest expansion). The way it is currently stated is incoherent. Only gross loss can be compensated by gains (to result in net loss), so the second occurrence of "forest loss" almost certainly refers to gross loss. However, it is less than clear whether the first reference to "global forest loss" also refers to gross loss or net forest cover change. The former is difficult to assess at the global level, mainly because of the difficulty to separate deforestation (LUC) from regular harvest followed by regeneration (which is not an LUC) in temperate and boreal forests. If the first reference to "forest loss" is to net change, then the sentence is not coherent, as "but" should be replaced with "because". [Zoltán Rakonczay, Belgium]	The passage was restructured, taking the comment into account, and also newer literature (e.g. Song et al. 2018, Baccini et al. 2018)
1850	10	11	10	11	Re: "forest gains, mainly forest plantations" - noting that plantations do not have the same positive impacts as more holistic actual forests [Rianne ten Veen, Netherlands]	Accepted - text revised.
5568	10	11	10	11	"by forest gain, mainly forest plantations", this is not quick, while deforestation is fast. I believe it is better to say how long it takes for reforestation, so it can attract people's attention [Sanaz Moghim, Iran]	Taken into account - combined with other comment. Combined with comment 27138
2342	10	13	10	14	Some specific numbers for high carbon emissions could be appropriated. [Manuel Llansola-Portoles, France]	Noted
26922	10	13	10	15	Change to, "Large regional variability exists, with tropical forests showing a clear trend of forest loss, leading to disproportionately high carbon emissions, in contrast to all other forest biomes that show concurrent losses and gains (medium evidence, high agreement (Hansen et al. 2013; Baccini et al. 2017). [Knute Nadelhoffer, United States of America]	Accepted chapter restructured.
27140	10	14	10	15	The "contrast" is invalid, as all regions, including tropical, have concurrent losses and gains. The balance is regionally different, but not the existence of both losses and gains. [Zoltán Rakonczay, Belgium]	The passage was restructured, taking the comment into account, and also newer literature (e.g. Song et al. 2018, Baccini et al. 2018)).
5570	10	15	10	15	"concurrent losses and gains", but not in the same time scale, I believe this needs to be mentioned. [Sanaz Moghim, Iran]	Accepted - text revised.
4364	10	16	10	16	OWL increased in extent in subtropical regions: why? This deserves some mention of the processes causing, or thought to be causing, this change in extent of land use type. [Samantha Grover, Australia]	Accepted - text revised.
2430	10	16	10	16	Identify OWL acronym. I suggest identification of acronyms when first used in a chapter. Alternatively, if not done, I suggest a list of acronyms in an appendix, and reference to this list when introduction of the first acronym. [William Lahoz, Norway]	Accepted - text revised.
17034	10	16	10	17	what is OWL? should be spelled out and defined before the acronym is used [Lourdes Tibig, Philippines]	Accepted - text revised.
27142	10	17	10	17	The sentence should be rephrased to reflect that pasture is part of agriculture (e.g., "agriculture including pasture", or "cropland and pasture"). [Zoltán Rakonczay, Belgium]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
5104	10	17	10	19	Please add information about steppes in Eurasia and North America, which almost totally have been converted into croplands, the most dry types - into pastures with the high level of land degradation. Werger, M. J., & Van Staalduinen, M. A. (Eds.). (2012). Eurasian steppes. Ecological problems and livelihoods in a changing world (Vol. 6). Springer Science & Business Media. [Oksana Lipka, Russian Federation]	Rejected. Publication is outside the range of publication years (>2014) - unfortunately, the word count limit does not allow to display detailed trends.
6838	10		10		Table 1.1 is missing references in the sixth column. [Wilfran Moufouma Okia, France]	Accepted chapter restructured.
6840	10		10		Table 1.1, high values of ice-free land surface are smaller than minima for for "Agriculture" and "Land management without land cover". Is this correct? [Wilfran Moufouma Okia, France]	Accepted chapter restructured.
10688	10	5	11	2	The regional overview is a bit limited. We would need conversion matrices for each region, based on the main categories listed in Table 1.1. Als what about the trends of natural reforestation in Northern America and in Europe? [Anne Mottet, Italy]	Accepted chapter restructured. The general part of the comment is gratefully taken up. Such a table, however, was beyond the scope of the chapter, severely limited in word count
1930	10	1			Pg 10. Line 1. Title of Table 1.1 is to be updated (as shown by the information in brackets). (placeholder, numbers to be updated in next version) [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
25220	10	2			The summation of Some values in table 1.1 are not correct, permanent pastures total [Abiud Kaswamila, United Republic of Tanzania]	Accepted chapter restructured.
25222	10	2			The summation of Some values in table 1.1 are not correct, forest under use total [Abiud Kaswamila, United Republic of Tanzania]	Accepted chapter restructured.
25224	10	2			The summation of some values in table 1.1 are not correct, wilderness and non-productive land, total [Abiud Kaswamila, United Republic of Tanzania]	Accepted chapter restructured.
8364	10	2			The table is very complicated, and not easy to understand. If there is a subclass, move that little more towards right. Summary information is very clear. Perhaps you can give two additional row lines there to keep it distinct and clear. [Shijo Joseph, India]	Accepted chapter restructured.
8366	10	2			The decimal is represented as comma in the table and text. This is not standard science structure. Lets follow UK/US system of putting points for decimals. [Shijo Joseph, India]	Accepted chapter restructured.
8368	10	2			The double star (**) notation is not found in the table. [Shijo Joseph, India]	Accepted chapter restructured.
1932	10	3			Page 10, Line 3 (Table 1.1). The Literature sources is not completed. [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
25902	10	5			This is a very short section, which amongst others, does not address settlement trends, e.g., urbanisation. Such trends have happened in the past and are ongoing, with regional differences. This should at least be mentioned here, not only in the following part on projections [Hans Poertner and WGII TSU, Germany]	Accepted - text revised.
1934	10	5			Pg 10 Line 5 (Table 1.1) Suggest that 'on forest, on natural grassland/Savanna and on shrub and tundra' be itemized as bullets [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
1936	10	5			Pg 10 Line 5 (Table 1.1) Suggest that of 'w., non-productive, including snow, of w., productive wilderness, forested and of w., productive wilderness, unforested' be itemized as bullets [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
16550	10	7			Please be more specific. Over which period exactly? And where did cropland increase most? [Merja Tölle, Germany]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
5324	10	8			grazing land has more or less stabilised if not slightly reduced.. This expression may be true in the case of developed world but in th case of poor countries, since population depending on land use is increasing, grazinglands are significantly reduced. (grazinglands are converted to cultivated lands) [Daniel Danano Dale, Italy]	Accepted; sentence revised and refs appended
8868	10	9		39	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
1938	10	11			Page 10 Line 11. Place a bracket after yr-1. [Mastura Mahmud, Malaysia]	Accepted - text revised.
16552	10	16			Please spell out OWL. It is hard to read since it is not defined in this paragraph. [Merja Tölle, Germany]	Accepted - text revised.
16554	10	19			State what are the consequences for carbon storage and biodiversity so far! [Merja Tölle, Germany]	Accepted - text revised. Included in Figure 1.2
11288	10				Table 1.1 This is interesting and relevant information. Is it possible to include a bar graph showing proportion of total land originally under (ice), forest, grassland, shrub, tundra, (desert) and to have those bars sub-divided showing proportion of each now under urban, crops, pastures, forestry (and desertified or otherwise destroyed/lost). This would give a clear visual picture of how much of each type of land cover humans have now converted or modified, ideally shown by continent. [Debra Roberts, South Africa]	Rejected. this is an excellent suggestion, and we developed the data, but for the reason of word count and display constraints, we could not include it in the text. We are now considering to show it in an Annex
3296	11	1	11	2	Please include data on these aspects from Asian subcontinent also as lots of information and data is available now. [Suresh Kumar, India]	Accepted - text revised.
14888	11	2	11	2	An additional example with palm oil in South-East Asia should be provided. [Florian Claeys, France]	Accepted - text revised.
15696	11	2	11	2	add heath of ecosystems or/and watr availability for other uses [Maria del Pilar Salazar Vargas, Mexico]	Accepted chapter restructured.
14890	11	3	11	3	A paragraph should be provide about the “indigenous peoples and local communities” dimension of lands and climate change, in the same perspective than for gender. [Florian Claeys, France]	Comment noted section totally updated and revised. Section on gender has been pared down due to word restriction. Point will be taken on board in the section on IK.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20804	11	3	11	17	<p>A simplification of farming systems in Africa seems to be occurring, with abandonment of previous integrative farming systems and move to monoculture (observed in Tunisia, Senegal and Niger, but I am sure other regions would be affected the same way). This is further reducing yields. See:</p> <ul style="list-style-type: none"> • Bossuet, J., Vadez, V. (2013) S'appuyer sur les multiples bénéfices des légumineuses à graines pour une agriculture plus productive et nutritive dans les tropiques semi-arides. Sécheresse, 24: 314–21. doi : 10.1684/sec.2014.0408 [04 juin 2015] • Quillérrou, E. (2015) Legumes in North-West Tunisia: benefits for soils but what economic benefits? Assessing the economic viability of expanding legume production in North-West Tunisia [in French]. Consultancy report for GIZ Tunisia in relationship with the project for Promotion of Sustainable Agriculture and Rural Development in Tunisia (PAD) and the Economics of Land Degradation (ELD) Initiative. Informed by contributions from the PAD project team and local stakeholders. <p>Move towards more monoculture and less integrated farming systems also mentioned in recent meetings by local actors from NGOs and research for Senegal, Mali and Niger, within the context of the ELD Initiative and Regreen Africa project (2017-2019). Baseline study currently being conducted by ICRAF which should help demonstrate this point. [Emmanuelle Quillérrou, France]</p>	Accepted - text revised. Added References after 2014, but only English.
16100	11	3	11	44	<p>Future scenarios missing. Section 1.3.1.3 Future trends in global land system. The whole section looks at future trends, but no reference is made to possible scenarios, ideally based on SSPs/RCPs which have already been fruitfully used in previous IPCC works or plenty of journal articles after the IPCC AR5. Not making reference to possible scenarios, intended as consistent descriptions of possible futures, leads to a scattered and fragmented view of possible patterns of land use, climate change impacts agriculture and food security implications. [Lorenzo Giovanni Bellù, Italy]</p>	Accepted chapter restructured. A cross-chapter Box on scenarios is added to the report. The passage has been completely restructured, now SSP and RCPs are mentioned, in line with the cc-box.
10038	11	3	11	44	<p>This section is confusing and lacking structure. I would suggest to streamline it towards a more logic structure. For example: (1) increasing demands (including the urbanisation aspect), (2) possible impacts on land use, (3) uncertainties related to land-use impacts, (4) feedbacks due to climate change. Additionally, please make sure to not use land-cover change and land-use change interchangeably in this section. [Reinhard Prestele, Germany]</p>	Accepted chapter restructured. Important
27144	11	4	11	4	<p>It should be clarified what "biomass" is meant. "Woody and crop" would include wood products and all plant-based food commodities, if that is the case, it is unfortunate to refer to "biomass" (as opposed to simply saying agricultural and food commodities), and there is no reason to exclude animal products. If the sentence implies only biomass for energy (or certain kinds of that), then it should be explicit. [Zoltán Rakonczay, Belgium]</p>	Accepted chapter restructured. Point well taken, thank you
16242	11	4	11	5	<p>From the way the sentence is phrased you are implying that increasing international trade results in large inter-dependencies of supply and demand. First of all this may hold in specific cases where countries specialize in some specific products and not in others. Second, the phrasing may erroneously lead your readers to think that it is bad to specialize and to increase trade as this causes to depend more on other countries' production. [Lorenzo Giovanni Bellù, Italy]</p>	Reformulate, more details added

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25728	11	4	11	17	The paragraph highlights uncertainties about future trends due to yield developments. It might be useful to broaden the perspective to total factor productivity growth in agriculture instead of focusing on yield developments alone. [Bernhard Brümmer, Germany]	Rejected. The severe word-count-limits did not allow to go into these details for which comarable data are not readily available
24548	11	11	11	11	"... double food production (Ray et al. 2013), which is deemed necessary to feed a growing population" . Doubling food production is not the only solution. I suggest to also mention other options like changing the behaviour of consumption (e.g. less meat consumption means less land consumption) or other issues like food waste (see Chapter 2, page 113, lines 33-35) [Christopher Morhart, Germany]	Accepted chapter restructured.
15700	11	11	11	12	" it has been proposed that no more than 15% of the global ice-free land surface should 12 be converted to cropland" is regarding to additional land change or just the land that have to changed? [Maria del Pilar Salazar Vargas, Mexico]	Accepted chapter restructured.
21138	11	12	11	13	in under development regions tecnology is insuficient to improve food production [Hasnat Aslam, Pakistan]	Accepted chapter restructured.
16098	11	12	11	13	Odd projections for food and agriculture. Ref to FAO 2017 (FOFA-TAC) and other material needed. "Current yields have been described to be insufficient to double food production (Ray et al, 2013) which is deemed necessary to feed growing population..." First, the timeframe to which this sentence is referred is unpecified. doubling food production from what period until what period? This sentence requires fixing also because there is no evidence is reported that food production has to be doubled from "current" levels (t2012-2017?) to an unspecified future period. Please make reference to most recent FAO projections in Alexandratos and Bruinsma, 2012, FAO 2017, The future of food and agriculture - Trends and challenges (p.46) and FAO (forthcoming) THE future of food and agriculture -Alternative pathways to 2050. For info re this forthcoming report, please, contact Lorenzo Giovanni Bellù, FAO Global Perspectives Studies: lorenzogiovanni.bellu@fao.org [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
15704	11	12	11	13	in addition to insufficient trends is important to mention about wasted food, up to one third of all food is spoiled or wasted before being consumed by people. This may be due to problems in the collection, storage, packaging, transport, infrastructure or market mechanisms, or prices, as well as institutional and legal frameworks. (http://www.fao.org/food-loss-and-food-waste/en/) [Maria del Pilar Salazar Vargas, Mexico]	Accepted chapter restructured. Thanks for pointing this out

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16244	11	12	11	14	You are suggesting that food production needs to be doubled to feed a growing population. Please explain what scenario suggests this finding, what is the time period concerned (starting and end point) and name your source. None of the sources you are citing in this phrase (namely Ray et al., 2013 and Laurance et al., 2014) cites anything on the need to double production to feed a growing population. Kindly note that FAO's work on long-term projection disagrees with your statement. The most recent projections of FAO, based on a scenario of modest economic growth and historical yield trends suggest that to equilibrate demand (and obviously agricultural products are not only demanded as food so demand refers to aggregate demand) supply would need to increase by about 50% between 2012 and 2050 (see: FAO. 2017. The future of food and agriculture – Trends and challenges. Rome. http://www.fao.org/3/a-i6583e.pdf). Finally and because statement on the increase of global supply and demand by 2050 are given also in Chapters 5 and 7 (see also comments in these Chapters), make sure you are giving the same references throughout the report, or else explain clearly what your sources say. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
1180	11	12	11	15	Reference to yield trends as insufficient to meet the demand to double food production -- and therefore likely to result in land expansion -- does not take into account where there are significant yield gaps, and where appropriate interventions could be implemented to close the yield gap with sustainable practices and technologies. For one reference, see Outlook on AGRICULTURE Vol 43, No 2, 2014, pp 85–90 doi: 10.5367/oa.2014.0163 -- R. Hillocks, "Addressing the Yield Gap in Sub-Saharan Africa." See also https://doi.org/10.1016/j.agsy.2015.12.006 B. Henderson, et. al., "Closing System-Wide Yield Gaps to Increase Food Production and Mitigate GHGs among Mixed Crop-Livestock Smallholders in SubSaharan Africa." [Tonya Rawe, United States of America]	Accepted chapter restructured.
17530	11	13	11	13	paragraph 1.3.1.3. "Current yield trends have been described to be insufficient to double food production," suggest adding " With prevailing technologies in use ...current yield trends. This is suggested because here and elsewhere in the report very little and insufficient reference is made to the potential advances through agro-biotechnologies. [TURI FILECCIA, Italy]	Accepted - text revised.
19592	11	13	11	14	Re: doubling of food production being "deemed necessary to feed a growing population" is only true assuming current waste % & changes in diet preference (eg more meat); this scenario need not continue so not "necessary"; alternative "if food waste etc not tackled, then doubling of food production may be necessary" [Rianne ten Veen, Netherlands]	Accepted chapter restructured.
27146	11	13	11	14	doubling is not "necessary" to feed a growing population, as the population is not expected to double, a significant part of the population is already overfed and avoidable food waste is substantial. Doubling would be needed to feed the population with an increasingly rich diet (unnecessarily high in animal protein). [Zoltán Rakonczay, Belgium]	Accepted chapter restructured.
2432	11	14	11	14	Style point – I suggest "likelihood" instead of "probability", unless a probability distribution can be associated with the phenomenon under discussion. [William Lahoz, Norway]	Accepted - text revised.
21140	11	14	11	15	resulting a high probability that in future agriculture land expands in tropical forest and semi-arid dryland [Hasnat Aslam, Pakistan]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16246	11	15	11	15	Similar scenario archetypes to what? You did not explain the details of any scenario in the preceding text! [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
15702	11	15	11	17	It's important to be mentioned the growth of the yield is slowing down and it can be difficult to maintain the rhythm of growth of the production (http://www.fao.org/3/a-i6881s.pdf). Also, the future projections calculate yields trends are insufficient to global crop production needed by 2050 (http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0066428) [Maria del Pilar Salazar Vargas, Mexico]	Accepted chapter restructured.
16248	11	16	11	16	Please revise, the sentence does not make sense. [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised.
4020	11	16	11	16	needs punctuation (semicolon?) before "hotspots" [Reid Detchon, United States of America]	Accepted - text revised.
27148	11	18	11	18	"many regions" should be replaced with "all regions" or at least "most regions". No region will be unaffected, and no region will be safe from "challenges", even those that may experience transient improvements in conditions in certain aspects. [Zoltán Rakonczay, Belgium]	Accepted - text revised.
6524	11	18	11	22	Any possible examples from developing countries showing this trend? [Ojong.E nee Enokenwa Baa, South Africa]	Accepted - text revised.
11780	11	19	11	19	Instead of writing "(Lipper et al. 2014; Myers et al. 2017)(see chapter 5).", please write (Lipper et al. 2014; Myers et al. 2017; (see chapter 5).)" [Jacques Andre Ndione, Senegal]	Accepted - text revised.
27252	11	19	11	22	Links can / should also be made with chapter 7. If large populations dependent on agriculture are at risk, there are likely cascading risks, such as migration and overwhelming of the humanitarian system. Climate change will interact with land degradation and / or desertification, food security. By definition these are emergent risks at the intersection of a number of the topics of this report. [Doreen Stabinsky, United States of America]	Accepted - text revised.
16250	11	19	11	22	The source you are citing is insufficient; as also explained in your source, there is a large number of studies on the impacts of climate change on land productivity and further on food security. Please cite more studies (also refer to Chapter 7 of the 2014 IPCC report https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap7_FINAL.pdf). [Lorenzo Giovanni Bellù, Italy]	Accepted; New refs added
27254	11	19	11	24	Tigchelaar, M., Battisti, D. S., Naylor, R. L., & Ray, D. K. (2018). Future warming increases probability of globally synchronized maize production shocks. Proceedings of the National Academy of Sciences, 201718031. [Doreen Stabinsky, United States of America]	Accepted - text revised.
18674	11	25	11	25	Table 1.1.1 --> Table 1.1 [Hiroaki Kondo, Japan]	Accepted - text revised.
15072	11	25	11	26	urban and infrastructure areas are keys for land use dynamics [Ahmed Imam, Egypt]	Accepted - text revised.
5838	11	25	11	26	"urban and infrastructure areas are key"! [Sanaz Moghim, Iran]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
27150	11	25	11	31	The paragraph addresses a core issue that should be prominently addressed head-on at the beginning of the chapter, including in 1.1. The largely irreversible loss of productive land is a fundamental challenge, and reducing it should be a top priority both for mitigation and adaptation. [Zoltán Rakonczay, Belgium]	Accepted - text revised.
17532	11	27	11	28	paragraph 1.3.1.3. the statement "Urban expansion is associated with a disproportionately high loss of fertile (crop)land" is unclear and appears a bit misleading. Is it meant to say that urbanisation is triggered by fertility loss, land degradation? Which is certainly not the case. At the same time land abandonment does not necessarily imply fertility loss, while it can even improve it. [TURI FILECCIA, Italy]	Accepted - text revised.
3926	11	28	11	28	(crop)land to be changed into (crop) land [Tarig Ibrahim, Sudan]	Accepted - text revised.
20196	11	30	11	33	This sentence is unclear, including the meaning of "urban-hinterland teleconnection" . [Kaoru Kitajima, Japan]	Accepted - text revised.
3298	11	31	11	31	" economy. Due the urban hinter-land..." may pl. Be written as " economy. Due to the urban hinter-land" [Suresh Kumar, India]	Accepted chapter restructured.
10040	11	31	11	33	Urban-hinterland teleconnection' is not explained, but probably not a well-known term. An additional sentence explaining what is meant would help. [Reinhard Prestele, Germany]	Accepted - text revised.
1182	11	31	11	33	Reference is made to "future changes in global food systems" -- such as what? Can a couple indicative examples be included? [Tonya Rawe, United States of America]	Accepted chapter restructured.
27152	11	31	11	33	The last sentence of the paragraph is unclear. It should be deleted, or it should be more explicit (what "innovation" it is referring to and why it would be relevant in this paragraph). I posit that no amount of "innovation" can compensate for the permanent loss of fertile land. [Zoltán Rakonczay, Belgium]	Accepted chapter restructured.
21190	11	33	11	33	Consider adding the role of traditional knowledge in agriculture for LBM. Examples include growing trees on farm bundes, [Soora Naresh Kumar, India]	Comment noted section totally updated and revised.
18608	11	33	11	44	I do not think that a discussion regarding the impact on women is needed in this assessment on the climate change impacts on land. While this is an extremely important subject, the social impacts driving the issues are primarily due to population growth and not impacts to the land. The impact to the land will be the same regardless of who owns the land and the social implications would seem to be outside the scope of what is to be addressed in this document. [Henry Allen Torbert, United States of America]	Comment noted section totally updated and revised.
3562	11	34	11	35	please keep the discussion around land and not about people [Zoltán Somogyi, Hungary]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
6526	11	34	11	36	when talking of social protection opportunities, might be good to also draw examples from countries such as South Africa where social protection opportunities have provided alternative options for women in particular who are eligible to social grant schemes unlike men in male headed households only. [Ojong.E nee Enokenwa Baa, South Africa]	Comment noted section totally updated and revised.
16018	11	34	11	37	This sentence should be rephrased since it is not well written [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
24272	11	34	11	44	This paragraph need further improvement. It is under subtitle of future trend of global land system, but it did not clearly link possible global land system trends with trends or predictable change of disparities in access to productive resources between women and man. The hypnosis seems that with improvement of women access to land tenure and participate in land management, Land management or adaptation to Climate change process would benefit from Knowledge. However, in many traditional agriculture or nomadic communities, women are mainly involved in off-field activities, due to harsh and labour demending of fiedl work that means knowlege of land management of women might not as much as expected. [Barron Joseph Orr, Germany]	Comment noted section totally updated and revised.
20806	11	34	11	44	In addition to gendered consequences, existing governance system are not always conducive to more sustainable land management, For example, in West Africa, farmers own productions from the land but not the land itself, nor trees growing on their land. They need to ask the government for permission to cut trees (branches or whole trees). This is creating red tape for land management creating an incentive for farmer not to let trees grow on their land in the first place. Allocation of responsibilities set by law should sometimes be revised to allow for improved land management (removing perverse incentives is key). This applies to Senegal, Mali and Niger, at least in some areas. Senegal has revised its Forestry code to remove some of these perverse incentives following social pressure. This has led to successful adoption of more integrative land management practices and remarkable land restoration. [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
17358	11	34	11	44	This message is not only interesting but also important. Is there any detailed introduction in other chapters? If so, please add the chapter information. [Fei Lu, China]	Comment noted section totally updated and revised.
25436	11	34	11	44	Good paragraph, but doesn't belong under "future trends in the global land system" [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
15698	11	34	11	44	It is important to point out that despite the condition of vulnerability to climate change of women, this population group plays a relevant role as active agents of social, institutional and economic change to combat climate change. Women, despite their reduced visibility in public life and decision-making on relevant aspects such as climate change, are leaders in family and community organization processes, in the management of natural resources and biodiversity (Zitin, 2015) , whose actions and efforts are usually reflected in results with multiplier effects in all areas of action (UNDP, 2016). The development of public policies that contribute to advancement in the conditions of gender equity, access to resources and capital, and in general to the inclusion of women, are catalysts in reducing their vulnerability to climate change, which is why In turn, the means to prepare, resist and recover from the phenomena associated with climate change are improved. References: UNDP (2016). Human Development Report. New York: United Nations Development Program and Zitin, J. (2015). https://www.gob.mx/inmujeres . Retrieved on July 21, 2018, from https://www.gob.mx/inmujeres : https://www.gob.mx/inmujeres/documentos/cambio-climatico-y-genero?state=draft [Maria del Pilar Salazar Vargas, Mexico]	Comment noted section totally updated and revised.
820	11	34	11	44	This paragraph seems overly generalized although it raises serious issues regarding the differential impact of climate induced changes in the land system and use use between men and women. The same could well be said about rich and poor, educated and non-educated, developed and undeveloped societies. [Paul Glaser, United States of America]	Comment noted section totally updated and revised.
7876	11	34	11	44	This paragraph seems overly generalized although it raises serious issues regarding the differential impact of climate induced changes in the land system and the different levels of impacts by men and women. The same could well be said about rich and poor, educated and non-educated, developed and undeveloped societies. [Paul Glaser, United States of America]	Comment noted section totally updated and revised.
2632	11	34	11	44	This paragraph has only references older than AR5. As this Special Report should be an update since AR5 (2013 - only including literature before 2013 if it was missed in the AR5), this should be avoid if possible. [Sarah Connors, France]	Comment noted section totally updated and revised.
1184	11	34	11	44	The paragraph on gendered impacts of climate change will interact with pressures on land, food security, etc. is very welcome. [Tonya Rawe, United States of America]	Comment noted section totally updated and revised.
6842	11	34	11	44	Repetition of two references (Omolo, 2010; Denton 2002) to back a single paragraph. Could additional and newer references be added to this paragraph? [Wilfran Moufouma Okia, France]	Comment noted section totally updated and revised.
10470	11	35	11	36	another important group to be considered is youths, as they also lack access to productive resources and are the ones who will be most affected by future impacts of climate change [Zitouni Ould-Dada, Italy]	Comment noted section totally updated and revised.
25164	11	36	11	36	women are also not often draw on financial opportunities too - it will good add it. [Mohammed Yahya Said Yahya, Kenya]	Comment noted section totally updated and revised.
18916	11	37	11	37	Gender instead of gendered [Carlos Matias Figueroa, Mexico]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
9730	11	37	11	39	More than one reference could be useful here. (And also more recent). [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.
15980	11	37	11	44	The reviewer believes that this paragraph is not fitting the topic in section 1.3.1.3 [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
5840	11	39	11	41	"insufficient participation"? needs ore clarification! [Sanaz Moghim, Iran]	Accepted - text revised.
5572	11	41	11	41	why the authors mentioned just "women" [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
3928	11	41	11	41	(Omolo 2010).Women to be changed into (Omolo 2010). Women [Tarig Ibrahim, Sudan]	Accepted - text revised.
5574	11	43	11	44	Does the author need to say this last sentence? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
18918	11	2	12	2	"fitness" instead of "fitness" [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
8124	11	1		5	There are other direct drivers to land competition to which I think should be added here. For instance there are places where crop production or human habitation is hampered by the nature of the tarain and the climate of the place. In africa for exapmle there are huge spaces wher humans,livestock and crops cannot survive this has led to 'crowding' in prime places which ahs in turn led to further land degredating,polution and the land economics complex dynamics [Franklin Odhiambo, Kenya]	Noted; section on land competition expanded
8870	11	5		32	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
16556	11	15		17	What kind of uncertainty? Hotspots are mid-latitudes and semi-arid areas like the Mediterranean. Please add. [Merja Tölle, Germany]	Accepted chapter restructured.
16558	11	17			These lines need revision. [Merja Tölle, Germany]	Accepted chapter restructured.
16560	11	23			Please add "and nutrition". [Merja Tölle, Germany]	Accepted - text revised.
25226	11	25			Table naming levels should go to two levels and not three i.e. table 1.1.1 to read Table 1.1 [Abiud Kaswamila, United Republic of Tanzania]	Accepted chapter restructured.
1940	11	25			Line 25, page 11. Table 1.1.1 does not exist, but there is a Table 1.1 on page 10 [Mastura Mahmud, Malaysia]	Accepted chapter restructured.
21142	11	27			Due to Urban expension land converted to urban settlements that cause high loss of fertile land [Hasnat Aslam, Pakistan]	Accepted chapter restructured.
16562	11	27			Please be more specific. Where will urban areas extent significantly? I think in developed countries, people will move to the countryside again for recreational reasons. [Merja Tölle, Germany]	Accepted - text revised.
1942	11	28			pg 11. In 28. spacing before land [Mastura Mahmud, Malaysia]	Accepted - text revised.
8370	11	28			Keep space after crop. [Shijo Joseph, India]	Accepted - text revised.
146	11	32			(high agreement, medium evidence; (Seto and Ramankutty 2016)) Change to: (high agreement, medium evidence; Seto and Ramankutty 2016). [Beth Middleton, United States of America]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
2880	11	34		44	This chapter needs revision... major theme is that CC creates winners and losers... often along social strata... disparities increase... between men-women; rich-poor; central-marginal... [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
2882	11	34		44	Gender issue not wrong but somehow an amalgam of often-red sentences ... also stereotypes... ==> there is a need for a state-of-the-art perspective on the gender (also: men and women together) [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
2884	11	34		44	it is not only (women's) traditional knowledge that is under pressure but the whole adaptive capacity of local land users and communities. Danger of implying an instrumental use of (women's) traditional knowledge. Local land users not only have traditional knowledge but also contextual knowledge ==> this is also central for local agency and development potential [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
2886	11	34		44	all a bit vague... be more precise on what is important: as for example, access to land/land tenure are not secured and are under pressure ... not only problem of women... [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
406	11	34		44	This paragraph seems overly generalized although it raises serious issues regarding the differential impact of climate induced changes in the land system and use use between men and women. The same could well be said about rich and poor, educated and non-educated, developed and undeveloped societies. [Paul Glaser, United States of America]	Comment noted section totally updated and revised.
16564	11	36			This statement is too narrative. Please remove. [Merja Tölle, Germany]	Comment noted section totally updated and revised.
17738	11	37			Remove second) [Donald Smith, Canada]	Accepted - text revised.
1944	11	37			pg 11. In 37. only 1 bracket. [Mastura Mahmud, Malaysia]	Accepted - text revised.
16566	11	44			You also need to say something about men`s traditional knowledge and their role. [Merja Tölle, Germany]	Comment noted section totally updated and revised.
886	12	11	11	12	Please, clarify if the value of 15% is referred to the total land surface (i.e. 15% of the total ice-free land surface) or it is referred to additional 15% relative to the current land surface (i.e. 15% increase of the current surface) [Jose Luis Vicente Vicente, Germany]	Accepted; reference removed here and covered in chapter 1/introduction
10690	12	1	12	22	Competition should be described in more details. For example agriculture vs urban, competition between agricultural sub-sectors. Climate is particularly putting at risk people who are already vulnerable from competition (e.g. herders vs crop farmers in th Sahel) [Anne Mottet, Italy]	Accepted; text revised to account for balance treatment of competition among uses and among users (farmers versus herders)
25730	12	1	12	22	The subsection on land competition remains vague. Competition takes place between land uses, or land users, or a mix of both. The text emphasises the former aspect and ignores competition between land users, while climate change might lead to increased competition between local land users even if the type of land use remains unchanged. [Bernhard Brümmer, Germany]	Accepted; text revised - how climate change is likely to increase land competition (by reduced productivity; loss of productive capacity or as a result of climate mitigation choices) is reinforced

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25658	12	2	12	2	<p>The "finiteness" or "non-renewable" nature of land is stated at numerous occasions. I propose to add new text to clarify various natures/dimensions of land. Such text could belong under 1.2 Scope and starting, while text in 1.3.2 "Competition for land" should also be modified to reflect additional perspectives. My suggestion for additional text below:</p> <p>Land management must combine various perspectives of lands and what they contain. From a geographical and quantitative perspective, land is a finite resource. The challenge ahead is to allocate this resource, which appears to be a zero-sum game. This perspective typically dominates in global- or macro-level statistics and policy assessment. Narrowing down, opportunities arise to expand (or reduce) this resource, for instance by strengthening soil ecology and fertility and expand soil carbon per unit area, which would serve various objectives combined. "There is plenty of room at the bottom", to coin a phrase from Richard Feynman. In this perspective, qualitative, systemic and ecological aspects come to the forefront.</p> <p>There are negative interlinkages between quantitative and qualitative dimensions. Historically, land constraints have led to over-exploitation and degradation. Likewise, degradation of soils imply less productive lands so that more land must be taken into use, displacing other uses. More encouraging, the inverse is also true to some extent. Mainly, improvement of soils can reduce demand for land.</p> <p>Ultimately, soil formation and thus land distribution evolve from interactions of abiotic (i.e. climate, geology) and biotic (i.e. plants, decomposers) factors at each individual site. Similarly, land use and other human factors also influence these processes. Currently, contributions to or from global warming, and our efforts to mitigate and adapt, also leave their imprint. A rise in sea-level and salinity, for instance, leads to negative interactions as soils become degraded and abandoned, and results in replacement and displacement of other uses. Higher levels of CO₂ and reactive nitrogen from the atmosphere may, on the other hand, expand primary productivity (and soil formation) that could satisfy human demands on less land. However, other constraining factors are likely to occur. Finally, effects of altered rainfall and evapotranspiration are also ambiguous at best. Stronger weather extremes may for instance destroy harvests and soils, that must find replacement.</p> <p>Mostly, these examples indicate hard priorities that must be solved ahead. The obvious case of</p>	Comment noted section totally updated and revised. Improving land management and soil qualities can positively impact on land competition by lessening pressure on land and reduce competition among different uses and users
26924	12	2	12	3	<p>Change to, "Competition for land is grounded in its finiteness and the fact that most highly-productive land is already under some sort of use (Lambin 2012; Lambin and Meyfroidt 2011; Venter et al. 2016)." [Knut Nadelhoffer, United States of America]</p>	Accepted - text revised.
282	12	2	12	22	<p>This has reference to the description given under 1.3.2 Competition for land: Competition for land has (and will continue) to increase due to climate change and because of the fact that productive land is limited. At the same time, recent trend of international migration of people from conflict zones to other regions, especially countries in the European Union (EU), has given new dimension to competition for land. Relevant data/information on this aspect should come under the section 1.3.2 of Chapter-1. [Santosh Kumar Mishra, India]</p>	Taken into account - combined with other comment.
2434	12	3	12	3	<p>"...some sort of use..." sounds vague to me. Could you use something more specific? For example, "...a type of use..." or "...use...". [William Lahoz, Norway]</p>	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
1186	12	6	12	8	Reference is currently only to who accesses land, but "ownership or holds title to" are also important concepts to flag, as are different means of ownership -- legal, formal, customary, collective, etc -- in considering competition, as they reflect various kinds of power structures. [Tonya Rawe, United States of America]	Taken into account; land ownership patterns are included as a driver in land competition among different users.
10472	12	7	12	8	no mention of indigenous people, who have an important role in protecting natural resources and generally are at the lower end of the power structures in relation to access to land and water [Zitouni Ould-Dada, Italy]	Taken into account; text revised to explicitly reference "indigenous people" rights to land .
20012	12	9	12	9	many of them ultimately originating in net primary productivity (NPP)..... [Sabit Erşahin, Turkey]	Taken into account - combined with other comment.
24894	12	10	12	12	Planetary Boundaries is a controversial idea and the text uses the term without context. Consider revising to put more context on the term/concept [Dale Lockwood, United States of America]	Accepted - text revised. Taken into account; planetary boundaries is moved from this section and covered in chapter 1 introduction
4366	12	10	12	12	On what basis has Rockstrom et al 2009 chosen 15% of global ice free land as the maximum extent of cropland? If this is to be included, it deserves an explanation, and also mention of how this 15% recommendation compares to the current extent of cropland. [Samantha Grover, Australia]	Accepted - text revised.
20198	12	11	12	12	The concept of planetary boundary appears here for the first time in this report. Perhaps, it should be explained earlier (1.2.2?) and also in the glossary. [Kaoru Kitajima, Japan]	Accepted; reference removed here and covered in chapter 1/introduction
16914	12	11	12	12	not clear what this means: converting only an additional 15% or limiting to only 15% as compared to the current percentage which is ??? If the latter, cite the current figure for immediate comparison [Pauline Midgley, Germany]	Accepted; reference removed here and covered in chapter 1/introduction
18920	12	13	12	18	You mention direct and indirect influences of climate change but you dont mention the DIRECT influences [Carlos Matias Figueroa, Mexico]	Accepted; text revised- direct influences through impact on land productivity (and increased pressure on land use) and indirect (through climate mitigation)
14892	12	15	12	18	Forest fires, biological invasions and pest outbreaks should be mentioned in the indirect impacts of climate change on lands. [Florian Claeys, France]	Accepted - text revised.
16916	12	15	12	18	this sentence would be easier to read and understand with better punctuation such as removing the outer parentheses and placing a colon after resource base [Pauline Midgley, Germany]	Accepted - text revised.
15074	12	18	12	18	Climate policies can also play a role in [Ahmed Imam, Egypt]	Accepted; text corrected
20014	12	18	12	18	Climate policies can also play a role in affecting..... [Sabit Erşahin, Turkey]	Thank you for the positive comment.
3930	12	18	12	18	Climate policies can also a play to be changed into Climate policies can also play [Tarig Ibrahim, Sudan]	Accepted - text revised.
25200	12	18	12	19	consider deleting 'a' before 'play' [Denis Asizua, Uganda]	Accepted - text revised.
4368	12	18	12	19	Climate policies to encourage more C storage in soil should also be mentioned here, along with forest conservation and energy crop production. Peatland restoration policies in Indonesia are a perfect example, and Lead Author Fahmuddin Agus could expertly write about this. [Samantha Grover, Australia]	Accepted; text revised - initiatives to improve C storage in soil can also indirectly lessen competition for land

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
27154	12	18	12	19	The impact of energy crop production is real, and trivial, but labelling it as "climate policy" is not trivial. To the extent energy crop production increases land scarcity, it is unlikely to contribute to effective mitigation (due to the inefficiency of bioenergy production systems and the high opportunity cost of land, implied by increased services). Therefore, the sentence implies wrongly designed (partly perverse) climate policies. [Zoltán Rakonczay, Belgium]	Taken into account. Accepted; the implication for land competition from energy crop production is referenced
6844	12	19	12	22	Could authors elaborate on how "climate change and climate policy responses will accentuate land competition"? [Wilfran Moufouma Okia, France]	Noted; text revise to make the link between CC (direct and indirect effects) and land competition.
27156	12	19	12	22	It should be noted that ANY activity that accentuates land competition is likely to have important impacts on net emissions (by driving land use changes and/or through foregone land carbon services). The implications are therefore not only on food security, but also include a lesser than expected mitigation benefit (or perverse outcomes, as the case may be with many crop-based biofuels). [Zoltán Rakonczay, Belgium]	text added - climate interventions for mitigation goals may through land competition effects have a dampening mitigation impacts (negative feedback loops).
4022	12	20	12	20	replace "will accentuate" with "may accentuate" or "will affect" - Comment: The effects on land use cannot be predicted a priori. [Reid Detchon, United States of America]	Accepted - text revised.
2436	12	21	12	21	I suggest indicating that it is (as I think), land degradation (as in Sect. 1.3.3). [William Lahoz, Norway]	Taken into account - combined with other comment.
3074	12	24	12	24	Food security should be considered separately, because land degradation, desertification, and land use change; all impact on food security. [Mostafa Jafari, Iran]	Accepted - title revised (added... and implications for food security) - text body revised to allow for each of these factors to be assessed in terms of implications for food security
14288	12	24	12	24	The delineation between 1.3.3. is not clear "Interactions of climate, land degradation desertification..." and Chapter 6 "Interlinkages between Desertification, Land Degradation..." It appears that Chapter 6 addresses responses but that should also be in the title. This special report would be strengthened by including a "map" of the different chapters of the special report and how they fit together. It may also help the author teams better delineate boundaries between chapters to avoid overlapping content. [Rattan Lal, United States of America]	Rejected - outside the scope of the chapter covered in Chapter 6
3694	12	24	12	26	The Task Force on Inventories is part of the scientific leadership of this report. It would be good to reflect somewhere on the much larger uncertainties associated with emission estimates for land as opposed to energy and the reliance on modelling/estimation in deriving emission inventories. This carries through to mitigation efforts because it's hard to monetise/incentivise measures which are not "MRVable". This would be particularly true for agriculture. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised
14966	12	25	12	25	Figures in this section should be updated (see Le Quéré et al. 2018). [Florian Claeys, France]	Accepted. Figures updated.
9732	12	25	12	26	"and other greenhouse gases" are not needed here. While these indeed can be important, it is in my view sufficient to focus on CO2 here. [Jan Fuglestad, Norway]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3564	12	26	12	30	a chart would be much more demonstrative than this narrative ("largest source" does not say anything about how large). Also, it would be nice to not only cite scientific studies, rather, the "official" data source which is the greenhouse gas inventories submitted to the UNFCCC, which are prepared by using the methodological guidances of the IPCC (e.g., the 2006 IPCC Guidelines on National Greenhouse Gas Inventories) [Zoltán Somogyi, Hungary]	Taken into account - combined with other comment.
118	12	27	12	27	Houghton & Nassika (2017) Global Change Biology Land Use sources 5.5 PgC/year (2006-15 average). Land Use sink 4.5 PgC/yr. In other words together -Land Use is 30-40% of climate solution, just taking into account GHG emissions pathway, and more if including non-GHG pathway. [Elizabeth Penelope Davies, United States of America]	Accepted - text revised.
24896	12	30	12	30	IPCCs Fifth Assessment Report should be replaced with AR5 [Dale Lockwood, United States of America]	Comment noted section totally updated and revised.
10042	12	30	12	30	I think it should not be phrased 'IPCCs AR5 estimated that...', as the following estimates probably originate in other publications. [Reinhard Prestele, Germany]	Comment noted section totally updated and revised.
15982	12	30	12	31	It would be useful for the reader if it might be included example of GHG emissions from land use and land use change also with figures [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted, modified with an example and the figure (value)
27158	12	30	12	32	The sentence misrepresents the land carbon flux. The WGI report of AR5 clearly recognises land as a significant net sink. It also recognises LUC (deforestation and some other land-use changes) as a significant net source, but it is wrong to equate LUC with "land use and land-use change". It also leaves one wondering whether or not forests are meant to be included. If so, why not mention them (under LULUCF or AFOLU). If not, why not, and how the numbers were disaggregated from AR5. Moreover, the WGI report of AR5 wrongly presented the WGI "land-use change" flux as total AFOLU C balance. That is clearly a mistake, as LUC cannot be equated with AFOLU. Also, it is unclear whether the sentence is trying to refer only to LULUCF fluxes (CO ₂), or also "agriculture" (non-CO ₂) emissions. LULUCF would strongly suggest the former, but referring only to "land use and land use change" makes it unclear whether it is meant to be LULUCF without forestry (i.e., carbon only), or a colloquial reference to land use in the broad sense (i.e., including agriculture with all its emissions). [Zoltán Rakonczay, Belgium]	Taken into account - combined with other comment.
9734	12	31	12	31	Re the use of "CO ₂ -eq" emissions. A footnote saying which GWP this is based on is needed (i.e. if old GWPs from SAR are used or more updated ones). See examples in AR5 SyR. [Jan Fuglestvedt, Norway]	Accepted - text revised.
2344	12	32	12	32	grammar mistake, remove AND [Manuel Llansola-Portoles, France]	Accepted - text revised.
7878	12	32	12	32	Delete "and" from "At the same time, and" [Paul Glaser, United States of America]	Comment noted section totally updated and revised.
4024	12	32	12	32	delete "and" [Reid Detchon, United States of America]	Accepted - text revised.
20016	12	32	12	32	At the same time, ecosystems..... [Sabit Erşahin, Turkey]	Accepted - text revised.
3300	12	32	12	32	Incomplete statement ".. At the same time, and ecosystem.." may be completed [Suresh Kumar, India]	Accepted - text revised.
2438	12	32	12	32	Superfluous "and". [William Lahoz, Norway]	Accepted - text revised.
15076	12	32	12	33	At the same time, ecosystems currently also serve as [Ahmed Imam, Egypt]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
18922	12	32	12	33	The line should be "At the same time, ecosystems also serve as a large carbon sink, due to environmental changes as well as reforestation" [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
6600	12	32	12	33	re-write sentence; remove 'and'? [Cornelia Rumpel, France]	Comment noted section totally updated and revised.
2346	12	32	12	33	This sentence implies that the ecosystems are regulating. However, the ecosystems are losing this ability to regulate, so it needs to be written differently. [Manuel Llansola-Portoles, France]	Accepted - text revised.
3932	12	32	12	33	Please revise the following sentence: At the same time, and ecosystems currently also serve as a large carbon sink, due to environmental changes as well as reforestation [Tarig Ibrahim, Sudan]	Comment noted section totally updated and revised.
27160	12	32	12	33	There is an apparent contradiction between saying that the annual GHG flux is a big source, and at the same time claiming that ecosystems are "also serve as a large carbon sink". Clearly, at least one of these sentences present a partial picture, and the text does not allow the reconciliation of the difference. [Zoltán Rakonczay, Belgium]	Accepted, the sentence modified
27162	12	32	12	33	It is incorrect to attribute the land sink only to environmental changes and reforestation. A key (if not the most important) factor is the recovery of forest in the temperate and boreal zone from centuries of past deforestation and overuse. This started around the beginning of the 20th century, with the ubiquitous availability of cheap fossil fuels, which largely displaced bioenergy uses. While some of this expansion of forest resources (in terms of area, density and therefore carbon stocks) involved planting, much of it did not. The thickening of vegetation and increase of forest stocking levels does not meet the customary definition of "reforestation". [Zoltán Rakonczay, Belgium]	Accepted, the sentence modified
24274	12	32	12	35	"At the same time, and ecosystems currently also serve as a large carbon sink, due to environmental changes as well as reforestation (Le Quere et al.2015; Canadell and Schulze 2014; Ciais et al. 2013; Arneeth et al. 2017; Erb et al. 2013; Pongratz et al. 2013; Hansis et al. 2015). " In sertion of " Land/territorial system is the biggest with storage of soil organic Carbon. [Barron Joseph Orr, Germany]	Noted no action needed.
25202	12	32	12	35	Consider deleting 'and' before 'ecosystem' [Denis Asizua, Uganda]	Accepted - text revised.
10044	12	32	12	35	Fuzzy and too general statement. What are the 'environmental changes' that make ecosystems to a carbon sink? Please consider to rephrase. [Reinhard Prestele, Germany]	Accepted, revised
6846	12	32	12	35	Need to clarify the following sentence: " At the same time, and ecosystems currently also serve as large carbon sink, due to environmental changes as well as restoration"? [Wilfran Moufouma Okia, France]	Accepted - text revised.
6848	12	32	12	35	Le Quere is to be replaced by Le Quéré [Wilfran Moufouma Okia, France]	Accepted - text revised.
6602	12	32	12	37	what do you mean by 'environmental changes' how can they transform ecosystems into carbon sinks? In the whole paragraph it is not clear which carbon sink you mean. [Cornelia Rumpel, France]	Accepted - text revised. Noted, the sentence is modified.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
4370	12	32	12	37	This section is misleading. Terrestrial ecosystems will always remain a carbon sink, short of planetary collapse. What is uncertain is the size of the sink and under what conditions certain ecosystems may become net sources. There will always be a sink component to terrestrial greenhouse gas fluxes, but some ecosystems, such as permafrost peatlands, may become net sources. See Petrescu et al (2015) PNAS The uncertain climate footprint of wetlands under human pressure [Samantha Grover, Australia]	Noted, the detail is addressed in Chapter 4
120	12	33	12	33	40% more carbon storage in forests than in fossil fuel deposits. Scharlemann et al. (2014) Carbon Management. McGlade & Eakins (2015) Nature [Elizabeth Penelope Davies, United States of America]	Accepted - text revised.
5576	12	33	12	33	"due to environmental changes" can be negative factor and a reason for the sources of Carbon not just sink! [Sanaz Moghim, Iran]	Noted
15078	12	35	12	36	Whether or not, this sink will persist in the future as one of the largest uncertainties in terms of carbon cycle and climate modelling [Ahmed Imam, Egypt]	Accepted - text revised.
9736	12	36	12	36	I think you mean the strength of the sink, not the sink it self. (Not sure if persist captures the first). I suggest being more clear [Jan Fuglestedt, Norway]	Taken into account - combined with other comment.
5842	12	38	12	41	not well-written! [Sanaz Moghim, Iran]	Accepted - text revised.
5944	12	38	12	41	confusing [Sanaz Moghim, Iran]	Accepted - text revised.
17328	12	38	12	42	I suggest rewriting this sentence in a more simple language [Jhan Carlo Espinoza, France]	Comment noted section totally updated and revised.
25662	12	38	12	42	Replace with: "Impacts from land use on climate are not limited to altering the atmospheric composition, but also include alterations of the earth's surface and hydrology with consequences for energy transfer and other biogeophysical factors. It has now been clearly demonstrated that impacts on energy and momentum transfer (via biogeophysical forces) can be substantial, while the net impact on climate varying from a heating to a cooling effect depending on context. Changes in albedo due to altered vegetation is estimated with a net cooling effect, estimated at 0,2 W/m2, comparable in size to the (opposite) heating effects of nitrous oxide (ref. AR5 WG I, Figure 8.15). Global impacts via altered water and vapor cycling and associated energy transfer could also be substantial but is not well established. Looking forward (along the chain of causes and effects), shortage or excess of water are crucial issues in climate scenarios and adaptation. It is well established that vegetation and soil properties influence water transfer and retention, which is of interest for water provision on-site but also as a buffer for floods and droughts downstream." [Jon Magnar Haugen, Norway]	Accepted - text revised.
17036	12	38	12	42	A revision of the sentence is suggested; to start with the confidence level (where is the agreement part ?) [Lourdes Tibig, Philippines]	Comment noted section totally updated and revised.
6850	12	38	12	42	The following sentence seems convoluted and can be simplified: "In addition to climate impacts from greenhouse gas emissions and uptake, it has now been consistently demonstrated that biophysical regional climate effects of land cover change, arising from altered energy and momentum transfer between ecosystems and atmosphere can be substantial with" [Wilfran Moufouma Okia, France]	Taken into account - combined with other comment.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25438	12	39	12	40	"altered energy and momentum transfer" is unduly technical [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
10110	12	41	12	41	Incorrect reference. Alexander et al. (2018) does not deal with biophysical regional climate effects. [Reinhard Prestele, Germany]	Accepted - text revised.
4372	12	41	12	41	it is unclear what is meant by "geographic context": does this mean "temperature and rainfall regime" or "latitude", or something else? [Samantha Grover, Australia]	Rejected. Geographic context, we mean all the geographic components (e.g. climate, latitude, etc.)
11782	12	41	12	42	Instead of writing "(Alexander et al. 2018; Perugini et al. 2017; Quesada et al. 2017)(robust evidence; see chapter 2).", please write "(Alexander et al. 2018; Perugini et al. 2017; Quesada et al. 2017; (robust evidence; see chapter 2)." [Jacques Andre Ndione, Senegal]	Accepted - text revised.
25664	12	42	12	42	Add: "Influences from land use on climate take other forms compared to those from industry and fossil sources. The latter can be understood as stock emissions, where carbon is transferred from fossil to atmospheric reservoirs. Contributions from land use and biological sources take form of flows, rather than stocks. These flows include emissions and removals of GHG, as well as energy and water transfer. Each of these processes have their separate characteristics, but they are also interconnected. Physical and temporal dimensions of these flows and forcings differ, and are often difficult to measure and account for. In a temporal perspective, shifts in albedo take effect immediately, without delay, while conversions of land and vegetation causing such shift may be of longer duration. Further, it is straightforward to make measurements of albedo on individual sites before and after a shift in human land use. To find aggregate perturbation at each point in time, the actual albedo have to be compared to a reference, contrafactual situation which is not always known. Methane, on the other hand, has a intermediate duration and forcing effect in the atmosphere. Aggregate methane emissions from livestock can be estimated with relatively high precision, while these figures may not be representative for a particular individual or production system. [Jon Magnar Haugen, Norway]	Taken into account - combined with other comment.
2634	12	42	12	42	This 'robust evidence' statement is missing an accompanying 'agreement' statement. Both are needed for the IPCC uncertainty language. [Sarah Connors, France]	Taken into account - combined with other comment.
9738	12	43	12	43	" (and in general greenhouse gas) " is too vague [Jan Fuglested, Norway]	Taken into account - combined with other comment.
4374	12	43	12	43	I think what you mean by (and in general greenhouse gas) is actually (and other greenhouse gases) [Samantha Grover, Australia]	Taken into account - combined with other comment.
20826	12	26	13	5	the whole issue described in these paragraphs is extensively addressed in chapter 2. Coordination between the two chapters as well as inclusion of references to chapter 2 sections, are needed [Carolina Vera, Argentina]	Taken into account.
26758	12	38	13	5	This paragraph seems to imply that the impacts of non-carbon pathways through which land-use change affects climate regulation or ecosystem services are likely to be negative ("undermine"). My sense is that they are at least as likely, if not more likely to be positive, e.g., protecting forests maintaining stored carbon, and also contributing to local cooling and hydrological function. In any case, the balance and tone should be consistent with the science reviewed in Chapter 2. [Frances Seymour, United States of America]	Accepted, revised

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25660	12	38	13	5	The paragraph seems to introduce manifold interactions b/w climate and land use. However, biogeophysical interactions are only briefly mentioned before the paragraph returns to carbon balances alone. I propose a more comprehensive coverage of interactions, to replace the entire paragraph: [Jon Magnar Haugen, Norway]	Taken into account - combined with other comment.
10046	12	38	13	11	Why are the carbon / GHG effects and biophysical effects mixed in this paragraph? Would not it make more sense to present them individually first (including some example numbers) and only discuss the attenuating and compensating effects in a joint paragraph afterwards? [Reinhard Prestele, Germany]	Taken into account - combined with other comment.
17038	12	42	13	1	What supports the confidence level of this statement? Where are the references? [Lourdes Tibig, Philippines]	Accepted - text revised.
25666	12	42	13	5	Replace with: "Carbon fluxes and stocks in terrestrial systems arise as a core topic to satisfy combined needs for food, fuel, water management, ecosystem services and climate stabilization. Carbon is fundamental to plant growth, soil fertility and food production, and there are numerous examples that soils are also instrumental for water management. Global warming has brought attention to the role of soils for carbon reservoirs, CO ₂ -emissions and removals, and for policies and interventions that can bring improvements, typically afforestation, bioenergy or land/soil restoration. This is a complex task however. First, it is complex to weigh in all perturbations and dynamics that arise from new uses. Efforts to manage carbon through land use can be susceptible to geophysical regional climate impacts, and raise unintended consequences on ecosystems that could undermine climate regulation. Further, because of shortage and competition over land, food and water, new uses may displace other users, or they may be reallocated to a new location, possibly with inferior results. There are certain general lessons from these concerns. First, interventions towards a single factor such as carbon removal may be counterproductive. A broad range of issues must be considered, beyond the carbon-perspective itself. Secondly, while inaction is a natural response to these concerns, it is clear that "business as usual" is not appropriate. There is therefore an urgent need for "no regret"-options that are helpful for climate without compromising food, water or ecosystem integrity. (Improvements in soil carbon and soil fertility arise as a promising way forward.) [Jon Magnar Haugen, Norway]	Taken into account - combined with other comment.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16102	12	24	15	5	Unclear rationale of section 1.3.3. "Section 1.3.3 Interactions of climate change, land degradation, desertification and food security". The title of this section could fruitfully be adopted as the title or subtitle of the whole chapter 1, as chapter 1 could be devoted to highlight and disentangle such relationships both on the basis of historical trends, but also through the presentation of a set of consistent scenarios for the future. In addition, the sub-section 1.3.3.1, despite the title: "Land use, greenhouse gas emissions and uptake and impacts of biophysical surface processes", does not discuss the extent to which climate change has affected and/or will affect land quality and land use. Furthermore, sections 1.3.3.2 "Land degradation" 1.3.3.3 "Desertification" and 1.3.3.4 "Food security" look as a short summary of chapters 3,4, and 5 respectively, but it is not clear why they are put here in this way. It seems that in a section named "Interactions of climate change, land degradation etc..." the reader would expect that after a definition of the different elements that interact, the sub-sections addressing every element follow a common pattern that highlights how every element interacts with the others. This would be an opportunity to clarify why these elements are considered in the various chapters of the report. Unfortunately, no common systematic pattern can be found in this section and related sub-sections. This material could be fruitfully structured to serve the purpose of introducing the various chapters of the report. [Lorenzo Giovanni Bellù, Italy]	Rejected - outside the scope of the chapter covered in Chapter 6
1188	12	24	15	5	Section 1.3.3 is about the interactions but the only interaction that appears to be discussed is the interaction of each of the topics individually with climate change, rather than interactions among all these factors (climate change, land degradation, desertification, and food security). This is important as interactions between climate change and land degradation, say, will impact food security, which -- depending on how populations are able to respond to those pressures -- can generate further impact on land degradation. While these interactions may be too complex to fully articulate here, a diagram could help and/or at minimum reflecting on the complexity and the potential for a vicious cycle is needed. [Tonya Rawe, United States of America]	Rejected - outside the scope of the chapter covered in Chapter 6
27258	12	1			There should be more explicit inclusion here of the extreme possibilities for land competition from CDR technologies such as large-scale afforestation and BECCS. The BECCS numbers presented later on -- with IAM scenarios suggesting there might need to be a 100% increase in cropland -- are rather astonishing. The political economy of land and land tenure, in that sort of scenario, would most certainly result in large-scale dispossession. People will lose ability to eat, not merely because of increase in food prices, but because they have lost access to lands that now have become more valuable for climate mitigation and bioenergy production. Dispossession is not merely a "trade-off." [Doreen Stabinsky, United States of America]	Accepted - text revised - links between potential expansion of BECCS and its demand for land and likely implications for land competition for other uses (food production, conservation) is also referenced
2888	12	2		12	global and local powerful actors and powerless actors are competing...power structures define who wins in the competition for land.... [Cordula Ott, Switzerland]	Accepted; reference to land tenure and land governance is made explicit here; also land grabbing is also added as part of land competition framing .
5328	12	4			Driven by population, urbanisation, growing food demand, and energy, competition for land is likely. I feel land degradation should be included as this is attributed by increasing trends in soil erosion, loss of fertility, salinity. [Daniel Danano Dale, Italy]	Taken into account; new text had restated the main causes of land competition, including productivity loss from land degradation.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
8872	12	6		38	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
2890	12	10		12	this is a key sentence... does it have the right place? better earlier... the concept of planetary boundaries and the relation to land should be introduced at the beginning?! [Cordula Ott, Switzerland]	Accepted - text revised. Taken into account; planetary boundaries is moved from this section and covered in chapter 1 introduction
1946	12	10			pg 12. line 10. add space between brackets [Mastura Mahmud, Malaysia]	Accepted - text revised.
2892	12	13		14	direct and indirect a bit difficult to comprehend... better explanation necessary [Cordula Ott, Switzerland]	Accepted - text revised.
17740	12	16			Change "qualitiy" to " , such as" [Donald Smith, Canada]	Accepted - text revised.
2894	12	19		22	In addition, other policies accentuate land competition: economic policies for example... policy coherence must be achieved ... [Cordula Ott, Switzerland]	Noted - no action taken (issue taken up in later chapters - chapter 5 and 7).
1948	12	19			pg 12. In 19. add spacing after 4.1 [Mastura Mahmud, Malaysia]	Accepted - text revised.
1950	12	21			pg 12. In 21. 'eq' notation should be superscript [Mastura Mahmud, Malaysia]	Accepted - text revised.
2854	12	24			Reconsider the order of the titles of the following chapters (should be same order and same wording as in (1)) [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
2896	12	24			title somehow chapter 6 but not totally? this is a bit disturbing.. [Cordula Ott, Switzerland]	Accepted chapter restructured.
2898	12	25			biophysical surface processes.. title unclear.. only those effected by human activities? ...or would that also include processes as for example melting permafrost soils ? [Cordula Ott, Switzerland]	Accepted - text revised. Agree that in general we need to cross reference better to other reports; for more detail on degradation definition we refer, however, to chapter 4 (it needs to be done, agreed). In fact, in order to avoid cofusion we revisioed/omitted the sentences.
17742	12	31			Remove first "%". [Donald Smith, Canada]	Accepted - text revised.
25228	12	32			delete and before the word ecosystems current... [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
17744	12	32			Remove "and". [Donald Smith, Canada]	Accepted - text revised.
408	12	32			delete "and" from "At the same time, and" [Paul Glaser, United States of America]	Accepted - text revised.
2900	12	41			a differentiation between global, regional and local impact of GC/CC is important ... and it could be emphasized here and also in previous paragraphs ... [Cordula Ott, Switzerland]	Accepted - text revised.
16568	12	42		43	This sentence is not a conclusion of the previous sentence. Please be more precise. You could refer to other studies including the biogeochemical regional climate effect of land cover change. The biophysical impact only gives indirect potential effect on the terrestrial CO2! [Merja Tölle, Germany]	Taken into account - combined with other comment.
24276	13	1	13	1	Please consider including the following directly related reference: Verburg et al. (2015): Land system science and sustainable development of the earth system: A global land project perspective; and/or Niewoehner et al. Eds (2016) Land Use Competition: Ecological, Economic and Social Perspectives. [Barron Joseph Orr, Germany]	Accepted - text revised.

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6852	13	1	13	4	The following sentence is confusing and needs clarifications: " But due to biophysical regional climate impacts, and the overall impact on ecosystem functioning efforts to manage carbon through land use need to be aware of unintended consequences on ecosystems that could undermine climate regulations.." [Wilfran Moufouma Okia, France]	Accepted, revised
10048	13	4	13	5	A broad range of issues must be considered [...] too unspecific. Either specify or leave this sentence out. [Reinhard Prestele, Germany]	Accepted, revised
27164	13	6	13	6	What is meant by "carbon storage"? Carbon stocks (stored), or carbon fluxes (removals)? [Zoltán Rakoncay, Belgium]	Accepted definition clarified.
3566	13	6	13	7	forests also have an important role in regulating climate (directly, through affecting the water cycle and the albedo), carbon cycle and others [Zoltán Somogyi, Hungary]	Accepted, revised
15706	13	6	13	8	Also take into account forest as natural resources (and services) provider or facilitator, such as wood, forest products and water [Maria del Pilar Salazar Vargas, Mexico]	Accepted - text revised.
14894	13	6	13	11	Some elements from Grassi et al. 2017 should be included in this paragraph. Besides, there is a lack of information about wetlands, included peatlands. [Florian Claeys, France]	Accepted, revised
7480	13	6	13	11	add reference to peat and permafrost soil as huge stocks of carbon (threatened by climate change), as well as potential of carbon storage in agriculture by appropriate management/SLM [Joris de Vente, Spain]	Accepted - text revised.
822	13	6	13	11	I strongly urge the authors to specifically mention peatlands, which are generally accepted to store about a 3rd of the global soil carbon. The best reference in my opinion would be: Gorham, E. (1991) Northern Peatlands: Role in the Carbon Cycle and Probable Responses to Climatic Warming. Ecological Applications 1:182-195. [Paul Glaser, United States of America]	Accepted - text revised.
7880	13	6	13	11	I strongly urge the authors to specifically mention peatlands, which are generally accepted to store about a 3rd of the global soil carbon. The best reference in my opinion would be: (Gorham, E. (1991) Northern Peatlands: Role in the Carbon Cycle and Probable Responses to Climatic Warming. Ecological Applications 1:182-195). [Paul Glaser, United States of America]	Accepted - text revised.
4376	13	6	13	11	Peatlands definitely need to be included in this paragraph, as they store more C than forest or savana (refs) [Samantha Grover, Australia]	Accepted, revised
3302	13	6	13	11	This para is not as much relevant unless it is related with temporal dynamics and climate change [Suresh Kumar, India]	Rejected, it provides important information
10112	13	7	13	7	Is it common to reference previous IPCC work (=Smith et al. 2014b) instead of original published research? [Reinhard Prestele, Germany]	Noted no action needed.
27166	13	8	13	8	"storage" should not be used or it should be defined. It is not a standard term and it is unclear whether it refers to stocks or flows. [Zoltán Rakoncay, Belgium]	Accepted, revised
5578	13	8	13	10	why the author said "world's food production", I disagree with biodiversity and species rich followed by food production! [Sanaz Moghim, Iran]	Accepted; text corrected (food production removed from the sentence)

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16020	13	8	13	10	The meaning of this sentence is not clear [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised
6604	13	8	13	11	Organic soils and peatlands contain the greatest amounts of C (Yu et al, 2010; Yu, Z., J. Loisel, D. P. Brosseau, D. W. Beilman, S. J. Hunt (2010), Global peatland dynamics since the Last Glacial Maximum, Geophys. Res. Lett., 37, L13402, doi:10.1029/ [Cornelia Rumpel, France]	Accepted, revised
15080	13	9	13	9	high levels of biodiversity and ecosystems [Ahmed Imam, Egypt]	Accepted - text revised.
20570	13	9	13	11	better: ..., and high levels of biodiversity, characterizing species-rich ecosystems, that contribute substantially to the world's... [Bettina Weber, Germany]	Comment noted section totally updated and revised.
18676	13	11	13	11	Gifford 2002) --> Gifford 2002; [Hiroaki Kondo, Japan]	Accepted - text revised.
3934	13	11	13	11	2002)Alkemade to be changed into 2002; Alkemade [Tarig Ibrahim, Sudan]	Accepted - text revised.
20808	13	12	13	36	The ELD (Economics of land degradation) Initiative has published a few case studies (peer-reviewed) on land degradation and its impacts on livelihoods. See eld-initiative.org for more detail. Also, the Global Mechanism of teh UNCCD has commissioned a few studies on land degradation as well. You could cite the ELD and the GM here, if not the specific case studies. Also, the paper by Schild et al may be a good reference to include here: Schild J.E.M., Vermaat J.E., de Groot R. S., Quatrini S., van Bodegoma Peter M. (2018) A global meta-analysis on the monetary valuation of dryland ecosystem services: The role of socio-economic, environmental and methodological indicators. Ecosystem services, 32:78-89. [Emmanuelle Quillerou, France]	Accepted; reference to ELD and GM is added in the context of links between land degradation and food security (which included an access dimension tied to livelihoods and incomes)
18824	13	12	13	36	In this report, chapter 3 is desertification, which is land degradation process and type occurred in dryland, and chapter 4 is land degradation occurred in other land use types. So, in this section, difference of chapter 3 and chapter 4 should be emphasized, there is no clear scope for land degradation in chapter 3 and in chapter 4, the confusion in chapter 3 and chapter 4 will appear. [Jianguo Wu, China]	Accepted definition clarified.
1192	13	12	13	36	As mentioned for all of section 1.3.3, section 1.3.3.2 could easily reference the interaction between land degradation and food security. [Tonya Rawe, United States of America]	Accepted; sentence added making the negative link between land degradation and food security and positive link between land and ecosystem service restoration and food security.
15082	13	13	13	14	degradation of soil and land resources are critical challenges [Ahmed Imam, Egypt]	Thank you for the positive comment.
5844	13	13	13	15	not well-written! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
5946	13	13	13	15	it is not clear. [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
6854	13	13	13	15	The following sentence seems convoluted and can be simplified: "Due to loss of productivity but also carbon storage, biodiversity, and other ecosystem services, degradation of soil and land resources is a critical challenge in cropland, pasture....." [Wilfran Moufouma Okia, France]	Taken into account - combined with other comment.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25440	13	13	13	29	The issue of "land degradation" being defined in this report as land degradation everywhere but arid and semi-arid regions needs to be confronted head-on. I suggest reversing the order of these two paragraphs and incorporating it in the new first para [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account - combined with other comment.
17360	13	14	13	14	How about wetlands, which could always be of high carbon density and biodiversity. [Fei Lu, China]	Accepted - text revised.
16022	13	14	13	14	I am not sure about the use of the term "challenge" in the sentence. Maybe "issue" would sound better [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised
6606	13	15	13	15	peatlands should be added to rapidly degrading land areas (Leifeld and Meichetti, 2018; Leifeld, J., Menichetti, L. (2018) The underappreciated potential of peatlands in global climate change mitigation strategies. Nature Communications, 9, 1071. [Cornelia Rumpel, France]	Accepted, revised
24278	13	16	13	17	The following could be synthesized as fits text flow and added: Three indicators have been proposed to estimate the "proportion of land that is degraded over total land area" (i.e. SDG 15.3.1 indicator) and land degradation neutrality: land cover, land productivity and carbon stocks, particularly soil organic carbon stocks. Reference to more recent publications could be added, especially to Orr et al. (2017): Scientific Conceptual Framework for Land Degradation Neutrality https://www.unccd.int/sites/default/files/documents/2017-08/LDN_CF_report_web-english.pdf ; Cowie et al. (2018): Land in balance: The scientific conceptual framework for Land Degradation Neutrality https://www.sciencedirect.com/science/article/pii/S1462901117308146?via%3Dihub and UNCCD (2017): Global Land Outlook, first edition. Bonn, Germany https://www.unccd.int/sites/default/files/documents/2017-09/GLO_Full_Report_low_res.pdf ; Sims et al 2017 https://www.unccd.int/sites/default/files/relevant-links/2017-10/Good%20Practice%20Guidance_SDG%20Indicator%2015.3.1_Version%201.0.pdf [Barron Joseph Orr, Germany]	Rejected. Chapter 1 is tasked to briefly introduce the concepts but go into too much detail; the deeper aspects of degradatio are discussed in chapter 4.
17534	13	16	13	18	paragraph 1.3.3.2 "Land degradation can be considered in terms of the loss of actual or potential productivity or utility; it results from a mismatch between land productivity and land use, and is driven to a large degree by socioeconomic pressures, such as rapid urbanisation and population growth" comment above is reiterated, it appears to state that urbanisation=land degradation. Suggest revisiting and amending this paragraph. [TURI FILECCIA, Italy]	Rejected. We are asked to use the same definition as chapter 4 in which all aspects of degradation ar being discussed in detail

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
7056	13	16	13	20	After having considered land degradation in terms of loss of actual or potential productivity, you may wish to consider expanding your discussion on the following definition of land degradation neutrality endorsed by the UNCCD in 2015 after the adoption of the SDGs (specifically SDG 15.3): "Land degradation neutrality is a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems." (see Decision 3/COP.12). [Mariam Akhtar-Schuster, Germany]	Repeated.
14290	13	16	13	20	After having considered land degradation in terms of loss of actual or potential productivity, you may wish to consider expanding your discussion on the following definition of land degradation neutrality endorsed by the UNCCD in 2015 after the adoption of the SDGs (specifically SDG 15.3): "Land degradation neutrality is a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems." (see Decision 3/COP.12). [Rattan Lal, United States of America]	Rejected - outside the scope of the chapter covered in Chapter 4
20200	13	16	13	29	The definition of land degradation. Does it have to be long-term? Does ecological complexity encompass biodiversity and ecosystem resilience? Is it more simply a deterioration of SDG values provided by a piece of land at local to regional scales? [Kaoru Kitajima, Japan]	Accepted - text revised. Definition of land degradation changed to get in line with Chapter 4.
10474	13	17	13	18	Land degradation is also driven by unsustainable production practices in combination with climatic factors [Zitouni Ould-Dada, Italy]	Accepted, revised
1190	13	18	13	18	population growth is cited far too often as a driver of land degradation (and other environmental woes), when it is many times a symptom of deeper issues of inequity in access to resources -- productive & reproductive health resources. If pop growth is to be continually referenced, then socio-economic factors behind pop growth (like unequal access, gender inequality, and lack of access to productive resources for more sustainable livelihoods) need to also be included to ensure there is more nuance to the discussion. In addition, unsustainable consumption in the global north (rather than just family size in the global south) should be referenced alongside pop growth to include a key driver of unsustainable demand. [Tonya Rawe, United States of America]	Accepted - text revised.
27168	13	18	13	18	before socio-economic pressures, unsustainable agriculture and forestry should be mentioned as primary causes of degradation. [Zoltán Rakonczay, Belgium]	Accepted, revised
15984	13	20	13	20	How climate change is one factor contributing to land degradation should be explained [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Rejected - outside the scope of the chapter covered in Chapter 4
16934	13	20	13	21	Here I would add also land abandonment as another factor contributing to degradation. [Vincenza Ferrara, Italy]	Accepted, revised
25178	13	21	13	21	should read pasture and loss of forest vegetation and soil resources. Inappropriate use of forest - is difficult to understand [Mohammed Yahya Said Yahya, Kenya]	Accepted, revised
15084	13	23	13	23	In this report, land degradation is [Ahmed Imam, Egypt]	Accepted - text revised.
5580	13	23	13	23	why "long-term", land degradation can be fast! [Sanaz Moghim, Iran]	Rejected. We mean time horizon not time duration here.
20018	13	23	13	24	It is not clear what is meant by human values. [Sabit Erşahin, Turkey]	The definition has already modified.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24282	13	23	13	25	The definition of land degradation provided herein could include the same reference cited in the glossary of the SRCL: "Negative trend in land condition resulting in long term reduction or loss of the biological productivity of land, its ecological complexity, and/or its human values, caused by direct and/or indirect human induced processes, including climate change. [Footnote: this definition is adapted from UNCCD Article 1]." [Barron Joseph Orr, Germany]	Taken into account - combined with other comment.
14292	13	23	13	25	I do have concerns about launching another definition of land degradation into the policy arena. One of the greatest challenges in addressing global land degradation is the lack of clear definitions in what it is. Now that we have an IPCC report on land and climate, climate has been inserted into the definition of land degradation. It's not entirely clear why this is needed and why climate doesn't fall under the "natural and human induced processes." The question is whether a new definition adds more confusion to the conversation of land degradation than clarity by adding yet another definition into the policy arena. [Rattan Lal, United States of America]	Taken into account - combined with other comment.
14296	13	23	13	25	The definition here does not match Chapter 4 and the definition given in the glossary. Make sure all definitions given in the assessment align throughout the chapters. [Rattan Lal, United States of America]	Accepted - text revised. Definition of land degradation changed to get in line with Chapter 4.
17536	13	23	13	25	same paragraph: the definition of land degradation that is selected by the report is not considered comprehensive. Suggest saying something like " long-term reduction or loss of productivity and of its ecosystem services due to disrupted physical, chemical, and biological properties". [TURI FILECCIA, Italy]	Taken into account - combined with other comment.
17040	13	23	13	29	It is being suggested that this definition be the first paragraph of this subsection. Definition should be given before the quantifications of the components. [Lourdes Tibig, Philippines]	Accepted, revised
10050	13	23	13	29	Would it be worth to include a short explanation of the reasons behind the decision to take another definition of land degradation than in the IPBES report? [Reinhard Prestele, Germany]	Chapter 1 introduces the concept, details on definition provided in chapter 4.
5582	13	24	13	24	"human values"? [Sanaz Moghim, Iran]	Accepted definition clarified.
14294	13	25	13	29	The IPBES Land Degradation and Restoration Assessment presented two definitions. One definition was "degraded land" as a "state of land which results from the persistent decline or loss in biodiversity ecosystem functions or services that cannot fully recover unaided within decadal time scales." Land degradation in the assessment was actually defined as "the many processes that drive the decline or loss in biodiversity, ecosystem functions or services, and includes the degradation of freshwater and coastal ecosystems that are closely interconnected with terrestrial ecosystems." So it is not factually correct to state that the definition of land degradation from this assessment has the language of "decadal time scales" associated with the definition. [Rattan Lal, United States of America]	Chapter 1 introduces the concept, details on definition provided in chapter 4.
16024	13	25	13	29	This sentence is badly formulated. The reviewer suggests to rephrase it [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted, revised .

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
26926	13	26	13	26	Either define the acronym IPBES here (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) or in the Glossary. [Knute Nadelhoffer, United States of America]	Accepted - text revised.
3696	13	26	13	29	UNEP and others are getting very worked up about "coherence" across environmental assessments. It would be good to bottom this out and aspire to greater convergence while both SRCL and IPBES are still in production. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Agree that in general we need to cross reference better to other reports; for more detail on degradation definition we refer, however, to chapter 4 (it needs to be done, agreed). In fact, in order to avoid confusion we revised/omitted the sentences..
10370	13	30	13	30	1 billion ha to over 6 billion ha, with equally. Could this be cited here because of the very big range difference [Zitouni Ould-Dada, Italy]	Repeated Comment
16026	13	30	13	36	This paragraph would benefit of some rephrasing since it is badly written [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted, revised .
15086	13	35	13	35	Land degradation is thus an important factor [Ahmed Imam, Egypt]	Accepted - text revised.
24898	13	35	13	35	remove the word "one" from between the words "important" and "factor" [Dale Lockwood, United States of America]	Accepted - text revised.
26928	13	35	13	35	Change, "...important one factor..." to "...important factor". [Knute Nadelhoffer, United States of America]	Accepted - text revised.
4026	13	35	13	35	delete either "an important" or "one" [Reid Detchon, United States of America]	Accepted - text revised.
10372	13	35	13	35	"Land degradation is thus an important one factor contributing to uncertainties of the mitigation potential of land-based ecosystems" This statement takes land degradation as a state of land that is not reversible. Some of the states of land degradation are reversible. [Zitouni Ould-Dada, Italy]	Rejected - outside the scope of the chapter covered in Chapter 4
3698	13	37	13	37	I would put desertification before LD to follow the sequence of the report. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised
3700	13	37	13	37	Note that UNCCD definition would make desertification a subset of LD. Would a small box teasing out definitions be helpful rather than trying to deal with in text? [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Rejected - outside the scope of the chapter covered in Chapter 3
16040	13	38	13	39	The reference is missing [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account - combined with other comment.
21326	13	38	13	42	Any scientific reason to propose a new definition of what is desertification? Why adopting a new definition and even recognizing that it is not consistent with previous IPCC reports? This report should use already approved definition and refrain to draft its own definition. [Martial Bernoux, Italy]	Accepted - text revised. Definition of desertification changed to be consistent with the one given in Chapter 3, and the one in lines 40-42.
26930	13	39	13	39	Change, "The IPCC has in previous reports adopted the definition..." to "Previous IPCC reports adopted the definition...". [Knute Nadelhoffer, United States of America]	Comment noted section totally updated and revised.
10052	13	39	13	40	It is not clear if the same definition of desertification has been adopted in current report similar to 'previous reports'. [Reinhard Prestele, Germany]	Comment noted section totally updated and revised.
24284	13	40	13	40	Please correct the typo: UNCCD --> UNCCD [Barron Joseph Orr, Germany]	Accepted - text revised.
5584	13	41	13	41	"variations" or changes defined by IPCC? [Sanaz Moghim, Iran]	Rejected - not supported by the peer-reviewed published literature /publication provided to support changes suggested by the reviewer

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20020	13	42	13	42	Desertification is non-reversible naturally. It may be reversed by human intervention as it was happened in Karapınar, Turkey and in many parts of the world. [Sabit Erşahin, Turkey]	Accepted, revised
24280	13	16	14	17	This paragraph need further improvement. It is under subtitle of "1.3.3 Interactions of climate change, land degradation, desertification and food security" but it did not reflect the relation of land degradation with Climate change. It is better to 1)merge "1.3.3.1 land degradation and 1.3.3.2 desertification " ,2) in the mered part, to indicate why desertification deserves an emhphasis on and the differences between degdation in dryland and other climatic zones 3) the reflect contribution of land restoration in narrowing the land demanding for food and prevent potential soild carbon loss from soil erosion and in uptaking carbon from air. [Barron Joseph Orr, Germany]	Rejected - outside the scope of the chapter covered in Chapter 6.
20828	13	37	14	17	As in the previous section on Degradation, this section should have a clear and explicit mention to the Desertification definition used in this report. Notice that section 2.3.2 of chapter 2 also discusses definitions of both desertification and land degradation. [Carolina Vera, Argentina]	Rejected - outside the scope of the chapter covered in Chapter 2
9740	13	37	14	17	Not clear to me which definition is adopted. [Jan Fuglested, Norway]	Accepted definition clarified.
18822	13	37	14	17	The definition of the UNCCD of desertification should be emphesized ,because the definition of the UNCCD of desertification has been agreed by the parties.In this report, the essential is how to linking the desertification and climate change, and if different definition of desertification is provided here, the new aguments of desertification definition may be aroused.in addition, the difference of desertification and other land degradation should be given,and linkage of this section and chapter 3 and chapter 4 should be given.As the frame of the report, clear background and structure should be given.And the magnitude of desertification all over the world did not provided clearly. [Jianguo Wu, China]	Accepted definition clarified.
25442	13	37	14	17	This section has very little tie-in to climate change [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Noted
1194	13	37	14	17	The desertification discussion would benefit from discussion -- or at minimum a couple examples -- of where we see desertification. This can help readers make inference regarding other dynamics beyond the scope of this report that will interact with desertification and its impact on food security [Tonya Rawe, United States of America]	Noted; examples of desertification expansion to be included; desertification link to food security is reflected through direct impacts (loss of productive land, reduced production) and indirect effects (through altered livelihoods and loss of ecosystem services (to be refined)...
1196	13	37	14	17	Again, this section would benefit from discussion of the interaction between desertification and food security, especially in light of discussions in loss and damage conversations regarding slow onset impacts and the fundamental loss of agricultural livelihoods that result from desertification. [Tonya Rawe, United States of America]	Accepted; text revised
20656	13	13	38	39	this definition of desertification is not consistent with the one given in Chapter 3, and the one in lines 40-42. [Alisher Mirzabaev, Germany]	Accepted - text revised. Definition of desertification changed to be consistent with the one given in Chapter 3, and the one in lines 40-42.
20658	13	13	42	42	the reference to desert-like conditions is not consistent definition of esertification in Ch 3 and Glossary [Alisher Mirzabaev, Germany]	Accepted definition clarified.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
2902	13	4		5	a bit unpecific.... related to a paragraph? [Cordula Ott, Switzerland]	Accepted - text revised.
8874	13	5		39	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
17746	13	11			Change first ")" to "; ". [Donald Smith, Canada]	Accepted - text revised.
1952	13	11			pg 13, ln 11, spacing after) and before A. [Mastura Mahmud, Malaysia]	Accepted - text revised.
16570	13	11			Remove closing bracket. [Merja Tölle, Germany]	Accepted - text revised.
2904	13	12		36	increase coherence: how related to chapter 4? introducing chapter 4? How itaken up in summary? [Cordula Ott, Switzerland]	Rejected - outside the scope of the chapter covered in Chapter 4.
25904	13	12			Here you should mention the difficulties in attributing land degradation to climate change (see Ch4). [Hans Poertner and WGII TSU, Germany]	Accepted - text revised.
5330	13	21			environmentally fragile lands subject to overuse. Better to include erosion of resource bases (soil, water, soil carbon) [Daniel Danano Dale, Italy]	Accepted, revised
17748	13	21			Insert ", " after "resource" [Donald Smith, Canada]	Accepted - text revised.
25230	13	23			at the beginning of the sentence land degradation is in ...delete is [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
17750	13	23			Add "is" after "report" [Donald Smith, Canada]	Accepted - text revised.
6476	13	24		25	where does culture fit in here - you cant discuss human values without referencing culture. [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account - combined with other comment.
17752	13	24			Delete "s" from "values" [Donald Smith, Canada]	Accepted - text revised.
5332	13	30			1 billion ha to over 6 billion ha, with equally. Could this be cited here because of the very big range difference [Daniel Danano Dale, Italy]	Taken into account - combined with other comment.
26760	13	34			In this paragraph, soil degradation is highlighted as of "particular concern". I would suggest that forest degradataion also be highlighted here, as a previously neglected topic, especially because the technology for remote sensing of forest degradation has rapidly increased in recent years. The rapid degradation of so-called "intact" forests through fragmentation and sub-canopy fires might be appropriate to highlight. [Frances Seymour, United States of America]	Accepted, revised
6588	13	35			delete the word "one" [Anna Haines, United States of America]	Accepted - text revised.
2906	13	37			increase coherence: introduction to chapter 3? related to text chapter 3? [Cordula Ott, Switzerland]	Rejected - outside the scope of the chapter covered in Chapter 3
21144	13	42			it is possible to reverse desertification of land but it is very difficult to reverse and require high cost [Hasnat Aslam, Pakistan]	Accepted, revised

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
410	13				2nd paragraph. I strongly urge the authors to specifically mention peatlands, which are generally accepted to store about a 3rd of the global soil carbon. The best reference in my opinion would be: Gorham, E. (1991) Northern Peatlands: Role in the Carbon Cycle and Probable Responses to Climatic Warming. Ecological Applications 1:182-195. [Paul Glaser, United States of America]	Taken into account - combined with other comment.
20660	14	14	11	12	Check the extent of drylands, it is 45.4% in Ch 3, citing the same reference [Alisher Mirzabaev, Germany]	Accepted - text revised.
3936	14	23	11	24	HLPE defines a sustainable food system as “a sustainable food system as “a food system that ensures food security to be changed into HLPE defines a sustainable food system as “a food system that ensures food security [Tarig Ibrahim, Sudan]	Accepted - text revised.
2636	14	1	14	8	Most of these citations are pre-AR5, consider shortening the paragraph or updating with more recent literature. [Sarah Connors, France]	Accepted, revised
7882	14	1	14	9	I would suggest adding depletion of groundwater aquifers in dry regions since these aquifers sustain agriculture in many arid areas but this resource is being rapidly depleted because of low precipitation (falling as rain or snow) in mountainous recharge areas. [Paul Glaser, United States of America]	Rejected. Rejected - outside the scope of the chapter covered in Chapter 3
824	14	1	14	17	I would suggest adding depletion of groundwater aquifers in dry regions since these aquifers sustain agriculture in many arid areas but this resource is being rapidly depleted because of low precipitation (falling as rain or snow) in mountainous recharge areas. [Paul Glaser, United States of America]	Repeated
6856	14	1	14	17	What is the report proposed definition or stance on the desertification? It does not come clearly what definition of desertification to be adopted throughout this report? [Wilfran Moufouma Okia, France]	Accepted definition clarified.
2440	14	2	14	2	processes. [William Lahoz, Norway]	Comment noted section totally updated and revised.
20022	14	2	14	9	I believe that the term desertification does not convey the meaning of the desertification either as a process or the result. Some people confuse desertification with land degradation; others consider desertification as irreversible state of land degradation, and many other consider it movement of desert front. [Sabit Erşahin, Turkey]	Accepted definition clarified.
2442	14	8	14	8	“...is a purely...”. [William Lahoz, Norway]	Comment noted section totally updated and revised.
3702	14	10	14	10	"estimates of the areal" [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
4028	14	10	14	10	replace "extend" with "extent" [Reid Detchon, United States of America]	Accepted - text revised.
25204	14	10	14	11	Is 'areal extend' supposed to mean 'areal extent'? [Denis Asizua, Uganda]	Accepted - text revised.
24286	14	10	14	17	The most recent efforts to map the spatial extent of land degradation and desertification were conducted by the World Map of Desertification (WAD) which was released just recently: https://wad.jrc.ec.europa.eu [Barron Joseph Orr, Germany]	Taken into account - combined with other comment.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
7276	14	10	14	17	Regarding discussions on the spatial extent of desertification you may wish to analyse the World Map of Desertification (WAD) which was released just recently: https://wad.jrc.ec.europa.eu [Mariam Akhtar-Schuster, Germany]	Taken into account - combined with other comment.
14298	14	10	14	17	Regarding discussions on the spatial extent of desertification you may wish to analyse the World Map of Desertification (WAD) which was released just recently: https://wad.jrc.ec.europa.eu [Rattan Lal, United States of America]	Taken into account - combined with other comment.
5586	14	14	14	15	"and the people who rely on the land's resources"lwe all rely on land [Sanaz Moghim, Iran]	Accepted, revised
5588	14	15	14	17	what the author wants to say by "By the end of this century" in the sentence! [Sanaz Moghim, Iran]	Accepted, revised
19650	14	16	14	17	"By the end of this century ..." - does it actually mean the last or this century? If referring to this century then the sentence should continue with "... it will be still one of the major environmental problems" [Birgit Kuna, Germany]	Taken into account - combined with other comment.
14896	14	18	14	18	The 4 pillars of food security, from the FAO, should be better highlighted. [Florian Claeys, France]	Accepted, revised
24686	14	18	14	18	maybe add food system in the title [Valerie Dermaux, France]	Accepted - text revised. Agree that in general we need to cross reference better to other reports; for more detail on degradation definition we refer, however, to chapter 4 (it needs to be done, agreed). In fact, in order to avoid cofusion we reviosed/omitted the sentences.
16252	14	19	14	19	Please note that HLPE is not connected to FAO, its independent. [Lorenzo Giovanni Bellù, Italy]	Noted, no action needed.
21328	14	19	14	23	Again on definition..."Food security" is not equivalent to "food system"...why using the second one in a section titled "food security"!?. Moreover the "food system" definition is not an FAO definition: The HLPE is serving the CFS and not FAO! If the authors decide to keep both definition, difference or complementarities should clearly be stated. [Martial Bernoux, Italy]	Accepted; text revised
2638	14	19	14	28	Reference the SRCCL glossary when defining Food Security. Please make sure these two pieces of text are consistent. [Sarah Connors, France]	Taken into account - combined with other comment.
1200	14	19	14	28	Whilst discussion of food security is highly necessarily, the inclusion of a food systems lens is also welcome, as it helps push the idea of impacts and foot print at all levels/all along the value chain. The use of the HLPE report and definition of a sustainable food system is also welcome. [Tonya Rawe, United States of America]	Thank you for the positive comment.
11784	14	23	14	23	Instead of writing "(HLPE 2017) (see chapter 5)", please write "(HLPE 2017; see chapter 5)." [Jacques Andre Ndione, Senegal]	Accepted - text revised.
5106	14	23	14	23	Repetition: HLPE defines a sustainable food system as "a sustainable food system as "a food system [Oksana Lipka, Russian Federation]	Accepted - text revised.
15986	14	23	14	23	There are quotation marks that should not be there [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25232	14	23	14	24	HLPE defines...as 'a sustainable food system as 'a food system.... This has to be recasted [Abiud Kaswamila, United Republic of Tanzania]	Taken into account. Accepted; sentence corrected
15088	14	23	14	24	cancel this: a sustainable food system as [Ahmed Imam, Egypt]	Accepted; sentence corrected.
25732	14	23	14	24	"a sustainable food as" is repeated [Bernhard Brümmer, Germany]	Accepted - text revised.
18924	14	23	14	24	"a sustainable food system as" is repeated two times [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
24900	14	23	14	24	delete the duplicated phrase, "a sustainable food system [Dale Lockwood, United States of America]	Accepted - text revised.
25206	14	23	14	24	There seems to be a repetition of some words in the beginning of the sentence "HLPE defines.....' [Denis Asizua, Uganda]	Accepted - text revised.
18678	14	23	14	24	"a sustainable food system as" is duplicated. [Hiroaki Kondo, Japan]	Accepted - text revised.
888	14	23	14	24	Please, remove "a sustainable food system" from the sentence [Jose Luis Vicente Vicente, Germany]	Accepted; sentence corrected.
1652	14	23	14	24	phrase repetition [Tobias Rütting, Sweden]	Accepted - text revised.
2348	14	23	14	25	Confusing sentence [Manuel Llansola-Portoles, France]	Accepted, revised
284	14	23	14	26	The sentence [HLPE defines a sustainable food system as "a sustainable food system as "a food system that ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised".] is grammatically incorrect. [Santosh Kumar Mishra, India]	Accepted; sentence corrected
24288	14	28	14	28	The following reference on global institutional and governance arrangements for nutrition and food security could be added, if considered to fit: von Braun, J. & Birner, R. (2017): Designing global governance for agricultural development and food and nutrition security. Review of Development Economics, 21(2), 265-284. https://onlinelibrary.wiley.com/doi/epdf/10.1111/rode.12261 [Barron Joseph Orr, Germany]	Accepted
11786	14	28	14	28	Instead of writing "(economic, social and environmental) (HLPE 2017).", please write "(economic, social and environmental; HLPE 2017).". [Jacques Andre Ndione, Senegal]	Accepted - text revised.
20572	14	29	14	32	is one year representative for an overall pattern? If yes, then it would be good to state that in a clearer way. [Bettina Weber, Germany]	Noted; text updated - FAO et al. just issued a second report SOFI 2017 which confirms the trends reported since 2015 about rising rates of food insecurity and malnutrition (text to be updated with the new SOFI 2017 report)
15708	14	29	14	36	Could be included: 2000 millions of people suffer lack of micronutrients (http://www.fao.org/resources/infographics/infographics-details/es/c/471474/) [Maria del Pilar Salazar Vargas, Mexico]	Accepted; text revised.
1202	14	31	14	31	While food security is one of the main topics of the report (and is included in its title), this is the first mention of the number of currently chronically hungry people in the world -- on page 14. As mentioned above, this current context must be discussed sooner as part of the framing of where we are now and where we could be going. [Tonya Rawe, United States of America]	Accepted; chapter restructured and references to food and nutrition insecurity are brought earlier in the chapter

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3938	14	37	14	38	(and the ocean) to be changed into: and the ocean [Tarig Ibrahim, Sudan]	Accepted - text revised.
25734	14	37	14	39	Climate change leads to substantial variability in local weather, and thus often exacerbates production risks. This aspect could be discussed here, too. [Bernhard Brümmer, Germany]	Accepted; sentence revised
16254	14	37	14	39	Climate change affects every single aspect of the food systems; it does not affect ONLY land productivity, the nutritional quality of food and water supply availability of crops. Climate change is expected to result in more diseases which appear with higher frequency both for humans and animals as well as into a higher number of pests, but also to increased food losses (via affecting the perishability of food), to affect population in coastal zones due to sea level rise and finally to affect marine ecosystems and hence the production of fisheries and aquaculture (see also the FAO fisheries and aquaculture technical paper no. 627, http://www.fao.org/3/I9705EN/I9705en.pdf). For more details please refer to FAO. 2017. The future of food and agriculture – Trends and challenges. Rome. http://www.fao.org/3/a-i6583e.pdf [Lorenzo Giovanni Bellù, Italy]	Taken into account - text revised to account for the issue of climate-induced pests and diseases and their implications for food security.
1204	14	37	14	41	Reference was made earlier in another section to the impacts of climate change through other drivers. Similar reference should be made here regarding impacts of climate change on food security and food systems through different drivers, particularly socio-economic dynamics, power dynamics, etc. These factors influence not only access to resources (information, training, inputs, etc) to enable sustainable and resilient land use among chronically hungry or poor populations but also access to food (as household and social norms dictate who eats first/worst when food is scarce. Women do.). This may be covered further in the food security chapter, but at minimum, it's worth noting the other factors that influence or shape how climate impacts are felt. [Tonya Rawe, United States of America]	Accepted; sentence revised on socio-economic drivers through which cc affect food security
24902	14	37	14	44	Soils are absent in the paragraph and yet are critical to this point. Should add climate change and soils to this paragraph. [Dale Lockwood, United States of America]	Noted; combined with other comment (on direct and indirect impact of climate change on food security).
9742	14	41	14	42	This statement needs more references [Jan Fuglestedt, Norway]	Accepted; additional references on environment footprint of food system will be added
10374	14	42	14	42	"Desertification results in desert-like conditions that can be non-reversible." Desertification is a process that involves serious degradation of the resource bases that eventually results in forming desert: it is non-reversible [Zitouni Ould-Dada, Italy]	Taken into account - introduced after definition of desertification.
27170	14	42	14	42	"the food system generates environmental footprints" is an unacceptable euphemism for the massive GHG emissions and other impacts of the sector. It is most likely motivated by vested sectoral interests and such language questions the objectivity of the authors and, indeed, the IPCC. [Zoltán Rakonczay, Belgium]	Accepted, revised

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16112	14	42	14	44	"...At the same time, the food system generates environmental footprintswith direct and indirect impacts on climate change and generate negative externalities in the form of food waste and loss..." Note that food systems generate negative externalities because they use resources whose cost is not reflected in the costs paid by producers and not transferred to consumers via prices, such as the cost of degrading land, water pollution from use of chemical fertilizers, diseases and loss of biodiversity due to pesticides etc. Food waste and loss is not a negative externality per se, but can entail negative externalities as long as food production generates negative externalities, and/or entail specific negative externalities, due for instance to their disposal (landfills etc). This requires fixing. [Lorenzo Giovanni Bellù, Italy]	Taken into account - reference to negative and unaccounted for externalities from the food system is combined with other comments and included in the revised text.
25446	14	43	14	43	I am not clear why food waste and loss are described as externalities [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Noted; text revised
4030	14	43	14	43	replace "and generate" with "as well as" [Reid Detchon, United States of America]	Comment noted section totally updated and revised.
25444	14	18	15	5	This section contains no definition of food security [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised. Noted; missing definition of FS added
16104	14	18	15	5	Definition of food security missing. Reference to FAO SOFI. Sub-section 1.3.3.4. "Food security (definition, magnitude)" does not provide a definition of food security. Please use the FAO one as provided e.g. in FAO 2017, (SOFI, annex 3) derived from the World Food Summit in 1996: "Food security. A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Based on this definition, four food security dimensions can be identified: food availability, economic and physical access to food, food utilization and stability over time". In this subsection then, the authors could then use these four dimensions of food security to see how climate change has affected/ could affect them. This includes, for instance the impact on economic food access that goes through likely income changes of people getting their earnings through land-use (not only or not necessarily for food production) . In addition, please, consider extending the title of this section, that deals also with food systems and nutrition. [Lorenzo Giovanni Bellù, Italy]	Noted; definition of FS added; text revised accordingly
1198	14	18	15	5	The section is titled food security, but the discussion is entirely about food systems. These are related concepts, but they are not the same, and the lack of discussion of food security is problematic. The section should define food security, relying on already agreed global definitions from FAO and reference to the four pillars of food security, as the IPCC has already referenced (availability, access, utilization/quality, and stability). [Tonya Rawe, United States of America]	Noted; a clear distinction between food security and food system is made as is their linkage (also in the graphic on food system)
11290	14		44		Food waste / loss and water consumption - hopefully these get their own dedicated sections somewhere in the report. [Debra Roberts, South Africa]	Taken into account.
8876	14	4		40	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
2908	14	10		12	Thus this mean that land affected by desertification not clearly defined, but arid areas clearly defined? [Cordula Ott, Switzerland]	Accepted, revised

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2910	14	12		17	end of the last century? reference a bit old for 2018 [Cordula Ott, Switzerland]	Rejected - not supported by the peer-reviewed published literature after that.
2912	14	18			a general comment: this paragraph does not provide a good overview on the issue at hand. (Partially) missing: definition/magnitude; global-local level view; processes and impacts on food security... on estimated trends and on measures...? issue of distribution [Cordula Ott, Switzerland]	Taken into account; text revised (more detail treatment is found in chapter 5).
25906	14	18			Suggest to refer to the role of the food system for mitigation (i.e., diets) and degradation (i.e. production patterns) [Hans Poertner and WGII TSU, Germany]	Taken into account - combined with other comment.
17754	14	20			Insert "a" before "food" [Donald Smith, Canada]	Accepted - text revised.
1954	14	24			pg 14. In 24. missing " in the sentence [Mastura Mahmud, Malaysia]	Accepted - text revised.
2914	14	42			the food system does not generate environmental footprint, but footprint is a way to measure impact... [Cordula Ott, Switzerland]	Accepted; combined with other comments (revised figure 1.2 on food system)
5334	14	42			Desertification results in desert-like conditions that can be non-reversible. Desertification is a proces that involves serious degradation of the resource bases that eventually results in forming deser: it is non-reversible [Daniel Danano Dale, Italy]	Taken into account - introduced after definition of desertification
8878	14			40	Beinroth et al., 1994, delete other names and their initials [Amanullah Amanullah, Pakistan]	Accepted - text revised.
412	14				I would suggest adding depletion of groundwater aquifers in dry regions since these aquifers sustain agriculture in many arid areas but this resource is being rapidly depleted because of low precipitation (falling as rain or snow) in mountainous recharge areas. [Paul Glaser, United States of America]	Noted; reference to aquifer depletion in part due to changes in rainfall patterns and intensity is also relevant for climate change and food security (especially in mountainous regions)
890	15	12	14	12	In 2018 a systematic review on negative emission technologies (NETs) was published. It includes BECCS. The revision in divided into three parts. Please, check the references. Part 1: Jan C Minx et al 2018 Environ. Res. Lett. 13 063001. Part 2: Sabine Fuss et al 2018 Environ. Res. Lett. 13 063002. Part 3: Gregory F Nemet et al 2018 Environ. Res. Lett. 13 063003 [Jose Luis Vicente Vicente, Germany]	Reference noted but point already covered by current used citations. Fuchs et al also added to deforestation text box
5590	15	1	15	1	"reduce resilience to climate"? [Sanaz Moghim, Iran]	Accepted, revised
3940	15	1	15	1	degrade the resource base, reduce resilience to climate to be changed into: degrade the resource base and reduce resilience to climate [Tarig Ibrahim, Sudan]	Accepted - text revised.
14898	15	6	15	6	A work of coherence must be done between this section and the SR15 information on negative emissions. [Florian Claeys, France]	Taken into account; text revised upon alignment between this section and 1.5 degree report
3704	15	6	15	6	I cant see much about adaptation in this section (says the co-chair of WG III!). Can't have a section 1.3.4.5 on limits to adaptation if you havent talked about adaptation the first place. Either include specific adaptaton measures in this section, or change the title to cover only mitigation and postpone adaptation to Section 1.4? [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.

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27172	15	6	15	6	Section 1.3.4. gives a bizarrely biased and incomplete list of potential "strategies". It would make sense to start with the basics, which is the reduction of carbon losses (emissions). That should include reduced land take (permanent loss of productive land), reduced deforestation, reduced peat drainage/extraction and cultivation of organic soils, reduced conversion of grasslands to cropland and generally the reduction of loss of soil organic matter. It could then include with the (generally slower and often more expensive) measures of increasing sinks, like through optimising forest management, restoring land (including wetlands and peatlands), as well as afforestation. BECCS, bichar and other expensive, inefficient and rather speculative options should come last. [Zoltán Rakoncay, Belgium]	Comment noted section totally updated and revised.
24708	15	6	15	27	CCU and carbon based chemistry, linked with land, with water, with food security (algae), with energy, could also fit in this paragraph [Valerie Dermaux, France]	Rejected. Chapter 6 has man more details on different options
15090	15	8	15	8	Bioenergy with carbon capture and storage (BECCS) [Ahmed Imam, Egypt]	Comment noted section totally updated and revised.
3706	15	8	15	8	I wouldn't lead off with BECCS which hasn't been done. I'd start with established measures (e.g. ADAFF) then move on to the more speculative. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
27174	15	8	15	8	1.3.4.1 It is preposterous to start the list of "strategies" with a speculative, untested and risky approach (BECCS), while certain established and safe approaches are not even mentioned. BECCS should not be combined with "bioenergy". Bioenergy does have the potential to contribute to mitigation (provided that certain conditions are met, notably that the biomass is additional and the bioenergy replaces more polluting energy sources), but BECCS has not been proven to work even in theory. [Zoltán Rakoncay, Belgium]	Comment noted section totally updated and revised.
27260	15	8	15	11	The implication of the text here is that bioenergy crops and afforestation / reforestation is REQUIRED. There are quite a number of new scenarios considered in the context of the 1.5 report that do not REQUIRE large areas of land for CDR. Update with a more circumspect assessment based on the entire range of IAMs and other scenarios out there, not just the ones that have BECCS and A/R as their outputs. [Doreen Stabinsky, United States of America]	Emerging information from SR1.5 considered in revised text (1.3.2); details are provided in more depth in e.g., chapter 6
26708	15	8	15	27	Conclusions mentioned are based on BECCS from energy crops (1st generation), and only valid on BECCS from energy crops and not for 2nd generation and other waste to energy. It should be mentioned that other NET technologies - negative emission technologies - can be negative in emissions without use of CCS. E.g. anaerobic digestion from agricultural residues are used. Terminology on BECCS, NET etc needs consistency across the chapters. (BioGrace) (Environmental impact of biogas: A short review of current knowledge, Paolini et al, Journal of environmental science and health) [Knud Christensen, Denmark]	Rejected. Too detailed for chapter 1; chapter 6
16256	15	8	15	27	Please add on the costs of BECCS, including indirect costs arising from policies, if any. [Lorenzo Giovanni Bellù, Italy]	Rejected. Scope of chapter 6 & 7

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
7058	15	8	15	27	It would be useful if section 1.3.4.1 also expands more on non-BECCS forms of carbon dioxide removal (e.g. biochar), particularly regarding those approaches that would also support native species, and support local livelihoods to adapt to climate change. [Mariam Akhtar-Schuster, Germany]	Rejected. See response to 14300
14300	15	8	15	27	It would be useful if section 1.3.4.1 also expands more on non-BECCS forms of carbon dioxide removal (e.g. biochar), particularly regarding those approaches that would also support native species, and support local livelihoods to adapt to climate change. [Rattan Lal, United States of America]	Rejected. We try in ch1 to highlight some of the most critical aspects; due to word-limits we have to be selctive (rather than comprehensive); see chapter 6
16258	15	9	15	11	Socioeconomic pathways do not say anything about global warming but instead they do say about economic and population growth and how economic growth can be achieved, namely the contribution of sectors to the economic growth. Socioeconomic pathways do not say anything about emissions and negative emissions either. The sources you cited are not discussing socioeconomic pathways. Please do not get confused with studies discussing specific scenarios run in an integrated assessment framework. In such studies anything related to warming and to emissions has to do with specific assumptions underlying emission concentration pathways and not with the socioeconomic part. Obviously you need to say that you refer instead to integrated assessments and say what is being assessed instead of referring to socio economic pathways so please revise accordingly. The AR5 IPCC report is more detailed and informative so please at least refer to it! [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised. Sentence was ambiguous, agreed.
25126	15	9	15	11	Recommend inserting "most" at the beginning of this sentence, as NOT ALL socio-economic scenarios rely heavily on BECCS (eg US Midcentury Strategy report). [Sara Ohrel, United States of America]	Comment noted section totally updated and revised.
1658	15	9	15	11	The statement seems to dismiss a growing body of research on the significant climate benefits of ecosystem restoration [Simone Lovera-Bilderbeek, Paraguay]	We try in ch1 to highlight some of the most critical aspects; due to word-limits we have to be selctive (rather than comprehensive); see chapter 4
27176	15	11	15	14	Numbers are not plausible and, in any event, would need considerable explanation. It is unclear what "net uptake" is supposed to mean for BECCS. It is also unclear what "delivering" the energy means (delivered from the biomass as primary energy or delivered to society as useful energy?). Taking the low end of estimates stated would yield 150 EJ/yr delivered through the uptake of 3 GtC/yr. That is 50 GJ/ton of C "taken up". That is about twice the energy that wood can deliver without CCS (and the energy penalty). If IAM's project such rates, then IAM's are most likely wrong. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
9744	15	12	15	12	regarding "have been projected": I think the IAMs show what is needed to achive certain climate targets, and I am not sure if the word "projected" is the right word. I suggest you discuss how to present this with Kate Calvin or Alexander Popp. The terminalogy should be made consistent through the chapters. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.

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16110	15	12	15	12	Obscure sentence. "Median BECCS net carbon uptake rates of > 3 GtC/yr by 2100 delivering around 150-200 EJ/yr...". The reader, exposed to sentences like this one, do not know if 3 GtC/yr or 150-200 EJ/yr are big or small amounts as no term of comparison is provided. Please, provide terms of comparison for both indicators [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised.
24904	15	13	15	13	Add (IAMs) after the phrase, Integrated Assessment Models [Dale Lockwood, United States of America]	Accepted - text revised.
26932	15	13	15	13	Add "(IAMs)" after "Integrated Assessment Models" here (first use of the term in this chapter). [Knut Nadelhoffer, United States of America]	Accepted - text revised.
10114	15	13	15	13	To my knowledge Smith et al. (2016) does not include any IAM projections and is thus not a suitable reference for this statement. [Reinhard Prestele, Germany]	Accepted - text revised.
5846	15	14	15	15	is it right, isn't it opposite of the sentence on lines 11-12 in page 12? [Sanaz Moghim, Iran]	No contradiction. But a clear "showcase2 of how some model projections do not include all sustainability considerations.
10054	15	15	15	17	Robust conclusions (regarding BECCS potential) are not only prevented by the 'assumptions on land use intensity', but also by assumptions about land-use allocation as well as the technical implementation of BECCS in the models (e.g., competition for cropland between food and bioenergy crops allowed?). See for example the IAM description in Krause et al. (2017). Full reference: Krause, A., T. A. M. Pugh, A. D. Bayer, J. C. Doelman, F. Humpenöder, P. Anthoni, S. Olin, B. L. Bodirsky, et al. 2017. Global consequences of afforestation and bioenergy cultivation on ecosystem service indicators. Biogeosciences 14: 4829–4850. doi:10.5194/bg-14-4829-2017. [Reinhard Prestele, Germany]	Comment noted section totally updated and revised.
5848	15	15	15	17	"Robust conclusions On land use intensity have on calculations"? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
15092	15	18	15	18	Integrated assessment model (IAM [Ahmed Imam, Egypt]	Accepted - text revised.
2640	15	18	15	18	This 'medium evidence' statement is missing an accompanying 'agreement' statement. Both are needed for the IPCC uncertainty language. [Sarah Connors, France]	Accepted - text revised.
25128	15	19	15	19	Remove the words "thus 'the net ghg saving of bioenergy systems'" and add 'the estimated net GHG effects of BECCS systems'. because the net GHG effects from bioenergy systems is not solely decided by bioenergy crop yield assumptions and CCS energy demand. It is decided by a large range of other factors, including how the biomass is produced, harvested and used, the land use prior to bioenergy production, etc in addition to those factors. [Sara Ohrel, United States of America]	Comment noted section totally updated and revised.
9746	15	20	15	20	"carbon debt" needs explanation [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.

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27178	15	20	15	20	Reference to "carbon debt" needs explanation and probably meaningless. "Carbon debt" is not a standard term, and several different, mutually exclusive (and even internally inconsistent) definitions exist. However, they mostly compare initial emissions with eventual benefits. However, assuming the idealised (and rather unrealistic) models of BECCS in the literature, biomass would be burnt with most of the resulting CO2 captured and sequestered. That is also strongly suggested by the previous paragraph which associates BECCS with net C uptake. Under those assumptions, no carbon debt should exist, as carbon is not emitted. It is also unclear what "natural vegetation clearance" refers to. BECCS would work the same from natural vegetation as from plantations. If the reference to "clearance" suggests that vegetation would be cleared to make space for plantations used for BECCS, then it is unreasonable why natural vegetation would be cleared unabated instead of feeding it to BECCS. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
1208	15	23	15	27	mention is made earlier in the chapter to increasing competition for land, as the services land must deliver multiply. That reference could be repeated here, in the discussion of growth of bioenergy crops. This competition then interacts with socio-economic or governance dynamics to shape who is at greater risk of competition, encroachment, or worse. [Tonya Rawe, United States of America]	Comment noted section totally updated and revised.
14900	15	28	15	28	The scope of this subsection should be broadened to natural climate solutions (Griscom et al. 2017), included Improved Forest Management. The different risks of land carbon should be presented: leakage, additionality and non-permanency; [Florian Claeys, France]	Comment noted section totally updated and revised.
27180	15	28	15	28	1.3.4.2 Avoided deforestation should be separated from afforestation, as they are entirely different activities involving totally different challenges. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised. agreed, unfortunately IAM scenarios often combine both, despite being separate issues. We try and clarify this in revised section
27182	15	28	15	28	1.3.4.2 Reforestation should not be mentioned, or it should be explained. It was used as a quasi synonym to afforestation under the Kyoto Protocol. However, this report is not bound by the conventions of the KP, so no need to use a redundant term. Moreover, this report ignores (and even seems to deliberately avoid) using KP (and earlier IPCC) terminology even when it would be very useful. So it is both unreasonable and unlikely that "reforestation" is used under the current understanding of the KP. But then the question is what it would be. If it refers to replanting after harvest, then it should be addressed under forest management, together with forest harvest. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised. see X-chapter box
24906	15	28	15	29	Move the acronym, ADAFF from the first line of the paragraph to the header for consistency [Dale Lockwood, United States of America]	Accepted - text revised.
18600	15	28	15	44	it would be better to exclude 'avoided deforestation' in this section. perhaps split out this into another section. planting new trees on degraded land is an improvement.. Preventing the loss of standing carbon stocks should be separated, and managed independently here maintaining land cover. [Justin Borevitz, Australia]	Comment noted section totally updated and revised.

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15710	15	29	15	31	as well as a natural solution (https://global.nature.org/initiatives/natural-climate-solutions/natures-make-or-break-potential-for-climate-change) [Maria del Pilar Salazar Vargas, Mexico]	Comment noted section totally updated and revised.
892	15	30	15	30	In 2018 a systematic review on negative emission technologies (NETs) was published. It includes afforestation and reforestation. The revision is divided into three parts. Please, check the references. Part 1: Jan C Minx et al 2018 Environ. Res. Lett. 13 063001. Part 2: Sabine Fuss et al 2018 Environ. Res. Lett. 13 063002. Part 3: Gregory F Nemet et al 2018 Environ. Res. Lett. 13 063003 [Jose Luis Vicente Vicente, Germany]	Reference noted but point already covered by current used citations. Fuchs et al also added to deforestation text box
15094	15	31	15	32	Carbon storage potential of ADAFF has been estimated to be principally of similar magnitude as BECCS [Ahmed Imam, Egypt]	Comment noted section totally updated and revised.
24908	15	33	15	33	change Integrated Assessment Models to IAMs [Dale Lockwood, United States of America]	Accepted - text revised.
24910	15	34	15	34	phrase, "and poorly (if at all) account" is quite awkward - consider revising [Dale Lockwood, United States of America]	Accepted - text revised.
5850	15	37	15	38	not well-written! [Sanaz Moghim, Iran]	Noted, copyedit to be completed prior to publication.
5948	15	37	15	38	sentence structure! [Sanaz Moghim, Iran]	Noted, copyedit to be completed prior to publication.
15096	15	44	15	44	Reforestation, Deforestation, and Reducing Emissions from Deforestation and Forest Degradation (REDD+) [Ahmed Imam, Egypt]	Comment noted section totally updated and revised.
7482	15	6	16	25	if these paragraphs aim to give a summary of mitigation options, they are incomplete, and should not only refer/emphasise biochar, but all SLM measures that can contribute to carbon sequestration or emission reduction from land use (see for example: Griscom, et al, 2017. Natural climate solutions. PNAS, 114(44): 11645-11650. [Joris de Vente, Spain]	Comment noted section totally updated and revised.
21330	15	6	16	25	The entire section 1,3,4 should be revised thus the subsections and the grouping do not make logical sense: and evenmore are not consistent with any agreed classifications: for instance: why merging soil C sequestration with Biochar? Why mixing avoided deforestation with reforestation/afforestation? the proposed acronym, ADAFF is not used by either other IPCC reports or UNFCCC reporting and nomenclature! [Martial Bernoux, Italy]	Comment noted section totally updated and revised.
26762	15	28	16	6	This paragraph underemphasizes the "no regrets" value of maintaining the world's dwindling natural forests (both for carbon storage and continuing sequestration, as well as other ecosystem services), and is unnecessarily negative with respect the balance between benefits and risks of REDD+. While there is not 100% alignment of priority regions for carbon sequestration and biodiversity conservation, the alignment is nevertheless quite high. [Frances Seymour, United States of America]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
11918	15	28	16	6	National scenario analyses from Finland were used to examine the effects of harvesting intensity on the development of forest resources, timber supply, carbon balance, and biodiversity indicators of Finnish forestry in nine 10-year simulation periods. They show that the volume increment and the total carbon balance of forestry were the higher, the lower was the harvested volume. Volume increment increased for several decades when harvested volume was less than the current volume increment. Low harvested volume increased the values of biodiversity indicators, namely volume of deciduous trees, amount of deadwood and area of old forest. Heinonen et al 2017: https://www.sciencedirect.com/science/article/pii/S1389934116303823 [Hanna Aho, Belgium]	Comment noted section totally updated and revised.
11920	15	28	16	6	Changes in forest management regimes can have a significant contribution (natural forest management). A study found that by extending the rotation period and using less-intensive thinnings compared to current practices, the steady-state carbon stocks could be increased by half while maintaining current harvest levels. Pingoud et al: https://www.sciencedirect.com/science/article/pii/S0301479717312641 [Hanna Aho, Belgium]	Rejected. We try in ch1 to highlight some of the most critical aspects; due to word-limits we have to be selctive (rather than comprehensive); see chapter 6
25130	15	28	16	6	Though IAMs don't usually have detailed forest sector modules, other models/modeling types do and these can lend more detail/insights to this section (IIASA's GLOBIOM, Sohngen's Global Timber Model), and in some cases outputs from these models have been used as inputs into IAMs to help give better representation of forestry in IAM modeling (eg national stduy in US Midcentury Strategy report). [Sara Ohrel, United States of America]	Comment noted section totally updated and revised.
27262	15	28	16	7	Missing throughout the text is a discussion of RESTORATION. For example, the category re/afforestation does NOT contain "forest restoration." Likewise, there could be consideration of ecosystem restoration and land restoration. Sustainable land management sort of captures these processes, however if some elements of SLM, such as re/afforestation, are mentioned, there should be parallel and equally substantive discussion of ecosystem, land, and forest restoration. [Doreen Stabinsky, United States of America]	Rejected. We try in ch1 to highlight some of the most critical aspects; due to word-limits we have to be selctive (rather than comprehensive); see chapter 4
10692	15	6	17	29	This section is missing mitigation of non CO2 emissions, while they represent more than 50% of AFOLU emissions. In particular, fertilizers, manure management and application, but alos rice cultivation (methane). While enteric methane is not directly land based, grazing management and feeding improvement can have a positive impact on enteric methane emissions too. Productivity improvements in livestock can result in land sparing. etc. [Anne Mottet, Italy]	Comment noted section totally updated and revised.
25334	15	6	17	29	Chapter 1.3.4 on land-based mitigation lists various options for land-based mitigation, but fails to differentiate between reforestation and afforestation, listed together in 1.3.4.2, even though they could have very different implications as mitigation and adaptation strategies (including re impacts on biodiversity, land, permanence of mitigation and adaptation benefits etc). It is hence important that the cross-chapter text box on afforestation/reforestation, the placeholder for which is currently on page 16, makes the difference between these two clear. Natural forest management is not listed at all under 1.3.4 despite its important sinks and mitigation potential identified in Griscom et al 2017 paper. [Kaisa Kosonen, Finland]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
16108	15	6	17	29	Unclear rationale of section 1.3.4. Section 1.3.4 "Land-based climate change mitigation and adaptation strategies". This section looks as an anticipation of chapter 6, but only one incidental reference to chapter 6 exists almost at the end of the section (p.16, line 20). So, the reader may not know why this section is put there. Is this section assumed to contribute to highlight the conceptual framework and structure of the whole report? If yes, this has to be clearly stated and the reader has to find a clear correspondence with the topics addressed in chapter 6. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
826	15	6	17	29	What about the destruction of peatlands particularly the tropics? Peatlands store enormous quantities of carbon but are particularly sensitive to climate change and artificial drainage. Perhaps the most important example of the later human-induced impact has been in tropical SE Asia where a majority of tropical peat domes have been converted to agricultural plantations in Malaya, Borneo, and Sumatra. I suggest including a sub-section on peatlands along with these references: [Paul Glaser, United States of America]	Rejected . chapter 2
828	15	6	17	29	Dommain, R., Couwenberg, J., Glaser, P.H., & Suryadiputra, I. N. N. (2014). Carbon storage and release in Indonesian peatlands since the last deglaciation. <i>Quaternary Science Reviews</i> , 97, 1–32. Dommain, R., Dittrich, I., Giesen, W., Joosten, H., Rais, D. S., Silvius, M., & Wibisono, I. T. C. (2016). Ecosystem services, degradation and restoration of peat swamps in the Southeast Asian tropics. In Bonn, A., Allott, T., Evans, M., Joosten, H., & Stoneman, R. (Eds.) <i>Peatland Restoration and Ecosystem Services: Science, Policy and Practice</i> (pp. 253–288). Cambridge: Cambridge University Press. Dommain, R., S. Frolking, A. Jeltsch-Thömmes, F. Joos, J. Couwenberg, and P. Glaser (in press). A radiative forcing analysis of tropical peatlands before and after their conversion to agricultural plantations. <i>Global Change Biology</i> Page, S. E., Rieley, J. O., & Banks, C. J. (2011). Global and regional importance of the tropical peatland carbon pool. <i>Global Change Biology</i> , 17, 798–818. [Paul Glaser, United States of America]	Noted, thanks.
4032	15	6	17	29	The sequence of this section is poor. It should lead with forests and agriculture (missing!) before turning to BECCS. [Reid Detchon, United States of America]	Accepted chapter restructured.
5010	15	6	17	29	This section might be strengthened with a linkage to Chapter 6, which includes a wider range of land-based climate mitigation and adaptation strategies than addressed here in Section 1.3.4. [Renee van Diemen, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
1206	15	6	17	29	The title of the section indicates discussion of adaptation strategies, but these are not well-discussed. Reference is made in the SLM section that follows to conservation agriculture, sure. However, this section should either be retitled or discussion of adaptation strategies should be included, i.e. approaches like conservation agriculture, agroecology, agroforestry, or practices like intercropping with nitrogen-fixing crops. [Tonya Rawe, United States of America]	Accepted chapter restructured.
26786	15	18	18	27	Turner et al. 2018. Climatic Change doi.org/10.1007/s10584-018-2189-z [Daniel Zarin, United States of America]	references useful some or all added.

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2916	15	1		5	clarify this sentence! ... Is this paragraph a summary of chapter 5? [Cordula Ott, Switzerland]	Noted; the sentence is a definition of food system from HLPE-CFS
8880	15	5		33	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
5338	15	6			restauration. Is it restoration? . 3rd line in the box [Daniel Danano Dale, Italy]	Accepted - text revised. box now developed
17756	15	14			remove first "%" [Donald Smith, Canada]	Accepted - text revised.
20574	15	18			abbreviation "IAMs" not explained, yet [Bettina Weber, Germany]	Accepted - text revised.
1956	15	18			pg 15. In 18. Acronym IAM is not introduced prior to this sentence but later on page 15 line 33. [Mastura Mahmud, Malaysia]	Taken into account - combined with other comment.
17758	15	24			This is far less clear for advanced biofuels. Again, I could supply a few concise sentences on this, should it be felt helpful. [Donald Smith, Canada]	Rejected. To my knowledge land-area needed for bioenergy is large even for 2nd generation bioenergy, depending on socioeconomic conditions
27184	15	28			1.3.4.2 whole section and elsewhere: it is unhelpful to introduce unprecedented and confusing acronyms like ADAFF. [Zoltán Rakonczay, Belgium]	Acronyms will be reduced.
5336	15	29			Avoided deforestation, reforestation and afforestation (ADAFF) . This sounds like avoided reforestation as a good measure for tackling emission of GHG [Daniel Danano Dale, Italy]	Comment noted section totally updated and revised.
17760	15	32			Change "than" to "to". [Donald Smith, Canada]	Accepted - text revised.
26934	15	32			Change, "similar magnitude than BECCS" to "similar magnitude to BECCS". [Knut Nadelhoffer, United States of America]	Accepted - text revised.
1958	15	33			page 15 line 33. Integrated Assessment Models (IAM) that is only introduced here, should be placed earlier at line 18, pg 15. [Mastura Mahmud, Malaysia]	Accepted - text revised.
1960	15	40			Pg 15, Line 40. Section 1.3.3.1, capitalize first letter of chapter [Mastura Mahmud, Malaysia]	Accepted - text revised.
1962	15	44			pf 15, line 44, acronym for 'REDD+' is not introduced before this sentence. [Mastura Mahmud, Malaysia]	Accepted - text revised.
6478	15				1.3.4.2 - where does culture fit in here - it is relevant in terms of impact upon cultural heritage, both tangible and intangible but also that the land in question has cultural value. [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Rejected. Governance discussed in ch. 7

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414	15				<p>What about the destruction of peatlands particularly the tropics? Peatlands store enormous quantities of carbon but are particularly sensitive to climate change and artificial drainage. Perhaps the most important example of the later human-induced impact has been in tropical SE Asia where a majority of tropical peat domes have been converted to agricultural plantations in Malaya, Borneo, and Sumatra. I suggest including a sub-section on peatlands along with these references:</p> <p>Dommain, R., Couwenberg, J., Glaser, P.H., & Suryadiputra, I. N. N. (2014). Carbon storage and release in Indonesian peatlands since the last deglaciation. <i>Quaternary Science Reviews</i>, 97, 1–32.</p> <p>Dommain, R., Dittrich, I., Giesen, W., Joosten, H., Rais, D. S., Silvius, M., & Wibisono, I. T. C. (2016). Ecosystem services, degradation and restoration of peat swamps in the Southeast Asian tropics. In Bonn, A., Allott, T., Evans, M., Joosten, H., & Stoneman, R. (Eds.) <i>Peatland Restoration and Ecosystem Services: Science, Policy and Practice</i> (pp. 253–288). Cambridge: Cambridge University Press.</p> <p>Dommain, R., S. Frohling, A. Jeltsch-Thömmes, F. Joos, J. Couwenberg, and P. Glaser (in press). A radiative forcing analysis of tropical peatlands before and after their conversion to agricultural plantations. <i>Global Change Biology</i></p> <p>Page, S. E., Rieley, J. O., & Banks, C. J. (2011). Global and regional importance of the tropical peatland carbon pool. <i>Global Change Biology</i>, 17, 798–818. [Paul Glaser, United States of America]</p>	Rejected. Chapter 2
3304	16	1	16	6	There is no mention of trees outside the forests and urban forests=plantations in this para which may please be included [Suresh Kumar, India]	Comment noted section totally updated and revised.
20202	16	2	16	6	What is meant by spill-over effect is not clear, and it is misleading to label savannah and temperate grassland to be more carbon rich than forests. [Kaoru Kitajima, Japan]	Accepted - text revised.
25166	16	6	16	6	It will important to have a map showing the loss overtime. Realise in whole chapter we have not used any map - it helps visualise the impacts as the other section addresses these issue and solution [Mohammed Yahya Said Yahya, Kenya]	Comment noted section totally updated and revised. map included
25448	16	6	16	7	The box will have to address the question of impacts on ecosystem services for whom - who has and will have access to the services being impacted [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised. Text limit in the box restricts unfortunately a more extensive discussion.
17042	16	6	16	7	The content of this cross-chapter box will be a very important part of this chapter. Information on impacts on ecosystems services, and on regional and climate, and associated risks will be very important considerations for policymakers. [Lourdes Tibig, Philippines]	Comment noted section totally updated and revised.
5594	16	6	16	7	in the box: "ecosystem services such as erosion and flood control, water and air quality, as biodiversity"? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
19652	16	7	16	7	The impacts of ADAFF on health, especially of indigenous populations, have been described in case studies. It might be appropriate to refer to some of these implications as for example described in CJP Colfer's book "Human health and forests" (2012). [Birgit Kuna, Germany]	Comment noted section totally updated and revised.

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14902	16	8	16	8	This subsection should include other biosourced materials than wood products (Peñaloza et al. 2016). Substitution effects, and their limits, should be better explained. - Peñaloza, D., Erlandsson, M., & Falk, A. (2016). Exploring the climate impact effects of increased use of bio-based materials in buildings. <i>Construction and Building Materials</i> , 125, 219-226. [Florian Claeys, France]	Comment noted section totally updated and revised.
25132	16	8	16	8	There is more information that can be addressed for wood products than only substitution with cement. Timber/wood products are globally traded commodities and the demand and supply of wood for products is a huge factor when it comes to land use and land use change. for example, if global prices for wood (say sawtimber) are really low, one may see more land shifting out of forestry into higher rent uses (ag, urban), therefore the economics of forestry, which depend substantially on wood product demand, are an essential element that should not be overlooked here. [Sara Ohrel, United States of America]	Comment noted section totally updated and revised.
11916	16	8	16	13	Evidence on wood utilization reducing emissions is limited. On the contrary in Finland, over a 100-year period, using wood for materials and fossil fuel substitution was shown to be a net source of carbon. The forests' lost ability to remove carbon was not compensated by the avoided emissions. The wood utilization decrease net carbon emissions with a probability lower than 40% for each of the studied scenarios. Soimakallio et al 2016: https://pubs.acs.org/doi/pdf/10.1021/acs.est.6b00122 [Hanna Aho, Belgium]	Comment noted section totally updated and revised.
16260	16	8	16	13	Please elaborate more on section 1.3.4.3. Please add on the costs of using wood in the building sector and on its adequacy for buildings located in seismic zones or in zones affected by natural hazards – also due to extreme weather events – as well as for constructing buildings of several floors. It would be also interesting to see some discussion on the institutional set up required to have properly managed forests and timber activities as managing forests may lie between public and private services, both of which may not always act supplementary but competitive may the institutional set up be inadequate. [Lorenzo Giovanni Bellù, Italy]	Rejected. Chapter 6
19594	16	8	16	13	Why limit/ overfocus on wood, at exclusion of alternative/ more sustainable materials esp. such as hemp? (*not* the cannabis side of the family, but food & industrial version), e.g. https://www.hort.purdue.edu/newcrop/ncnu02/v5-284.html [Rianne ten Veen, Netherlands]	Comment noted section totally updated and revised.
1660	16	8	16	13	The comment about the carbon storage potential of wood is based on limited evidence and ignores alternative scenarios like efficiency measures in the building sector, which can avoid the use of both cement and wood. Moreover, there is no comparison with potentially more beneficial materials like bamboo [Simone Lovera-Bilderbeek, Paraguay]	Comment noted section totally updated and revised.
5596	16	9	16	9	I disagree with " The use of wood", where do you get wood, trees! it means deforestation. [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
2350	16	9	16	12	I do not consider that this is a real solution. It really seems like improvised short term solution. Maybe it needs further explanation to understand exactly what the authors mean. [Manuel Llansola-Portoles, France]	Comment noted section totally updated and revised.

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17362	16	9	16	13	The contribution of cement in carbon emission needs more discussion according to Xi. F., S. J. Davis, P. Ciais, et al., (2016). "Global carbon uptake from cement carbonation." Nature Geoscience [Fei Lu, China]	Comment noted section totally updated and revised.
21334	16	12	16	25	Consider adding about agroforestry area and its potential for LBM [Soora Naresh Kumar, India]	Comment noted section totally updated and revised.
24290	16	14	16	14	A section could be added on Non-wood Forest Products (NWFP), also called Non-timber Forest Products (NTFP). The concept of NTFPs was first coined by DeBeer & McDermott (1989), who defined them as "all biological materials other than timber, which are extracted from forests for human use." (ibid.: 17). For an overview on challenges and, particularly, opportunities of the NTFP sector for co-benefits (chapter 1.3.4.6) including for reconciling biodiversity conservation (SDG 15) and climate change mitigation/adaptation (SDG 13) with food security (SDG 2) and poverty reduction (SDG 1) livelihoods of over 1.5 billion who use NTFP according to Shanley et al. (2015), see e.g. Guariguata et al. (2017), Wunder et al. (2014) and Shackleton & Pandey (2013). [Barron Joseph Orr, Germany]	Comment noted section totally updated and revised.
14968	16	14	16	14	- Soussana, J. F., Loiseau, P., Vuichard, N., Ceschia, E., Balesdent, J., Chevallier, T., & Arrouays, D. (2004). Carbon cycling and sequestration opportunities in temperate grasslands. Soil use and management, 20(2), 219-230. - Tubiello, F. N., Soussana, J. F., & Howden, S. M. (2007). Crop and pasture response to climate change. Proceedings of the National Academy of Sciences, 104(50), 19686-19690. - Soussana, J. F., & Lemaire, G. (2014). Coupling carbon and nitrogen cycles for environmentally sustainable intensification of grasslands and crop-livestock systems. Agriculture, Ecosystems & Environment, 190, 9-17. [Florian Claeys, France]	Comment noted section totally updated and revised.
6608	16	14	16	25	Biochar and soil carbon sequestration should not be discussed at the same level; While the effects of biochar are highly uncertain, soil organic carbon sequestration comes with large benefits in terms of soil quality and ecosystem services, which respond to multiple SDGs (Chabbi et al., 2017) Chabbi, A., Lehmann, J., Ciais, P., Loescher, H.W., Cotrufo, M.F., Don, A., SanClements, M., Schipper, L., Six, J., Smith, P., Rumpel, C. (2017) Aligning agriculture and climate policy. Nature Climate Change, 7, 307-309. [Cornelia Rumpel, France]	Comment noted section totally updated and revised.
27264	16	14	16	25	This is a balanced treatment of what is known / not known about biochar. The treatment in a later chapter is incredibly biased in favor of biochar. The later chapter should be brought into balance with this framing. [Doreen Stabinsky, United States of America]	Comment noted section totally updated and revised.
26710	16	14	16	25	Loss of nutrients (most importantly immobilisation of P) associated with pyrolysis should be mentioned as a challenge that needs attention. Mentioned in text here or elsewhere in the chapters. [Knud Christensen, Denmark]	Comment noted section totally updated and revised.
16262	16	14	16	25	A caveat of the studies you are citing is that they do not take into account neither opportunity costs nor changes in prices which may occur when selecting the one or the other technology. Can you please give some reflection on these missing elements and how they may change the costs you are referring to? [Lorenzo Giovanni Bellù, Italy]	Rejected. chapter 6

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15712	16	14	16	25	industrial scale of biochar production and its potential impact in biodiversity could be explained [Maria del Pilar Salazar Vargas, Mexico]	Comment noted section totally updated and revised.
742	16	14	16	25	The chapter "1.3.4.4 Biochar and soil carbon sequestration" is way too short and does not give the issue due credit. Also, I disagree with the general statement that "Enhancing soil carbon or adding biochar has been found to be beneficial for soil properties... and yields, but generalisation overall is difficult". I think the opposite is true: there is overwhelming evidence that increasing soil_organic_carbon almost by default increases soil fertility and yields. Finally, I would also suggest not to merge soil carbon sequestration and biochar. These are different topics with quite different tradeoffs involved, that should not be muddled up. [Rolf Sommer, Kenya]	Rejected. chapter 4, chapter 6
1662	16	14	16	25	Biochar and soil carbon sequestration are two distinct approaches that deserve a distinct analysis, especially as biochar would require large areas of land for biomass production, while other forms of soil carbon sequestration do not require this. [Simone Lovera-Bilderbeek, Paraguay]	Comment noted section totally updated and revised.
24710	16	14	16	26	It would be interesting also to add the concern of utilising organic matter as first priority, before thinking about transforming it into mineral matter, in a circular economy view [Valerie Dermaux, France]	Comment noted section totally updated and revised.
894	16	15	16	25	In 2018 a systematic review on negative emission technologies (NETs) was published. It includes biochar and soil carbon sequestration. The revision is divided into three parts. Please, check the references. Part 1: Jan C Minx et al 2018 Environ. Res. Lett. 13 063001. Part 2: Sabine Fuss et al 2018 Environ. Res. Lett. 13 063002. Part 3: Gregory F Nemet et al 2018 Environ. Res. Lett. 13 063003 [Jose Luis Vicente Vicente, Germany]	Reference noted but point already covered by current used citations. Fuchs et al also added to deforestation text box
9748	16	18	16	18	No need to use the unit "CO2-eq" when you talk about only carbon. [Jan Fuglestedt, Norway]	Comment noted section totally updated and revised.
10056	16	18	16	19	These estimates may be quite optimistic and barriers to adoption of management techniques as well as history of soil use are likely to limit the carbon uptake potential. These potential limitations should be mentioned as well. See for example Prestele et al. (2018), Sanderman et al. (2017). Full references: Prestele, R., A. L. Hirsch, E. L. Davin, S. I. Seneviratne, and P. H. Verburg. 2018. A spatially explicit representation of conservation agriculture for application in global change studies. <i>Global Change Biology</i> . doi:10.1111/gcb.14307.; Sanderman, J., T. Hengl, and G. J. Fiske. 2017. Soil carbon debt of 12,000 years of human land use. <i>Proceedings of the National Academy of Sciences</i> . doi:10.1073/pnas.1706103114. [Reinhard Prestele, Germany]	Comment noted section totally updated and revised.
2352	16	19	16	19	Could you give some numbers for LOW? [Manuel Llansola-Portoles, France]	Comment noted section totally updated and revised.

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10058	16	23	16	25	The assumption that soil carbon storage and addition of biochar do not lead to competition for land is not studied well enough to make such a statement. For example, SOC enhancing management practices can lead to yield losses under certain circumstances (Pittelkow et al., 2015), which may lead to clearance for cropland elsewhere (displacement effect). Even in the case of co-benefits (high yields + carbon storage), cropland expansion may be induced due to higher revenue for the farmers (rebound effect; Lambin and Meyfroidt 2011). Full references: Pittelkow, C. M., B. A. Linquist, M. E. Lundy, X. Liang, K. J. van Groenigen, J. Lee, N. van Gestel, J. Six, et al. 2015. When does no-till yield more? A global meta-analysis. Field Crops Research 183: 156–168. doi:10.1016/j.fcr.2015.07.020.; Lambin, E. F., and P. Meyfroidt. 2011. Global land use change, economic globalization, and the looming land scarcity. Proceedings of the National Academy of Sciences of the United States of America 108. National Academy of Sciences: 3465–72. doi:10.1073/pnas.1100480108. [Reinhard Prestele, Germany]	Comment noted section totally updated and revised.
3708	16	26	16	26	haven't done adaptation yet! [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised. Section on adaptation added
7484	16	26	16	26	seems strange to start here about limitations and mal-adaptation, before introducing what adaptation refers to and present the potential for adaptation (drought resilience, flood prevention etc..) [Joris de Vente, Spain]	Comment noted section totally updated and revised. Has been removed
18598	16	26	16	32	adaptation by planting drought tollerant trees would also draw down carbon. This is not direct mitigation of fossile emissions, rather biological negative meissions. maladaptation and malmitigation are confusing terms, perhaps failed adaptation or mitigation is better [Justin Borevitz, Australia]	Comment noted section totally updated and revised.
6528	16	26	16	32	maybe add that development agencies and research institutions have over the years focused more on climate change mitigation than on adaptation as a vision on its own separate from mitgiation. This was highlighted again by Cheick Mbow in the just ended Adaptation Futures conference in Cape Town. [Ojong.E nee Enokenwa Baa, South Africa]	Comment noted section totally updated and revised.
6858	16	26	16	32	What is the definition of malmitigation in the context of the report? Could this be added into the glossary? [Wilfran Moufouma Okia, France]	Comment noted section totally updated and revised.
15098	16	27	16	27	Climate change adaptation involves actions aims at achieving higher resilience to a changing climate [Ahmed Imam, Egypt]	Comment noted section totally updated and revised.
9750	16	30	16	30	What is meant by "metric system" here? Please clarify. [Jan Fuglestedt, Norway]	Accepted definition clarified.
10060	16	30	16	32	An example for this statement would be very helpful to illustrate co-benefits between adaptation and mitigation. [Reinhard Prestele, Germany]	Comment noted section totally updated and revised.
5598	16	31	16	31	"or vice versa" like what? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
5600	16	32	16	32	"objectives"? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.

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7012	16	7	17	7	Air quality is briefly mentioned in this proposed box. Air quality needs to be discussed more fully in the context of Land Use. There is considerable literature on this, here's just one example out of many: Impact of climate and land cover changes on tropospheric ozone air quality and public health in East Asia between 1980 and 2010 By: Fu, Y.; Tai, A. P. K. ATMOSPHERIC CHEMISTRY AND PHYSICS Volume: 15 Issue: 17 Pages: 10093-10106 Published: 2015 [William Collins, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
20810	16	26	17	8	Limits of global vulnerability studies to coastal areas would apply to terrestrial areas as well. These are discussed in: Comte, A., Pendleton, L., Bailly, D., Quillérou, E. Conceptual advances on global scale assessments of vulnerability: Informing investments for coastal populations at risk of climate change. Marine Policy, In review. The paper also suggests an alternative approach: impact studies at the global level and vulnerability assessment at the local level. This to better distangle the factors driving to contrasted rankings of countries for priority action by global level assessments. [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
17044	16	26	17	8	Subsection is on limits to adaptation, maladaptation and malmitigation. I find the discussion here very interesting and useful. It needs to be explained further ; but I find the word "limits" not reflective of what it wants to convey. [Lourdes Tibig, Philippines]	Accepted. There is a revised section on mitigation and adaptation benefits.
5592	16	3	18	5	it is not that easy, agriculture provides food and we cannot transform it easily, but we can stop agriculture extension! [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
8882	16	2		39	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
2918	16	5		6	how to link ADAFF to SDGs, respectively impacts on societies and livelihoods... societal goals/justice [Cordula Ott, Switzerland]	Rejected. Not sure I fully understood this comment - but seems to link more to issues addressed in chapter 7
25234	16	6			the last sentence beginning with risks, associated with e.g. from risks to the forest per se. delete the words risks to [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
1964	16	6			pg 16. after line 6. This section (presumably a Box) is not completed/developed, yet the draft report was scheduled for FOD review. [Mastura Mahmud, Malaysia]	Accepted - text revised.
1966	16	6			pg 16. after line 6. Box ? Line 3 restoration? check spelling [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
6480	16	7			text box needs to acknowledge cultural impacts and context for afforestation/reforestation [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
6482	16	8			as well as wood products a more general consideration of traditional construction materials and techniques? Thatch? Adobe? Wattle and daub, rammed earth? Cobb? [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
27186	16	14			1.3.4.4. whole section: "biochar" should be separate from soil organic carbon management. SOC management is serious and feasible, biochar is largely speculative and unproven. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
27188	16	14			1.3.4.4. whole section: Instead of "soil carbon sequestration", it should be "soil organic carbon management". The avoidance of soil C losses is at least as important as increased sequestration. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
27190	16	14			1.3.4.4. The "biochar" discussion should be separated. Assuming (but not necessarily allowing) that charring biomass offers a viable mitigation strategy, the resulting char can be more safely and efficiently sequestered in locations other than the soil, such as in landfills or abandoned mines, etc. Incorporation in the soil makes sequestration less certain (and the char is less likely to be stable), more expensive and energy intensive (need for spreading), more difficult to monitor. It also involves considerable risks to soils and to the environment (including the reduction of albedo and the pollution of black carbon). The only case where incorporation into soils should be considered is when significant improvements of the soil are demonstrated, risks are mitigated. Neither is generally proven. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
18812	17	1	17	2	You can also reference SR1.5 as adaptation and mitigation are discussed in 4.3.2 and synergies and trade-offs between them in 4.5. [Debora Ley, Guatemala]	References useful some or all added.
27192	17	1	17	8	Examples of mal-mitigation should not be limited to "developing regions". In particular, bioenergy policies of developed regions (in particular ethanol in the US and biodiesel, solid biomass in the EU) have been shown to be counter-productive from a mitigation perspective, although all those policies were justified largely by mitigation objectives. [Zoltán Rakonczay, Belgium]	Comment noted section totally updated and revised.
17046	17	3	17	4	The idea of introducing the term "mal-mitigation" is excellent. [Lourdes Tibig, Philippines]	Comment noted section totally updated and revised.
25450	17	4	17	4	Is it the term "mal-mitigation" or the phenomenon which has not been discussed? Negative secondary effects of both REDD+ and promotion of biofuels are discussed in AR5 WG2 Chs. 9 and 13, among many other sources. [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured. Analysis and reference on maladaptation discussed.
5602	17	4	17	7	"severe consequences that are in conflict with ..." like what? [Sanaz Moghim, Iran]	Comment noted section totally updated and revised.
6610	17	4	17	8	Sol C sequestration as land-based climate change mitigation option does not have negative effects in terms of SDGs, in contrast, several of them are supported similarly to the climate one. [Cornelia Rumpel, France]	Comment noted section totally updated and revised.
10376	17	5	17	5	"land-based climate mitigation might have severe consequences that are in conflict with the achievement of sustainable development goals such as no poverty, zero hunger and life on land (UN 2015)." How? Even if it could it is only for short term. In the long term it does not affect the achievement instead it ameliorates [Zitouni Ould-Dada, Italy]	Accepted chapter restructured.
24912	17	6	17	7	For consistency, list the numbers of the SDGs as well as the names. [Dale Lockwood, United States of America]	Comment noted section totally updated and revised.
9602	17	7	17	7	Add a sentence "Land acquisitions for biofuel production may for instance lead to displacement and loss of access to land for local population without compensating benefits in terms of job creation or other livelihood benefits". [Markus Giger, Switzerland]	Accepted chapter restructured. Point has been alluded to.
9604	17	7	17	7	Oberlack, C., Tejada, L., Messerli, P., Rist, S., Giger, M., 2016. Sustainable livelihoods in the global land rush? Archetypes of livelihood vulnerability and sustainability potentials. Global Environmental Change 41, 153-171. [Markus Giger, Switzerland]	Comment noted section totally updated and revised.

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27266	17	7	17	8	The implication of the text here is that bioenergy crops and afforestation / reforestation is REQUIRED. There are quite a number of new scenarios considered in the context of the 1.5 report that do not REQUIRE large areas of land for CDR. Update with a more circumspect assessment based on the entire range of IAMs and other scenarios out there, not just the ones that have BECCS and A/R as their outputs. [Doreen Stabinsky, United States of America]	Accepted chapter restructured.
15714	17	7	17	8	not only especially in the food system but also in biodiversity and natural resources base [Maria del Pilar Salazar Vargas, Mexico]	Accepted chapter restructured.
1210	17	7	17	8	"Food system", again, is an important concept and its inclusion is welcome. However, it should be discussed alongside and not as a replacement for a strong focus on "food security." "Food system" in some ways removes the human face of the potential impact and trade off, as well as potential negative impacts on land rights, human rights, etc. [Tonya Rawe, United States of America]	Accepted chapter restructured.
6018	17	9	17	29	For synergies, tradeoffs and cobenefits, suggest looking at SR 1.5 Supplementary Materials 4E which also touch upon cobenefits of mitigation and adaptation related to land transitions. [Chandni Singh, Myanmar]	Noted; combined with other comments
16264	17	9	17	29	In general some discussion on what information is available on mitigation costs is missing and should be added. You discuss about how to interpret mitigation costs and cost efficiency without saying anything about what are these costs, how high they are and if there information sufficient to measures them. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured
5604	17	10	17	10	"costs of mitigation", what the author means by cost here! mitigation generally aims to reduce the costs! [Sanaz Moghim, Iran]	Noted, revised.
16114	17	10	17	11	Unfocused statement to revise. "costs of mitigation need to be interpreted in the light of costs of inaction (costs of restoring the equivalent of a damaged ecosystem-based resource, the diminution in value of ecosystem services, and damage assessments)". This sentence appears to be weak and generic. It should be clarified here that the costs of inaction, i.e. the costs on not mitigating, are all the costs related to the general increase of average temperature of x degrees by the end of the century, including the cost of yield degradation, costs related to rise of oceans, the costs of increased pests and diseases and all the other costs related to the expected impacts of climate change within a given time frame. Incidentally, note that "damage assessments" is not a cost of inaction per se, so it should not be inserted in the list between brackets. [Lorenzo Giovanni Bellù, Italy]	Accepted - text revised.
20812	17	10	17	12	The following sentence mixes up two different concepts and how they can be measured: "Costs of mitigation need to be interpreted in light of costs of inaction (costs of restoring the equivalent of a damaged ecosystem-based resource, the diminution in value of ecosystem services, and damage assessments)". Costs of mitigation = costs of restoring the equivalent of a damaged ecosystem-based resource Costs of inaction = diminution in value of ecosystem services, and damage assessments. Because these two concepts are often mixed up, it would be helpful to separate them clearly in your text so as to avoid any ambiguities. [Emmanuelle Quillerou, France]	Accepted; section on costs of mitigation expanded

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9752	17	10	17	15	This para needs improvement, in my view. It starts with three statements which are not very well connected and which also have only one reference each. [Jan Fuglestedt, Norway]	Accepted; section on costs of mitigation expanded
6530	17	10	17	17	Can also add that the cost of adaptation could be based on the adaptive capacity of communities or households. [Ojong.E nee Enokenwa Baa, South Africa]	Accepted; section on costs of mitigation expanded
24914	17	11	17	12	The costs should also include the socio-economics costs of diverting human resources/capital to replace or substitute for the lost ecosystem function [Dale Lockwood, United States of America]	Accepted; section on costs of mitigation expanded
24292	17	12	17	12	Please consider adding reference to costs of inaction pertaining to land degradation as well, see e.g. Nkonya et al. Eds. (2017): Economics of Land Degradation and Improvement – A Global Assessment for Sustainable Development. Springer. As well as https://www.unccd.int/news-events/poor-land-use-costs-countries-9-percent-equivalent-their-gdp (additional current figures/information). [Barron Joseph Orr, Germany]	Accepted; section on costs of mitigation expanded
16266	17	12	17	12	What were these cost-effective nature-based actions? [Lorenzo Giovanni Bellù, Italy]	Accepted- text revised (e.g., in the case of minor modifications)
6860	17	12	17	12	What is the meaning of "nature-based actions"? [Wilfran Moufouma Okia, France]	Accepted; section on costs of mitigation expanded
15100	17	12	17	13	A combination of multiple cost-effective nature-based actions was found to contribute until 2015 to 20% of necessary emissions reduction of a 2oC pathway [Ahmed Imam, Egypt]	Accepted; section on costs of mitigation expanded
16268	17	12	17	14	Is it observed that these actions reduced emissions by 20%? Between which period? Namely you name 2015 as the end point but what is the starting point? And what was the target? How high are the necessary emission reductions of a 2oC pathway? And where? [Lorenzo Giovanni Bellù, Italy]	Taken into account - combined with other comment
20024	17	14	17	14beginning to decline from then on) (Griscom et al. 2017b). [Sabit Erşahin, Turkey]	Accepted; section on costs of mitigation expanded
3942	17	14	17	14	one pracket is to be removed [Tarig Ibrahim, Sudan]	Accepted - text revised.
16270	17	15	17	20	In the phrase "some of these actions" which actions are meant under "some" and which under "these"? From this phrase the reader can deduct that the rest of the "these actions" do the contrary, namely do not benefit societies etc. is this what you intend to say? [Lorenzo Giovanni Bellù, Italy]	Accepted- text revised (e.g., in the case of minor modifications)
20026	17	19	17	19	Yet to date there is no agreement upon..... [Sabit Erşahin, Turkey]	Accepted; section on costs of mitigation expanded
14904	17	21	17	29	This paragraph is hardly understandable and should be rewritten more simply. [Florian Claeys, France]	Comment noted section totally updated and revised.
15716	17	21	17	29	these economic methodologies should be taken into consideration in the design and prioritization of public policies on climate change, as well as in the implementation of mitigation and adaptation measures [Maria del Pilar Salazar Vargas, Mexico]	Accepted; section on costs of mitigation expanded
3944	17	22	17	22	add space after the forward slash [Tarig Ibrahim, Sudan]	Accepted - text revised.

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24756	17	26	17	29	maybe add an exemple to understand what is really meant here [Valerie Dermaux, France]	Accepted; section on costs of mitigation expanded
10116	17	29	17	29	Additional references: Verburg, P. H., J. A. Dearing, J. G. Dyke, S. van der Leeuw, S. Seitzinger, W. Steffen, and J. Syvitski. 2016. Methods and approaches to modelling the Anthropocene. <i>Global Environmental Change</i> 39. Elsevier Ltd: 328–340. doi:10.1016/j.gloenvcha.2015.08.007.; Rounsevell, M. D. A., A. Arneth, P. Alexander, D. G. Brown, N. De Noblet-Ducoudré, E. Ellis, J. Finnigan, K. Galvin, et al. 2014. Towards decision-based global land use models for improved understanding of the Earth system. <i>Earth System Dynamics</i> 5: 117–137. doi:10.5194/esd-5-117-2014.; Delzeit, R., G. Klepper, F. Zabel, and W. Mauser. 2018. Global economic–biophysical assessment of midterm scenarios for agricultural markets—biofuel policies, dietary patterns, cropland expansion, and productivity growth. <i>Environmental Research Letters</i> 13. IOP Publishing: 025003. doi:10.1088/1748-9326/aa9da2. [Reinhard Prestele, Germany]	Noted; references were reviewed and incorporated as appropriate
16936	17	29	17	29	Suggestion of additional reference: Balvanera et al. 2017. [Vincenza Ferrara, Italy]	References useful - added.
7884	17	30	17	30	What about the conversion of topical peatlands to agricultural plantations, particularly in SE Asia? Peatlands store enormous quantities of carbon but are particularly sensitive to climate change and artificial drainage. Perhaps the most important example of the later human-induced impact has been in tropical SE Asia where a majority of tropical peat domes have been converted to agricultural plantations in Malaya, Borneo, and Sumatra. I suggest including a sub-section on peatlands along with these references: (Dommain, R., Couwenberg, J., Glaser, P.H., & Suryadiputra, I. N. N. (2014). Carbon storage and release in Indonesian peatlands since the last deglaciation. <i>Quaternary Science Reviews</i> , 97, 1–32. Dommain, R., Dittrich, I., Giesen, W., Joosten, H., Rais, D. S., Silvius, M., & Wibisono, I. T. C. (2016). Ecosystem services, degradation and restoration of peat swamps in the Southeast Asian tropics. In Bonn, A., Allott, T., Evans, M., Joosten, H., & Stoneman, R. (Eds.) <i>Peatland Restoration and Ecosystem Services: Science, Policy and Practice</i> (pp. 253–288). Cambridge: Cambridge University Press. Dommain, R., S. Frolking, A. Jeltsch-Thömmes, F. Joos, J. Couwenberg, and P. Glaser (in press). A radiative forcing analysis of tropical peatlands before and after their conversion to agricultural plantations. <i>Global Change Biology</i> Page, S. E., Rieley, J. O., & Banks, C. J. (2011). Global and regional importance of the tropical peatland carbon pool. <i>Global Change Biology</i> , 17, 798–818). [Paul Glaser, United States of America]	Rejected; this suggestion on peatlands doesn't belong here; except in so far as it relates to mitigation costs
14906	17	31	17	31	The title of this subsection is too policy-prescriptive. [Florian Claeys, France]	Accepted chapter restructured.
16272	17	31	17	31	Perhaps revise the title unless you want to advocate that ONLY on systemic links solutions need to be found; still consider elaborating more on what is the problem that needs to be solved, as this is not conveyed clearly from the preceding text. [Lorenzo Giovanni Bellù, Italy]	Accepted; title revised to "Systemic links between supply and demand drivers in land resource management"; problem statement - climate change impacts and response options dictate systemic approaches (as opposed to single objective or mono-sectoral approaches)
25452	17	31	17	32	Sub-section title is inappropriate [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.

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4034	17	31	17	32	The phrase "this is where solutions have to be found" is editorializing and should be deleted. [Reid Detchon, United States of America]	Accepted - text revised.
10062	17	31	17	32	I assume that is only a preliminary heading. It should be connected to the subsequent text more closely. Actually, the section is more about 'nexus thinking' than 'systemic links between production and consumption'. [Reinhard Prestele, Germany]	Accepted; Comment noted section totally updated and revised and focus shifted more to systemic approaches of which nexus-type problems and solutions are only a subset
744	17	31	17	32	odd title of a sub-chapter [Rolf Sommer, Kenya]	Accepted chapter restructured.
18596	17	31	17	35	Food, water, energy nexus is important but perhaps outdated. We need to be thinking about using renewable energy to drawdown carbon. why not introduce a 'land water biocarbon' nexus. biocarbon is biodiversity including food, fodder, fibre, and (soil) fertility [Justin Borevitz, Australia]	Accepted; introduction to nexus thinking is revised and couple combinations highlighted (e.i., water-food-energy; land-water-biocarbon)
24916	17	33	17	40	Human boundaries (political) rarely align with the scale of the interaction of the nexus, e.g. rivers cross national boundaries but farmlands do not and the strategies employed by one nation may conflict with those of another. [Dale Lockwood, United States of America]	Noted no action needed.
17364	17	33	17	42	Energy (bioenergy) production could also influence food supply from land competition, and the soil condition after the removal of biomass for bioenergy. [Fei Lu, China]	Noted; combined with other comment (on direct and indirect impact of climate change on food security).
6862	17	33	17	44	This section is unbalanced and discusses more the "nexus thinking" than the systemic links between production and consumption of land resources as stated in the section's title [Wilfran Moufouma Okia, France]	Accepted; this section is totally revised and restructured to introduce the systemic thinking linking supply and demand drivers of land resources; provide examples of nexus thinking (and related approaches) and leading up to socio-ecological systems frameworks (addressed later in chapter 1)
24660	17	35	17	35	Suggest to change "inextricably" to complexly [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
11788	17	37	17	37	It's very relevant to point out the role of the "Nexus thinking", but why not putting this issue directly in the title of this section? [Jacques Andre Ndione, Senegal]	Comment noted section totally updated and revised.
10118	17	37	17	37	Relevant reference: D'Odorico, P., K. F. Davis, L. Rosa, J. A. Carr, D. Chiarelli, J. Dell'Angelo, J. Gephart, G. K. MacDonald, et al. 2018. The Global Food-Energy-Water Nexus. Reviews of Geophysics. Wiley-Blackwell. doi:10.1029/2017RG000591. [Reinhard Prestele, Germany]	Taken into account - combined with other comment.
18680	17	41	17	41	"concern- some"-->"concern; some" [Hiroaki Kondo, Japan]	Accepted - text revised.
17538	17	43	17	43	paragraph 1.3.5 the nexus water-energy-food should be completed by the "market" element [TURI FILECCIA, Italy]	Accepted; sentence revised to include "market" factor
16938	17	44	17	44	Here I would add also trans-disciplinary...so "cross-disciplinary and trans-disciplinary". [Vincenza Ferrara, Italy]	Accepted; sentence revised

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16116	17	31	18	4	Unduly very limited focus on systemic links. Section 1.3.5 "Systemic links between production and consumption (supply and demand) of land resources, this is where the solutions have to be found". This very short (single-paragraph) section should be indeed merged with section 1.3.3 "interactions of climate change..." and constitute the structure of chapter 1. Note that the "nexus thinking" mentioned in this section should be the thinking of all the authors of this report thus resulting as the overarching feature of the report itself. (see the comments at the beginning of the list, regarding the need of restructuring the whole chapter 1 and rearrange the material provided so far). [Lorenzo Giovanni Bellù, Italy]	Accepted; Comment noted section totally updated and revised and updated and treatment of nexus thinking here (and socio-ecological systems thinking in later section) as the guiding principal of the whole report
26788	17	33	18	4	This section merits substantial elaboration - particularly in the areas of diet and food waste there are robust literatures with well-quantified estimates that merit as serious assessment as the preceding sections [Daniel Zarin, United States of America]	Taken into account - combined with other comment on nexus linking food-energy-water.
16274	17	33	18	4	In this section, please explain the terms you are using e.g. "systemic link" (including why it is missing between supply and demand since you suggest that it is required) and "Nexus thinking" (what Nexus are you talking about? Nexus per se doesn't say much, nexus is supposed to mean link and so unavoidably one needs to define what is linked with what). The section in general reads rather weak, what links and solutions are needed, what do you propose? Also why are they needed? All economic activities operate based on supply and demand so what link is missing? [Lorenzo Giovanni Bellù, Italy]	Accepted; title revised to "Systemic links between supply and demand drivers in land resource management"; problem statement - climate change impacts and response options dictate systemic approaches (as opposed to single objective or mono-sectoral approach)
19288	17	37	18	4	Discussion on nexus thinking is not appropriate here, it just diverts attention and probably in future relevant sectors might say that a/c to IPCC report nexus should be adopted by integrating biodiversity in addition to water, food, energy. In that sense rather than providing scientific basis on the relationship between climate change and land, IPCC seems to be promoting nexus approach with providing concrete substance [Binaya Raj Shivakoti, Japan]	Accepted; title revised to "Systemic links between supply and demand drivers in land resource management"; problem statement - climate change impacts and response options dictate systemic approaches (as opposed to single objective or mono-sectoral approach)
8886	17	2		43	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
1968	17	2			Pg17, Line 2. 'see previous chapters' Identify the sub-sections, and name the Chapters [Mastura Mahmud, Malaysia]	Accepted chapter restructured.
6484	17	5		7	also include impact upon cultural heritage in this list of impacts [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
5340	17	5			land-based climate mitigation might have severe consequences that are in conflict with the achievement of sustainable development goals such as no poverty, zero hunger and life on land (UN 2015). How? Even if it could, it is only for short term. In the long term it does not affect the achievement instead it ameliorates / adds [Daniel Danano Dale, Italy]	Comment noted section totally updated and revised.
2920	17	9		29	This paragraph could be more specific on the question on which level to intervene... [Cordula Ott, Switzerland]	Accepted; section on costs of mitigation expanded
11292	17	10			"cost of restoring..." - that is assuming that the ecosystem-based resource can be restored. What if it cannot? Is the cost then infinite? [Debra Roberts, South Africa]	Accepted; section on costs of mitigation expanded
6486	17	15		20	and can also provide benefits for cultural heritage [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Accepted; section on costs of mitigation expanded

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5342	17	24			farming, integrated pest management, soil fertility management, rain water harvesting, range and pasture Please include physical structures that modify land slopes [Daniel Danano Dale, Italy]	Accepted; section on costs of mitigation expanded
2922	17	31			This title raises expectations: but content is low. [Cordula Ott, Switzerland]	Accepted; both title and text revised and updated
18646	17	32			Drop "this is where solutions have to be found". This is a comment, not a subject heading [Henry Allen Torbert, United States of America]	Accepted - text revised.
2924	17	33		44	I would dare to say that systems approaches are suited...should be discussed. A nexus thinking can indeed become another form of silo-thinking... a nexus is always only a system cut out for analysis, is a model.. but never the reality... this is often forgotten within the processes/analysis/impkementation [Cordula Ott, Switzerland]	Accepted; title revised to "Systemic links between supply and demand drivers in land resource management"; problem statement - climate change impacts and response options dictate systemic approaches (as opposed to single objective or mono-sectoral approac
18610	17	37			The term "nexus thinking" need to be better explained. [Henry Allen Torbert, United States of America]	Accepted - text revised. Taken into account - combined with another comment
8884	17				replace all GHG by GHGs [Amanullah Amanullah, Pakistan]	Accepted - text revised.
4036	18	1	18	4	unclear wording - perhaps add "is growing" after "momentum"; add "and" before "more sophisticated" [Reid Detchon, United States of America]	Accepted - text revised.
18594	18	1	18	21	I suggest 'Regenerative Land Management' to reverse (not halt) degradation and desertification . Also add enhanced rock weathering and application of biochar to 'regenerative' land management approaches that draw down CO2 into soil and rock. [Justin Borevitz, Australia]	Accepted - text revised.
20830	18	6	18	6	title of section 1.4: wouldn't be better SLM for adaptation and mitigation ? [Carolina Vera, Argentina]	Accepted chapter restructured.
27194	18	6	18	8	Don't capitalise "sustainable land management". [Zoltán Rakonczay, Belgium]	Accepted - text revised.
27196	18	6	18	8	Land management includes forest management. It does not seem to be covered. If it is excluded, the title should reflect that (talk only about agriculture). The lack of reflection on forest management is curious throughout the report. [Zoltán Rakonczay, Belgium]	Accepted - text revised.
3306	18	6	18	21	Not much is mentioned in respect of Desertification, its trends in space and time, benchmarking and parameterisation which constitute key issues in sustainable land management. Complexity of landuse patterns and desertification are intricately related as much as farmers land holding patterns and sustainability.These need to be included for framing the issues. [Suresh Kumar, India]	Accepted balance revised. Combined with previous section introducing desertification

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20814	18	6	18	32	A mention of WOCAT (http://www.wocat.net/) would be good here since they record all possible sustainable land management option for given areas. Also, the following paper had a look at possible options for salt-induced land degradation and restoration: Qadir, M., Quill��rou, E., Nangia, V., Murtaza, G., Singh, M., Thomas, R.J., Drechsel, P., Noble, A.D. (2014) Economics of Salt-induced Land Degradation and Restoration. Natural Resources Forum, A United Nations Sustainable Development Journal, 38(4): 282–295. [Emmanuelle Quillerou, France]	Taken into account - combined with other comment.
14908	18	7	18	7	Clarification should be provided between sustainable land management and sustainable forest management. Same things for other land categories. Besides, some SLM activities such as agroecology should be mentioned. [Florian Claeys, France]	Accepted - text revised
11790	18	7	18	8	It would be better to write "What comprises Sustainable Land Management, and what are the specific options with respect to degradation, desertification and food security?" instead of "What comprises Sustainable Land Management, and what are the specific options with respect to degradation, desertification, food?" [Jacques Andre Ndione, Senegal]	Accepted - text revised.
18826	18	7	18	8	the title of section should be What comprises Sustainable Land Management, and what are the specific options with respect to land degradation, desertification, food. [Jianguo Wu, China]	Accepted chapter restructured.
1970	18	7	18	8	pg 18, ln 7. Suggest that the title of Sub-Section 1.4.1 be changed to 'Sustainable Land Management, and the specific options with respect to degradation, desertification, food' [Mastura Mahmud, Malaysia]	Accepted chapter restructured.
6006	18	7	18	32	In Sec 1.4.1, would be useful to add that effective SLM needs flexible management. Some examples of relevant literature: de Vente, Joris, Mark S. Reed, Lindsay C. Stringer, Sandra Valente, and Jens Newig. "How does the context and design of participatory decision making processes affect their outcomes? Evidence from sustainable land management in global drylands." Ecology and Society 21, 2 (2016). Schultz, L., Folke, C., ��sterblom, H., & Olsson, P. (2015). Adaptive governance, ecosystem management, and natural capital. Proceedings of the National Academy of Sciences, 201406493. [Chandni Singh, Myanmar]	Accepted - text revised
6020	18	7	18	32	In Sec 1.4.1, would be useful to add that effective SLM needs flexible management. Some examples of relevant literature: de Vente, Joris, Mark S. Reed, Lindsay C. Stringer, Sandra Valente, and Jens Newig. "How does the context and design of participatory decision making processes affect their outcomes? Evidence from sustainable land management in global drylands." Ecology and Society 21, 2 (2016). Schultz, L., Folke, C., ��sterblom, H., & Olsson, P. (2015). Adaptive governance, ecosystem management, and natural capital. Proceedings of the National Academy of Sciences, 201406493. [Chandni Singh, Myanmar]	Taken into account - combined with other comment.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3948	18	7	18	32	This section is also suggested to introduce the two concepts of Smart Water Management and Organic Farming and their implication on adaptation and mitigation. [Tarig Ibrahim, Sudan]	Accepted - text revised.
7278	18	9	18	32	You may wish to consider the response hierarchy of avoiding - reducing - reversing land degradation, where SLM is considered to be an essential measure to reduce land degradation. In: Cowie, A.L., Orr, B.J., Castillo Sanchez, V.M., Chasek, P., Crossmann, N.D., Erlewein, A., Louwagie, G., Maron, M., Metternicht, G.I., Minelli, S., Tengberg, A.E., Walter, S., Welton, S. 2018. Land in balance: the scientific conceptual framework for Land Degradation Neutrality. In: Environmental Science and Policy. 79: 25-35. [Mariam Akhtar-Schuster, Germany]	Accepted - text revised.
14302	18	9	18	32	You may wish to consider the response hierarchy of avoiding - reducing - reversing land degradation, where SLM is considered to be an essential measure to reduce land degradation. In: Cowie, A.L., Orr, B.J., Castillo Sanchez, V.M., Chasek, P., Crossmann, N.D., Erlewein, A., Louwagie, G., Maron, M., Metternicht, G.I., Minelli, S., Tengberg, A.E., Walter, S., Welton, S. 2018. Land in balance: the scientific conceptual framework for Land Degradation Neutrality. In: Environmental Science and Policy. 79: 25-35. [Rattan Lal, United States of America]	Taken into account - combined with other comment.
25454	18	10	18	13	The sentence is true, but seems out of place and disrupts the flow of the argument between the adjoining sentences. [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised
20678	18	11	18	13	Please consider also the challenges caused by issues related to the heterogeneity and the hierarchy too [Mahamadou Laouali Amadou, Niger]	Accepted- text revised.
24294	18	13	18	13	Please consider adding brief discussion on dealing with challenges for SLM adoption and implementation while including the following reference: Sanz et al. (2017): Sustainable Land Management contribution to successful land-based climate change adaptation and mitigation. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany. https://www.unccd.int/sites/default/files/documents/2017-09/UNCCD_Report_SLM_web_v2.pdf [Barron Joseph Orr, Germany]	Accepted - text revised.
11792	18	13	18	13	Please delete the second "(" before "Borrelli et al. 2017" [Jacques Andre Ndione, Senegal]	Accepted - text revised.
3710	18	13	18	21	Back to the tautology of SLM. I'd start with lines 17-21 which meaningfully defines SLM. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted
16276	18	14	18	14	What is the strong scientific evidence you are referring to? [Lorenzo Giovanni Bellù, Italy]	Noted no action needed.
24870	18	14	18	32	the list of practices of SLM (line 23 to 26) is also quite the same as the definition of agroecology. Again why isn't agroecology present in the report? All these definitions, including the definition of precision agriculture (line 29 to 32) should be reproduced in the glossary. [Valerie Dermaux, France]	Taken into account - combined with other comment.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
10064	18	15	18	33	Why are conservation agriculture and precision farming placed so prominently here? They are only part (or rather specific applications) of the strategies mentioned in the paragraph before. There is a bunch of practices that are (context- and site-specific) related to SLM (e.g., Mahon et al. 2017) and the major challenge is probably to identify co-benefits and trade-offs (also context- and site-specific) and operationalize these concepts (e.g., Weltin et al. 2018). Moreover, there is evidence that conservation agriculture (as a fixed 'package' of no-till, residue management, and crop rotations) may be not suitable (and ready to be upscaled) especially for in smallholder farming systems (e.g., sub-Saharan Africa) (e.g., Ndah et al. 2018; Brown et al., 2018). Overall, I think it is good to mention these packages/strategies (e.g., conservation agriculture). However, it should be made more clear that they are not the only approach (and probably not the silver bullet solution) towards SLM. Full references: Mahon, N., I. Crute, E. Simmons, and M. M. Islam. 2017. Sustainable intensification – “oxymoron” or “third-way”? A systematic review. <i>Ecological Indicators</i> 74. Elsevier: 73–97. doi:10.1016/J.ECOLIND.2016.11.001.; Weltin, M., I. Zasada, A. Piorr, M. Debolini, G. Geniaux, O. Moreno Perez, L. Scherer, L. Tudela Marco, et al. 2018. Conceptualising fields of action for sustainable intensification – A systematic literature review and application to regional case studies. <i>Agriculture, Ecosystems & Environment</i> 257. Elsevier: 68–80. doi:10.1016/J.AGEE.2018.01.023.; Ndah, H. T., J. Schuler, K. Diehl, C. Bateki, S. Sieber, and A. Knierim. 2018. From dogmatic views on conservation agriculture adoption in Zambia towards adapting to context. <i>International Journal of Agricultural Sustainability</i> 16. Taylor & Francis: 228–242. doi:10.1080/14735903.2018.1447227.; Brown, B., I. Nuberg, and R. Llewellyn. 2018. Constraints to the utilisation of conservation agriculture in Africa as perceived by agricultural extension service providers. <i>Land Use Policy</i> 73. Pergamon: 331–340. doi:10.1016/J.LANDUSEPOL.2018.02.009. [Reinhard Prestele, Germany]	Comment noted section totally updated and revised.
15102	18	17	18	18	Sustainable land management describes the use of land resources for the production [Ahmed Imam, Egypt]	Taken into account - combined with other comment.
25134	18	17	18	21	Is this the definition of SLM? If so, make that clear. Not 'describes' but 'is' [Sara Ohrel, United States of America]	Taken into account - combined with other comment.
24918	18	18	18	18	extraneous period in sentence. [Dale Lockwood, United States of America]	Thank you for the positive comment.
21250	18	18	18	18	"the use of land resources . for the production.... Dot is slided [Erhan Akca, Turkey]	Accepted - text revised.
18682	18	18	18	18	A period between "resources" and "for" should be removed. [Hiroaki Kondo, Japan]	Noted, copyedit to be completed prior to publication.
11794	18	18	18	18	Instead of writing "the use of land resources .", please write "the use of land resources"; the space after resourcces is bigger... [Jacques Andre Ndione, Senegal]	Accepted - text revised.
2354	18	18	18	18	grammar mistake [Manuel Llansola-Portoles, France]	Accepted - text revised.
3946	18	18	18	18	remove period and space [Tarig Ibrahim, Sudan]	Accepted - text revised.
896	18	18	18	21	Please, correct the definition of Sustainable Land Management, since there is a "." in between and it is needed a ")" [Jose Luis Vicente Vicente, Germany]	Taken into account - combined with other comment.

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26936	18	18	18	21	Slight modifications to, ...management describes "the use of land resources for the production of goods to meet changing human needs while assuring the long-term productive potential of these resources and the maintenance of their environmental functions" (Alemu 2016), and conceptually includes ecological, technological and governance aspects (see chapter 6). [Knute Nadelhoffer, United States of America]	Taken into account - combined with other comment.
24920	18	20	18	20	missing closing parenthesis [Dale Lockwood, United States of America]	Accepted - text revised.
11796	18	20	18	20	Please add a second "(" after (Alemu 2016)) [Jacques Andre Ndione, Senegal]	Accepted - text revised.
24922	18	22	18	22	is a function of both social and regional context [Dale Lockwood, United States of America]	Accepted - text revised
27268	18	22	18	25	This is a useful listing of practices and strategies which are elements of SLM. Many of these practices / strategies are also included under the terms agroecology or climate-smart agriculture or sustainable intensification or... The point is that all these different labels can be confusing, confounding, and analytically unhelpful. Some standardization in the report is absolutely required. It would be quite valuable if sustainable land management would be used as the overall catch term, and other practices described as relevant. If a term such as climate-smart agriculture or sustainable intensification is used, there should be a very obvious and well-stated reason why that's a more appropriate term, and its analytical utility explained. [Doreen Stabinsky, United States of America]	Taken into account - combined with other comment.
25596	18	22	18	25	Another example of sustainable land management is silvopastoral systems. Citation: Rudel, T., B. Paul., D. White, I.M. Rao, R. Van Der Hoek, A. Castro, M. Boval, A. Lerner, L. Schneider and M. Peters. 2016. LivestockPlus: Forages, sustainable intensification, and food security in the tropics. AMBIO, DOI 10.1007/s13280-015-0676-2 [Laura Schneider, United States of America]	references useful some or all added.
16922	18	22	18	25	not clear what is meant by "high agreement on (a combination of) choices", especially without the phrase in parentheses. Do you mean "high agreement that (a combination of) choices ... are a good thing/are needed/are essential"? Please provide clearer text [Pauline Midgley, Germany]	Accepted - text revised.
1212	18	22	18	25	Agroecology should be included among the approaches discussed. The HLPE will release a report on agroecological approaches in 2019. While too late for inclusion in the IPCC report, their initial work could be a benefit. [Tonya Rawe, United States of America]	Taken into account - combined with other comment.
10694	18	22	18	32	Sustainable Land Management appears as a package of predefined practices or even a brand. I would avoid naming this approach only if you don't provide an entire review of said practices and not others. Why would organic agriculture be a sustainable way to manage land? You can deforest land to start growing organically... In addition, conservation agriculture shows very low adoption and controversial impact on soil carbon, especially about soil carbon. See for example Giller, Ken E., Jens A. Andersson, Marc Corbeels, John Kirkegaard, David Mortensen, Olaf Erenstein, and Bernard Vanlauwe. "Beyond conservation agriculture." <i>Frontiers in plant science</i> 6 (2015): 870. I would avoid this type of blanket approaches and prefer a description of the principles behind. For example, crop-livestock-trees integration for improved nutrient and water use efficiency, crop rotation etc. [Anne Mottet, Italy]	References useful some or all added.

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898	18	22	18	32	Most of the agricultural practices belong to the so-called "agroecology techniques" (e.g. agroforestry, organic farming, soil fertility management), and I miss a lot a comment about the benefits of the agroecology techniques on soil organic carbon, biodiversity and decrease GHG. [Jose Luis Vicente Vicente, Germany]	Taken into account - combined with other comment.
16278	18	22	18	32	In the second paragraph, while you are naming several SLM choices, you explain only two, namely conservation agriculture and precision agriculture. Why? [Lorenzo Giovanni Bellù, Italy]	Taken into account - combined with other comment.
3308	18	22	18	32	In the SLM, some practices have been mentioned. Please include value addition and value chain development, alternate vocations and solar farming also as strategies for SLM. Issues like livestock management, pastoralism and transhumance that affects entire arid part of the globe also need to be given space and related with SLM [Suresh Kumar, India]	Taken into account - combined with other comment.
15718	18	23	18	23	such as agroforestry, including the silvopastoral systems,... [Maria del Pilar Salazar Vargas, Mexico]	Taken into account - combined with other comment.
18926	18	23	18	24	It would be advisable to adhere to FAO's definition for "organic farming" to avoid misinterpretations [Carlos Matias Figueroa, Mexico]	Taken into account - combined with other comment.
10378	18	24	18	24	"farming, integrated pest management, soil fertility management, rain water harvesting, range and pasture" Please include physical structures that modify land slopes [Zitouni Ould-Dada, Italy]	Taken into account - combined with other comment.
4038	18	25	18	28	This section would benefit from increased attention to co-benefits of these conservation agriculture practices - especially improved water retention by the soil, which increases resilience to both flood and drought conditions. In many cases, these practices lead to increased soil fertility, increased yields, increased income to the farmer, increased biodiversity in the soil - all of which support intensification of production on the same land, as opposed to expansion to additional land. [Reid Detchon, United States of America]	Taken into account - combined with other comment.
4040	18	25	18	28	Consider adding from this language in Chapter 3 (page 4, lines 9-19): "Investments into land restoration and rehabilitation have positive economic returns. Integrated soil and water conservation measures were shown to increase coverage density, with positive economic and social effects (medium confidence). Conservation agriculture contributes to carbon sequestration in dryland cropped areas (low confidence). It also increases climate change adaptation capacities of agricultural households (high confidence). Combined use of salt-tolerant crops, improved irrigation practices, and chemical remediation measures were effective in reducing salinity-induced desertification (medium confidence). Rangeland management systems such as sustainable grazing approaches and revegetation helped to increase rangeland productivity (medium confidence). Agroforestry practices were shown to generate diverse ecological and economic benefits, including soil and water conservation, increased carbon sequestration, and reduced erosion." [Reid Detchon, United States of America]	Taken into account - combined with other comment.

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900	18	29	18	32	I would not include the precision agriculture in the SLM, since the precision agriculture is based in the same principles of the conventional agriculture with the exception of trying to reduce the inputs in order to be more efficient. [Jose Luis Vicente Vicente, Germany]	Accepted - text revised.
27198	18	29	18	32	Delete. It does not seem to belong in this section. [Zoltán Rakonczay, Belgium]	Taken into account - combined with other comment.
9754	18	34	18	34	It seems odd to have a statement as a section title. I also find the statement policy prescriptive [Jan Fuglestad, Norway]	Accepted; section title revised
3712	18	34	18	34	Policy prescriptive title which does not reflect the combined treatment of supply/demand in this section [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted; section title revised
3950	18	34	18	34	add space after the forward slash [Tarig Ibrahim, Sudan]	Accepted - text revised.
4042	18	34	18	38	This heading and first paragraph garble an essential point. Suggest as heading: "Consumption and demand drivers affect the management of land" - not just SLM! Begin the text with: "Climate-related policies can have a positive or negative effect as they apply to every aspect of the food system, including both supply and demand and encompassing" ... etc. [Reid Detchon, United States of America]	Accepted; section title revised; text revised
24924	18	35	18	35	replace sustainable land management with SLM [Dale Lockwood, United States of America]	Accepted - text revised.
6958	18	35	18	38	Even food security is crucial, also ecological functions contributing to ecological and social resilience should be taken into account, [Anna Luise, Italy]	Accepted; sentence revised
2642	18	35	18	38	This paragraph needs references. It reads as an assessment - where are the uncertainty language and citations? [Sarah Connors, France]	Accepted; para revised and references added
24926	18	36	18	36	change the word "is" to "are" [Dale Lockwood, United States of America]	Accepted - text revised.
16122	18	36	18	37	Sequence of material needs rearranging. The concept and definition of "(sustainable) food system": is introduced in section 1.3.3.4, "food security" but not really exploited to show how unsustainable food systems may lead to food insecurity. Here, the concept of "food system responsive to food security" is recalled, with no mention to the definition provided before. The reader gets scattered material and struggles to follow a logical pattern. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
19290	18	37	18	37	...transformation (transport, storage, processing and packaging)...., word choice transformation seems wrong, it is more of supply chain related processes [Binaya Raj Shivakoti, Japan]	Accepted - text revised.
16124	18	39	18	39	Missing definition. "Agricultural intensification" not defined here. Is it intended as reduced use of land per unit of output? Definition is needed [Lorenzo Giovanni Bellù, Italy]	Accepted; definition of AI added

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10476	18	39	18	39	" improving land productivity implies agricultural intensification" - it also implies improving the efficiency [Zitouni Ould-Dada, Italy]	Noted no action needed.
7060	18	39	18	40	Agricultural intensification does not only affect forests but for instance also rangelands or peatlands (regarding discussions on degradation of peat soils see section 4.11.6).. [Mariam Akhtar-Schuster, Germany]	Accepted; sentence revised
14304	18	39	18	40	Agricultural intensification does not only affect forests but for instance also rangelands or peatlands (regarding discussions on degradation of peat soils see section 4.11.6).. [Rattan Lal, United States of America]	Accepted; sentence revised
24872	18	39	18	42	It would be interesting to add a reference to urbanisation and land utilisation [Valerie Dermaux, France]	Accepted; text revised
10066	18	40	18	40	There should not be a focus on deforestation here. Agricultural intensification may have many more implications, e.g. for biodiversity, water, and soil resources, etc. and 'sustainable intensification' is a concept that still requires proof of concept at larger scales. [Reinhard Prestele, Germany]	Accepted; sentence revised to expand beyond deforestation
4044	18	34	19	39	This section belongs under 1.3.5, Systemic links between production and consumption. [Reid Detchon, United States of America]	Accepted chapter restructured.
25136	18	34	19	39	There is no discussion of the role of forest sector commodities/trade and related impact on LU in this section and there should be (due to reasons outlined in previous comment). Of course food production is top priority but wood for shelter and other goods is also very important and is being overlooked here. [Sara Ohrel, United States of America]	Accepted; Comment noted section totally updated and revised to include a reference to forestry production and trade (and the implications for land use)
14910	18	34	19	40	Instead of being only focused on food production, this section should include some considerations about other land-based products (materials, energy, ...). [Florian Claeys, France]	Accepted; this section is revised to expand beyond food production and include all major land using activities
16280	18	34	19	40	The reader gets the feeling that you neglect that the agents (producers, farmers) are first of all ECONOMIC agents and they very much reflect on demand changes provided policies do not distort the market signals. Consumption and demand is by definition an integral part of sustainable management, it is the one side of it. [Lorenzo Giovanni Bellù, Italy]	Noted; text referencing producers as economic agents included.
16118	18	6	22	35	Unclear rationale of section 1.4. Section 1.4 "Sustainable land management for adaptation and climate resilience". This section contains strategic options and possible policy responses to climate change and land overuse."It overlaps, in terms of role in chapter 1, with the previous sub-section 1.3.4 "Land based climate change mitigation and adaptation strategies", so, it is not clear why these are separate sections. More in general, and possibly more seriously, it is not clear to the reader why this content pops up in chapter 1. Is this to be assumed as an anticipation (summary, overview) of the content provided in chapter 6? If yes, this has to be clearly stated and the content systematically arranged to be consistent with chapter 6. If not this section (and section 1.3.4) requires another justification or requires moving and integrating its content in chapter 6. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.

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4386	18		22		In Section 1.4, Sustainable Land Management, literature is available on treating land as Common Property Resource. There is no discussion on this. Many societies, such as the tribal societies in India, land is considered common property resource. There are collective solutions for sustainable land management. It is not adequate to only refer to 'Actors in solution space' (sub-section 1.4.3). Two sides of the argument on SLM, market based as well as collective based need to be brought in framing of the options. [Darshini Mahadevia, India]	Accepted - sections on objective and framing augmented -- the issue of common property resource management is treated under socio-ecological system thinking section (which introduces a third way to manage land-based resources other than state or market agency) - common pool resource drawn from Ostrom's AID framework
2926	18	1		4	... also more sophisticated models will be models.. they need to be valued within a societal process... what is needed is a systems approach and the acknowledgement that we have to proceed in processes in the science-society interface ...with normative decision-making... An example/reference: Earth system Governance Project... [Cordula Ott, Switzerland]	Noted no action needed.
8888	18	2		12	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
3570	18	6			This section lacks the definition of sustainability. This term is thought to be defined and understood, however, in my experience, it is not. See Somogyi, Z. 2016. A framework to quantify environmental sustainability. Ecological indicators Volume 61, Part 2, Pages 338-345 https://doi.org/10.1016/j.ecolind.2015.09.034 [Zoltán Somogyi, Hungary]	Rejected - beyond the mandate of the report.
2928	18	7		8	the second part of this title is not discussed here, but under the following paragraphs.... adapt the titles of the following paragraphs in direction of: introducing and discussing options... [Cordula Ott, Switzerland]	Accepted; section titles revised
25908	18	7			Suggest not to discuss 'specific options' here. The way I understand it, they are briefly mentioned in 1.4.2 and then discussed in detail in the respective chapters in this report. [Hans Poertner and WGII TSU, Germany]	Accepted - text revised.
9368	18	8		9	consider adding sentence /note that " water harvesting techniques without spatial planning does contribute to site site specific land degradation particularly in the Arid-Semi Arid lands. For instance areas where boreholes or water pans are concentrated to provide water for livestock, are increasingly losing vegetative cover and undergoing massive soil erosion." [Kennedy Ondimu, Kenya]	Accepted - text revised.
6488	18	9		21	there is a point to be made here about the way human activity has shaped the landscape for many thousands of years. - pretty much since the last glaciation in the UK. [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Accepted.
6590	18	18			period in middle of the sentence [Anna Haines, United States of America]	Accepted - text revised.
17762	18	18			remove "." following "resources" [Donald Smith, Canada]	Accepted - text revised.
1972	18	18			pg 18. In 18. Delete full stop after resources [Mastura Mahmud, Malaysia]	Accepted - text revised.
17764	18	20			Unbalanced brackets, remove second "(" [Donald Smith, Canada]	Accepted - text revised.
1974	18	21			pg 18. In 21. should have a ')' here [Mastura Mahmud, Malaysia]	Accepted - text revised.
26764	18	39			It's equally important to recognize that enhanced forest protection (i.e., closing the forest frontier) can induce agricultural intensification. [Frances Seymour, United States of America]	Noted no action needed.

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21146	18	39			precision agriculture techniques are used for the production of more yield using minimum resources (land and water) in such a way that have trade-offs with environment and other SLMs [Hasnat Aslam, Pakistan]	Taken into account in revised text.
2164	18	41			Pg 18 line 41. Reference of '(Warren 2014.' should be changed to 'Deryng et al. 2014' [Mastura Mahmud, Malaysia]	Accepted - text revised.
18814	18				Based on the title of Section 1.4, I expected to read more on adaptation options (in equal measure to the enablers, such as governance), and I feel that such adaptation measures or options are missing (and perhaps detailed in the respective chapters). [Debora Ley, Guatemala]	Accepted ; chapter restructured to bring in more framing of adaptation measures (as much as mitigation options are discussed) -- across chapter 1
16282	19	1	19	1	Please explain what you mean by "food shocks"; are you talking about climate change or about extreme weather effects that might be related to climate change? [Lorenzo Giovanni Bellù, Italy]	Accepted; "food shocks" term clarified and reframed
19596	19	1	19	1	Re: "food shocks" - food speculation for now seems to have more significant impact on this than actual environmental/ climate risks, e.g. https://www.globalagriculture.org/report-topics/food-speculation.html (not as sufficiently covered in paragraph starting row 31 on this page 19) [Rianne ten Veen, Netherlands]	Taken into account - combined with other comment
24296	19	3	19	3	If considered pertinent, respective results from Rodriguez Osuna et al. (2014) could be added as directly related evidences stemming from subnational production networks (instead of global value chains) to complement the references to the global studies already referred: Rodríguez Osuna, V., J. Börner and M. Cunha (2014): Scoping adaption needs for smallholders in the Brazilian Amazon: a municipal level case study. Change and Adaptation in Socio-Ecological Systems (CASES), 1: 12-25. [Barron Joseph Orr, Germany]	References useful - some added.
3952	19	4	19	4	the term (crop genetic diversity) is not accurate so please use the term (crop genetic improvement through traditional breeding and genetic engineering) [Tarig Ibrahim, Sudan]	Accepted - text revised.
24550	19	4	19	8	Include as another way to enhance land productivity: "increasing the resistance and resilience of production systems to climatic events, pests and diseases e.g. using combined land use systems as agroforestry" [Christopher Morhart, Germany]	Taken into account - combined with other comment.
27270	19	4	19	9	Following on the above comment #15, it is much more analytically useful to talk about actual practices such as promotion of crop genetic diversity or preservation and protection of pollination services. The term "sustainable intensification" does not have a similar analytical utility. Avoid opaque, catch-all terms as much as possible. [Doreen Stabinsky, United States of America]	Accepted - text revised.
16284	19	4	19	9	Is there a particular reason why you name these ways to enhance land productivity instead of others (e.g. appropriate crop rotation, adequate and appropriate fertilizing. Please note that in the last paragraph of page 39 you are suggesting that "improving land productivity implies agricultural intensification", which is frequently connected to monocultures. Crop genetic diversity on the contrary is frequently connected to multi-culture and to lower productivity levels. Please be consistent. [Lorenzo Giovanni Bellù, Italy]	Accepted; paragraph revised and expanded

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10068	19	4	19	9	I am missing the most 'basic' way of increasing land productivity, that is increasing inputs (e.g. fertilizer) and input efficiency. [Reinhard Prestele, Germany]	Taken into account - combined with other comment.
3310	19	4	19	9	Various factors for enhancing land productivity has been mentioned but there is no mention of age old proven practices like shelterbelts, wind breaks and green walls for enhancing land productivity. Emperical data exists in India on these aspects . And now modelling is being done through wind tunnel experiments to design wind breaks in various countries. Nanotechnology producing nanofertilizers as well as water retaining compounds are opening newer horizons for fertility management. Please consider including such issues also. [Suresh Kumar, India]	Outside the scope of chapter 1 (framing and context)
3954	19	4	19	9	modern irrigation systems (sprinkler and drip) have the ability to improve the Water Use Efficiency (WUE), to enhance crop productivity and the quality of the produce. [Tarig Ibrahim, Sudan]	Accepted; paragraph expanded
1214	19	4	19	9	discussion of land productivity & SLM could benefit from discussion of practices (inter-cropping of nitrogen fixing crops, etc) that can themselves address soil health. Would also inject some discussion of the value of dietary diversity that is reliant on diverse food production. [Tonya Rawe, United States of America]	Taken into account- combined with other comment
17540	19	4	19	9	parapgraph 1.4.2.suggest adding among the options to increase land productivity also " biotechnology" [TURI FILECCIA, Italy]	Accepted; text revised.
902	19	7	19	7	Please, change to "drylands" [Jose Luis Vicente Vicente, Germany]	Accepted; text corrected
746	19	7	19	7	"especially in the dry lands" is probably not a required addition here, as the mentioned practices equally apply to other climatic zones. [Rolf Sommer, Kenya]	Accepted - text revised.
21192	19	7	19	7	Consider adding prcision agroiculture besides conservation agriculture [Soora Naresh Kumar, India]	Accepted; text revised
2356	19	8	19	9	I think this sentence could be further developed [Manuel Llansola-Portoles, France]	Accepted; reference to water management is expanded (combined with another comment)
15722	19	10	19	10	Regarding to "may fall beyond economic incentives ", in some countries the economic incentives are not implemented, just they have inflationary processes. Also, prices are not the only economic incentives or tool in order to change social behavior. [Maria del Pilar Salazar Vargas, Mexico]	Accepted; sentence revised to allow for prices and non-prices determinants of demand
27200	19	10	19	10	It is unclear why dietary and consumption habits would fall beyond economic incentives. The same could be said about all elements of mitigation and adaptation. People do respond to price in their dietary choices, and economic incentives go beyond prices. [Zoltán Rakonczay, Belgium]	Accepted; sentence revised to improve clarity between diets and economic incentives
16286	19	10	19	11	Economic incentives are not only prices but also available income. [Lorenzo Giovanni Bellù, Italy]	Noted; sentence revised to improve clarity

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18928	19	10	19	12	A staple food for Mexico is "tortilla" and in 2006-2007 due to oligopolic practices its price went up from 3.5 pesos to almost 30 pesos. This caused a harsh consumption reduction. These lines underestimate the power of prices I suggest you to read this article http://www.redalyc.org/pdf/118/11820167006.pdf (in spanish). Also you are underestimating short and long run effects of price elasticity in consumption. [Carlos Matias Figueroa, Mexico]	Noted no action needed.
904	19	10	19	15	Could you specify examples of "alternative" diets? (e.g. less meat consumption, Mediterranean Diet...). Currently there is an increasing agreement that a lower meat consumption would lead to a significant GHG emission reductions [Jose Luis Vicente Vicente, Germany]	Taken into account - combined with other comment.
1216	19	10	19	15	discussion of the demand side should include discussion of malnutrition, the need among many populations for greater dietary nutrition & diversity, and the role of more diversified production (esp in local food systems). This would enable a balance in the reference to consumption habits between changes that may come with a higher carbon footprint and changes that are in fact needed to address malnutrition. Put more simply, the demand discussion would benefit from recognition of different needs, related to consumption patterns, among different populations. c [Tonya Rawe, United States of America]	Accepted; starting sentence for demand side is added to reflect variety of needs related to consumption
3714	19	10	19	39	The amount of text devoted to the demand side is disproportionate to the amount on supply. 8 lines on food waste and 6 lines on improving land productivity is not balanced. I am completely for covering the demand side, but we need to reflect the volume of scientific literature available. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account - combined with other comment.
15720	19	12	19	12	To add: among others factors (not only gender empowerment). Regarding to gender empowerment it is recommended to add a reference with scientific and technical information about it. [Maria del Pilar Salazar Vargas, Mexico]	Accepted; relevant ref on gender empowerment is added
15988	19	12	19	13	Examples should be provided here [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted; text revised (examples of diets added)
16288	19	12	19	15	Please explain what the problem is and diets and consumption habits need to change. Furthermore please explain what you mean by "sustainable dietary patterns" and what by "healthy diets". Please note that economic theory on consumer behavior is detailed. Empirical regularities known as Engel's and Bennett's law for example suggest how consumers react to changes of income and prices, both of which are thought to be the economic incentives. Furthermore, because producing in a sustainable way involves different production costs than producing in a non-sustainable way, prices change and so perhaps no additional price incentive is needed. [Lorenzo Giovanni Bellù, Italy]	Accepted; para revised (starting with problem statement related to consumption habits and need for change)
24930	19	13	19	13	it would be interesting to add examples of the sustainable dietary patterns, to be used as good examples provided by IPCC [Valerie Dermaux, France]	Accepted; text revised (with examples of healthier diets)
25456	19	14	19	14	surely taxes and levies as well as discounts and subsidies? [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted; text is revised

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15724	19	14	19	14	"price incentives (e.g., discounts or subsidies)" as well as other economic incentives (such as tax, prices, accelerated depreciation for sustainable projects) [Maria del Pilar Salazar Vargas, Mexico]	Accepted - text revised.
16940	19	14	19	14	Together with "price incentives", here I would add also targeted information and education campaigns/activities (also in an intergenerational perspective because in this respect older generations can teach and pass down in incredible amount of relevant knowledge on the subject to younger generations, who are the most influenced by changing diet and lifestyle trends). [Vincenza Ferrara, Italy]	Noted; combined with another comment as text is revised
2358	19	14	19	15	Some guidelines of healthier diets [Manuel Llansola-Portoles, France]	Noted; text is revised (examples of healthier diets added)
21332	19	16	19	16	The international community is more widely using "food loss and waste", at least when correlating with climate change issues (see the UNFCCC website for instance) [Martial Bernoux, Italy]	Noted no action needed.
10478	19	16	19	16	Please differentiate between food waste and food loss [Zitouni Ould-Dada, Italy]	Noted; this is reflected in the separate definitions and whenever the discussion/framing warrant keeping the two terms separate this is done; in other contexts the two terms are joined when appropriate.
16120	19	16	19	18	Missing reference to FAO 2017 (FOFA -TAC). "...Solutions to food waste and loss (FWL) arises as unintended side effects of supply chain efficiency and low cost of food (in part due to subsidies and unaccounted for externalities)..." Please, refer here to: FAO 2017, The future of food and agriculture -Trends and challenges , Rome, p 117 "... Policies need to create conditions that enable the behaviour of different individual agents along the food supply chain to achieve a socially optimal level of food losses and waste . These policies include 'getting the food prices right' by ensuring that the consumer assumes full responsibility for covering the the environmental and social costs of producing- and eventually discarding - food". [Lorenzo Giovanni Bellù, Italy]	Accepted; FAO reference is included; text is revised as appropriate
3312	19	16	19	23	There is a practice of Food recycling in less developed societies as no food is then wasted. Also traditional practices exist on various ways of storing excess food. A para could be added on these issues [Suresh Kumar, India]	Noted; text is revised to accommodate the suggestion that less developed countries where food is relative expensive in relation to income, the minimum food waste observed amounts to "food recycling"
1218	19	16	19	23	The discussion of food loss and waste is oversimplified into a discussion only of food waste (which is a rather big problem). Food loss, however, is quite a different issue that is not necessarily the "unintended side effect of supply chain efficiency and low cost food." It is more often a factor of lack of access to tools, resources, technology, and markets among rural producers in the global south. The discussion of food waste can remain, and a discussion of food loss should be added. Furthermore, food waste is also a factor of consumer behavior beyond economics. Cosmetic requirements for food can be far too stringent, resulting in discarded food that is otherwise highly consumable. (Consider initiatives such as Hungry Harvest, out of Baltimore, MD in the United States) [Tonya Rawe, United States of America]	Accepted; a clear separation between food waste and food loss is made in the revised text.
4046	19	16	19	39	These three paragraphs, on food waste and trade, do not belong in an introduction to this report and should be omitted. [Reid Detchon, United States of America]	Noted; the chapter is restructured and sections belong to later chapters will be omitted from this chapter

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16290	19	18	19	20	The discussion on food losses and waste is important but still very foggy as there are no observations on where and how much food is lost but only some estimates that can be challenged as they mostly refer to private households and not to food lost in services sectors (e.g. hotels, restaurants, hospitals etc). Hence before proposing as a solution the one that would result into higher prices make sure that food losses and waste occurs at private household level. Or else higher purchase costs may be transmitted to the private consumers who are not causing food waste, with food security implications for the low income consumers. [Lorenzo Giovanni Bellù, Italy]	Taken into account. Noted; combined with other comments
4048	19	18	19	20	This assertion is an unsupported judgment call. Suggest deleting "A more sustainable solution requires" and replacing "to" with "could" [Reid Detchon, United States of America]	Accepted - text revised.
11798	19	20	19	20	Instead of writing "(FAO 2015)(Alexander et al. 2017b).", please write "(FAO 2015; Alexander et al. 2017b)." [Jacques Andre Ndione, Senegal]	Accepted - text revised.
18592	19	21	19	23	consider describing the ecological footprint measures aggregating land, water, carbon etc as individual demand and land supply in global hectares. [Justin Borevitz, Australia]	Taken into account - combined with other comment.
15726	19	21	19	23	and also to take into account analysis of value chains and food life cycle [Maria del Pilar Salazar Vargas, Mexico]	Noted; sentence revised
11800	19	22	19	23	Instead of writing "(Cremasch, 2016) (van Noordwijk and Brussaard 2014).", please write "(Cremasch, 2016; van Noordwijk and Brussaard 2014)." [Jacques Andre Ndione, Senegal]	Noted, copyedit to be completed prior to publication.
10120	19	23	19	23	Additional reference: Scherer, L., and P. H. Verburg. 2017. Mapping and linking supply- and demand-side measures in climate-smart agriculture . A review. Agronomy for Sustainable Development. Agronomy for Sustainable Development. [Reinhard Prestele, Germany]	Accepted; ref added
11802	19	24	19	24	Instead of writing "(e.g., biomass) (Favero and Massetti 2014)", please write "(e.g., biomass; Favero and Massetti 2014)" [Jacques Andre Ndione, Senegal]	Accepted - text revised.
16292	19	24	19	30	On the connection of trade and climate change please also refer to the forthcoming FAO publication on the State of Commodity Markets (to be launched at the end of September 2018) [Lorenzo Giovanni Bellù, Italy]	Taken into account - combined with other comment.
4050	19	25	19	25	for "mile food" - did you mean "zero mile food"? [Reid Detchon, United States of America]	Accepted - text revised.
4052	19	27	19	27	add "in" in front of "countries" [Reid Detchon, United States of America]	Accepted - text revised.
16924	19	27	19	28	"Countries where trade dependency ..." what? Verb missing: "exists" perhaps? [Pauline Midgley, Germany]	Accepted - text revised.
16028	19	27	19	28	The meaning of this sentence is not clear. Please, rephrase it [Tiziana Susca, United Kingdom (of Great Britain and Northern Ireland)]	Accepted; sentence rephrased
27272	19	27	19	30	Unpack this. Which countries might that be exactly? Most of the world, depending on the particular foodstuff? What challenges might there be in "increasing domestic reserves"? [Doreen Stabinsky, United States of America]	Accepted; argument reframed (to add specific context - countries and type of food); "increasing domestic reserves" clarified .

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26940	19	27	19	30	Revise as, "For countries where trade dependency may accentuate the risk of food shortages from foreign production shocks, such risk could be reduced by increasing domestic reserves or importing food from a diversity of suppliers that possess their own reserves (Gilmont 2015; Marchand et al. 2016)." [Knut Nadelhoffer, United States of America]	Taken into account - combined with other comment.
25458	19	28	19	28	missing words: "is high" or similar [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised.
1220	19	28	19	30	While in a country that is simply unable (due to agroecological constraints) to produce food, in the context of a discussion of land use and SLM, the role of food production -- and closing yield gaps -- warrants consideration as an alternative solution to addressing risk from trade as a source of food. Policy must not simply reinforce a status quo with a band-aid like policy, but rather should consider why there's a reliance on trade and whether there is an alternative means of achieving greater food sovereignty. Is there an economic development solution that would entail a better investment in agriculture? [Tonya Rawe, United States of America]	Accepted; text revised to incorporate possible production/productivity options to reduce reliance on trade when economically and agro-ecologically feasible.
11294	19	31	19	39	There are lots of "shoulds" in this paragraph. Also lots of "must" and "require" and similar prescriptive language in entire section. [Debra Roberts, South Africa]	Accepted - text revised.
25736	19	32	19	39	This paragraph suggests that trade rules must be adapted to mitigate climate change. This would be an overburdening of the multilateral trade regime, whose functioning is already now in danger. Internalising the negative externalities in consumption and production, as suggested in the last sentence of this paragraph, is an excellent idea, and, if applied globally, would perfectly suffice so there would be no additional need to overburden the multilateral trade regime. [Bernhard Brümmer, Germany]	Accepted; sentence is reframed to focus on the need to internalize the negative externalities.
16126	19	35	19	35	Misleading (and possibly erroneous) statement re trade. This line states that "...it is important to ensure that future trade rules are both non-distorting to trade as well as being more aligned with climate objectives" . Please, note that "trade" is not (has not to be) an objective per se. Trade is an objective only if occurs under competitive market conditions, which are conditions that ensure the socially optimal allocation of resources, that is the maximization of social welfare. In presence of externalities, as well as other violations of competitive conditions, such as asymmetric information, monopolies, oligopolies, monopsonies, and even economies of scale etc, trade and related market equilibria may well fail to achieve social optima. In such case, trade is "distorting" social welfare, thus "distorting" trade may well lead to improve the social welfare. Therefore trade rules have to be such that social welfare is improved (if not maximized), whether they "distort" trade or not. [Lorenzo Giovanni Bellù, Italy]	Noted; ombined with other comment
25910	19	36	19	39	Slightly prescriptive tone of these sentences. This does not read like a literature assessment. [Hans Poertner and WGII TSU, Germany]	Accepted; both sentences reframed to read more like an assessment
25460	19	36	19	39	Uses of "should" might be regarded as policy-prescriptive language [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Noted, copyedit to be completed prior to publication.
9756	19	38	19	38	I find the statement policy prescriptive [Jan Fuglested, Norway]	Accepted - text revised. Noted; text revised

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3314	19	39	19	39	climate change mitigation cost should also internalise cost of desertification control and management as well as costs of drought mitigation and other climatic disasters which affect large area of our earth. [Suresh Kumar, India]	Rejected - outside the scope of the chapter
21148	19	2			poor people [Hasnat Aslam, Pakistan]	Accepted - text revised.
26436	19	4			Intensification of agriculture should also discuss aspects of current industrial agriculture and its collateral damages. [Hans Poertner and WGII TSU, Germany]	Taken into account; text related to AI revised.
25236	19	5			Include name of second author Elbert and W..2014 [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
1976	19	5			pg 19, ln 5. delete 'and W, as there is only one author, Ebert 2014. See comments on Pg 38 line 60. [Mastura Mahmud, Malaysia]	Accepted - text revised.
850	19	8			not only rangelands, also and all the more mountainous and hill slopes [Christophe Cudennec, France]	Accepted - text revised.
8890	19	11		27	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
26938	19	11			change to "(through prices) since diets are also rooted in culture and traditions as well as responses to changing lifestyles" [Knut Nadelhoffer, United States of America]	Accepted - text revised.
21150	19	13			food insted of land [Hasnat Aslam, Pakistan]	Accepted - text revised.
1978	19	20			pg 19, ln 20. comma "," instead of ')(''. can consider them as 2 references. [Mastura Mahmud, Malaysia]	Accepted - text revised.
17766	19	22			Change "ecosystems like" to "ecosystem aspects, such as" [Donald Smith, Canada]	Noted, copyedit to be completed prior to publication.
1980	19	23			pg 19, ln 23. comma "," instead of ')(''. can consider them as 2 references. [Mastura Mahmud, Malaysia]	Accepted - text revised.
1986	19	23			pg 19, ln 23. spelling error for 'requiree' [Mastura Mahmud, Malaysia]	Noted, copyedit to be completed prior to publication.
6490	19				something is needed in here about how understanding the history of landscapes and their associated cultural practices and cultural heritage can and inform sustainable solutions. E.g. natural flood managemetn in the UK can eb more effective if it takes account ot the history of water maangement in a place. [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Noted - point raised is well taken and covered under the indigenous and local knowledge (ILK) section, space permitting .
14912	20	1	20	1	A paragraph should be added about indigenous peoples and local communities. [Florian Claeys, France]	Accepted chapter restructured.
3716	20	1	20	1	Jargon title doesn't tell a non-social scientist anything about content. If it's about indigenous knowledge and/or gendersay so! [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.

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1224	20	1	20	9	As this is a discussion of actors in the solution space, more attention is needed to food producers as rather key to the solutions to tensions among land use, climate change, and food security. It's odd that there isn't more discussion of the innovative and adaptive actions that food producers (who are keenly aware of the environment in which they realize their livelihoods) are already taking. The mention of better linking scientific and policy-making communities is warranted -- but this link must also then include food producers (of all scales), to ensure that research responds to their needs and that policy is inclusive and responsive to differentiated needs, ensuring that particular populations of farmers are not left behind nor that the gap between those with good access to resources and those without is widened. Research continues to examine the potential of the land sector, including agriculture, to deliver on climate solutions, but there is a dearth of research on the barriers or incentives that different farmers (large scale, small scale, women, men, poor, not poor) face in adopting and maintaining more sustainable and climate-resilient practices. One study highlighted the unfortunate disconnect between what the literature & "experts" identify as barriers and incentives and what farmers themselves identified. see USAID. "Adoption of Climate-Smart Agriculture in Africa: Constraints, Incentives, and Recommendations." Prepared by Integra LLC. September 2016. https://issuu.com/integrallc/docs/adoption_of_climate_smart_agricultu [Tonya Rawe, United States of America]	Accepted chapter restructured. The solution space section has been revised.
3956	20	1	20	18	Land tenure systems in the other regions of the globe are not covered. The coverage is suggested to include gender disaggregation and the controversy between Customary and Statutory laws. [Tarig Ibrahim, Sudan]	Accepted chapter restructured.
18930	20	2	20	2	"Policies tend to often discount the" should be "Policies often tend to..." [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
25208	20	2	20	7	I am amazed by the wealth of knowledge in this chapter and waited patiently to see the approaches or solutions proposed to address the salient challenges of the complexities between land use and climate change, especially in rural communities. I like the fact that this paragraph raises the issue of stronger linkages between scientific and policy making communities in terms of valuing the knowledge base of land users, however, my short term experience is that, the weakest link in a developing country in addressing challenges is limited effectiveness in implementation of line policies mainly due to resource constraints both technical and structural. Climate change clearly being a reality, I think it would be good for such a report to outline the key ingredients necessary for the stronger linkage between science, policy and land users in a rural context. [Denis Asizua, Uganda]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
14310	20	2	20	7	To consider to add this paragraph after line 7. "Education of farmers that will provide them with a holistic perspective of how their management choices impact the land they manage and make them feel that they are part of a larger society effort, and not merely servants of subsidies or policymakers. There is a need to incentivize a new sustainable (societally, environmentally and economically) agriculture that will include cooperating with farmers and having them work closely with scientists, policy-makers, and other relevant members of society (Cerda et al., 2017). Reference: A., C., Land Use Policy (2017), https://doi.org/10.1016/j.landusepol.2017.12.052 [Rattan Lal, United States of America]	Accepted chapter restructured.
20832	20	2	20	18	The content seems to be somewhat limited compared to the title scope. More cross-chapter discussions are needed to agree about what chapter 1 should introduce in this sections. The discussion of an individual region (like Latin America) should be well justified. [Carolina Vera, Argentina]	Accepted chapter restructured.
25462	20	2	20	18	Material on gender from p.11 could be moved here, but the section either needs more material on social differences beyond gender, or renaming [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
6960	20	3	20	7	Local knowledge should not be neglected and coordinated with scientific knowledge, promoting their innovative use. [Anna Luise, Italy]	Accepted chapter restructured. Effort made in discussing the benefits of shared learning and drawing on local knowledge
7062	20	4	20	7	As land degradation and desertification are caused by land use, it may also be very important to develop stronger links between the scientific, policymaking and also land users at sub-national levels in the process of developing solution pathways. [Mariam Akhtar-Schuster, Germany]	Accepted chapter restructured.
14306	20	4	20	7	As land degradation and desertification are caused by land use, it may also be very important to develop stronger links between the scientific, policymaking and land users at sub-national levels in the process of developing solution pathways. [Rattan Lal, United States of America]	Accepted chapter restructured.
1982	20	7	20	8	pg 20. lines 7 and 8. Join these 2 sentences [Mastura Mahmud, Malaysia]	Accepted - text revised.
20204	20	8	20	9	This sentence is ambiguous in what it is trying to state. [Kaoru Kitajima, Japan]	Accepted - text revised.
16294	20	8	20	9	Can you please expand more? What arrangements do you have in mind and to what flows or resources are you referring? [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
19598	20	8	20	9	paragraph would benefit from being expanded and more explicitly cover land speculation and international land trade as significant issues affecting land governance and power distribution, e.g. In the areas of Africa, traditional unwritten agreements about using land and trees are often unclear and groups like indigenous people are often excluded. Sometimes forests are controlled by the government too, with permits (e.g. sold to foreign speculators or to grow food for export such as to Qatar or China), taxes and fines. Unless villagers trust the system, they won't invest in helping to protect the forest. [Rianne ten Veen, Netherlands]	Accepted chapter restructured.

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20028	20	8	20	9	Merge into previous paragraph [Sabit Erşahin, Turkey]	Accepted - text revised.
19292	20	8	20	18	Gender issue is suddenly introduced here, in fact, in this chapter I have a difficulty to follow the story line as the focus of the chapter is shifting from here and there (nexus, gender, SLM,). Why an IPCC report is structured in such a manner? [Binaya Raj Shivakoti, Japan]	Accepted chapter restructured. Text is now condensed and the overall flow is more coherent
18612	20	8	20	18	Again, the ownership of the land is a social issue that is not directly relevant to climate change. The impact to the land will be the same regardless of who owns the land and the social implications would seem to be outside the scope of what is to be addressed in this document. [Henry Allen Torbert, United States of America]	Rejected. It is also a governance issue
4054	20	8	20	18	suggest that you reverse the order of these paragraphs, putting the governance language last and replacing "The dominance" with "However, the existence" [Reid Detchon, United States of America]	Accepted - text revised.
6962	20	10	20	18	Gender issues are central in many areas. The role of girls and women should be better explored, especially in other continents (Africa, Asia) [Anna Luise, Italy]	Accepted chapter restructured.
24928	20	10	20	18	This paragraph is an odd generalization and the reference to Latin America should be noted as a case study or the like. Also, the generalization of gender roles across Latin America is overly broad. Gender rights vary globally and at scales often smaller than national boundaries. Consider a major rewrite of this paragraph. [Dale Lockwood, United States of America]	Accepted chapter restructured.
11700	20	10	20	18	Why is only South America singled out here? [Debra Roberts, South Africa]	Accepted chapter restructured.
17366	20	10	20	18	This paragraph could be move to 1.4.5. [Fei Lu, China]	Accepted chapter restructured.
18686	20	10	20	18	I agree with contents of this paragraph, however, the relationship between the contents and climate resilience is unclear. [Hiroaki Kondo, Japan]	Accepted chapter restructured. Removed
16296	20	10	20	18	The third paragraph of this section refers to land use rights in Latin America. How about other regions of the world? And how about other policies? And most important: what is the problem you are trying to solve? [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
2360	20	10	20	18	Gender disparity is clearly a global issue to be addressed but i do not see why women should manage better the land. It looks more like an educational problem. Could the authors expand and clarify. [Manuel Llansola-Portoles, France]	Accepted chapter restructured. Text reduced – problem fixed
25168	20	10	20	18	It will be good too add additional references from Africa and Asia too. [Mohammed Yahya Said Yahya, Kenya]	Accepted chapter restructured.
3316	20	10	20	18	Inter relations between land use changes and gender do exists and studies are available from Indian context which may be considered for inclusion [Suresh Kumar, India]	Accepted chapter restructured.
1222	20	10	20	18	The discussion of gender is welcome, but it's striking that it references one region only. FAO's 2010-2011 State of Food and Agriculture report continues to be a key source for discussion of gender issues. [Tonya Rawe, United States of America]	Accepted chapter restructured. Fixed
18684	20	13	20	14	Bose et al 2017 --> Bose et al. (2017) [Hiroaki Kondo, Japan]	Accepted - text revised.

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906	20	13	20	14	Please, write the reference Bose et al. (2017) in the correct form. [Jose Luis Vicente Vicente, Germany]	Accepted - text revised.
20030	20	13	20	14	Bose et al. (2017), in their Latin..... [Sabit Erşahin, Turkey]	Accepted - text revised.
20576	20	13	20	16	This sentence comprises a lot of the things said in previous sentences. Alternative sentence: Thus a level playing field needs to be created among social groups to reduce tendencies of unequal societies and entrenched incidences of poverty (Bode et al. 2017). [Bettina Weber, Germany]	Accepted chapter restructured.
15728	20	18	20	18	including entrepreneurship, but also capital and land ownership [Maria del Pilar Salazar Vargas, Mexico]	Comment noted section totally updated and revised.
14970	20	20	20	20	- Karsenty, A., Vogel, A., & Castell, F. (2014). "Carbon rights", REDD+ and payments for environmental services. Environmental Science & Policy, 35, 20-29. - Biénabe, E., Dutilly, C., Karsenty, A., & Le Coq, J. F. (2017). Ecosystem services, payments for environmental services, and agri-chains: what kind of regulation to enhance sustainability?. In Sustainable Development and Tropical Agri-chains (pp. 305-319). Springer, Dordrecht. [Florian Claeys, France]	Comment noted section totally updated and revised. Section on REDD reviewed
14314	20	20	20	20	Monetizing nature, marketization of environmental "goods", tends to undervalue non-quantitative social, aesthetic, and ethical aspects of the natural world (Unmüßig, 2014). Ref.: Unmüßig, B., Monetizing Nature: Taking Precaution on a Slippery Slope, Great Transition Network, 2014 [on line]: http://greattransition.org/publication/monetizing-nature-taking-precaution-on-a-slippery-slope [Rattan Lal, United States of America]	Comment noted section totally updated and revised. This has been tweaked.
4056	20	22	20	25	add "as" after "as well"; replace "requiree" with "require"; delete "assures" [Reid Detchon, United States of America]	Accepted - text revised.
15104	20	23	20	23	require [Ahmed Imam, Egypt]	Accepted - text revised.
19600	20	23	20	23	On the contrary – there seems too much market 'solutions' at play, cf my earlier remarks on impacts of food & land speculation [Rianne ten Veen, Netherlands]	Noted; sentence revised; "solutions" replaced by "response options"
16298	20	23	20	24	What is the problem with the current business models? What is it that they do wrong so that we need a paradigm shift in business models? [Lorenzo Giovanni Bellù, Italy]	Noted; reframing the business models required to internalize the costs of externalities in pursuit of CC and LSM.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24298	20	25	20	25	The importance of internalising externalities of business as usual is broadly accepted in all production sectors but the private sector where there still is room for improvement towards inclusive sustainable development (robust evidence and high agreement). However, what has not yet been sufficiently explored are concrete strategies - including by governments (beyond tax reliefs towards formal institutions) - to regulate and/ or incentivise such internalisation of negative effects of unsustainable business practices. Rural enterprises, particularly agricultural cooperatives and environmentally sound forest user groups could further benefit from government programmes that incentivise state-controlled access to markets, e.g. through school feeding programmes (see e.g. Drake, L., Woolnough, A., Burbano, C.& Bundy, D. (2016): Global School Feeding Sourcebook: Lessons from 14 Countries. London: Imperial College Press. < https://openknowledge.worldbank.org/handle/10986/24418 >). Such demand created by governments could incentivise climate-smart agriculture in the frame of inclusive and environmentally sound sourcing while adding value (not only economic - see chapter 1.3.4.6) in loco. [Barron Joseph Orr, Germany]	Accepted; text to be revised to better frame the issue (within the limit of introducing the issues leaving the details to later chapters)
6864	20	25	20	27	The following sentence is lacking clarity: " With private sector engagement in adaptation, assures greater investments can be catalysed enbling" [Wilfran Moufouma Okia, France]	Thank you for the positive comment.
27202	20	30	20	30	It is a myth that PES has worked well for forest. There are a few isolated examples often quoted, but they are rather insignificant in the big scheme of things and most are not really "PES" in the real sense, just subsidy schemes dressed up as PES for ideological or legal reasons. [Zoltán Rakoncay, Belgium]	Accepted; sentence revised to present a more nuanced assessment of PES
20816	20	30	20	36	Sengalama and Quilléro had a look at PES for upstream land management to ensure downstream water availability. Sengalama, T., Quilléro, E (2016) Paying for water in Uganda: is paying upstream land users a possible solution? The Solutions Journal, Special issue on "Sustainable Land Solutions", September-October, 64-73. [Emmanuelle Quillerou, France]	Accepted - text revised.
25170	20	30	20	36	A lot of work on PES on biodiversity has shown effectiveness of conserving biodiversity - other fields could learn from these experiences - see example from East Africa - Ogutu, J.O., Piepho, Hans-P, Said, M.Y., Ojwang, G.O., Njino, L.W., Kifugo, S.C., and Wargute, P.W. (2016) Extreme wildlife declines and concurrent increase in livestock numbers in Kenya: What are the causes? PLoS ONE 11(9):e0163249.doi:10.1371/ journal.pone.0163249. [Mohammed Yahya Said Yahya, Kenya]	Noted; text revised; framing of PES is revised within the scope of the report.
1226	20	31	20	31	The reference to participatory approaches is welcome -- and this is the sort of approach that should be discussed at greater length. [Tonya Rawe, United States of America]	Thank you for the positive comment.
15730	20	34	20	35	And also is important to have better metrics to focus these instruments in the scarce economic resources context. For instance, in Mexico this instrument is focused with some tools such as a spatially explicit index of economic risk to deforestation [Maria del Pilar Salazar Vargas, Mexico]	Noted; no action taken
11804	20	38	20	38	Instead of writing "social networks" (Nepstad et al. 2013) (Gautier et al. 2016)", please write "social networks; Nepstad et al. 2013; Gautier et al. 2016)" [Jacques Andre Ndione, Senegal]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
908	20	38	20	38	Please, unify the two references [Jose Luis Vicente Vicente, Germany]	Accepted - text revised.
11806	20	41	20	41	Instead of writing "(e.g., transport) (Appleton 2009)", please write "(e.g., transport; Appleton 2009)" [Jacques Andre Ndione, Senegal]	Accepted - text revised.
6964	20	20	21	19	The analysys of market -based solutions is referred to climate services, very important the reference of land contribution to mitigation; the suggestion is to consider also circular effects for land protection and restore. [Anna Luise, Italy]	Comment noted section totally updated and revised.
26766	20	20	21	19	This section seems to be missing reference to promising initiatives being implemented under the "jurisdictional approach" to linking market-based incentives (such as preferential commodity sourcing) to public sector regulation. (See, for example, Boyd et al. 2018). It also seems strange not to mention the potential of incorporating land-based carbon into carbon markets as a market-based solution, as has already been done, for example, in California's cap-and-trade system. [Frances Seymour, United States of America]	Comment noted section totally updated and revised.
7064	20	20	21	19	Regarding section 1.4.4 on market-based solutions: You may also wish to also discuss non-monetary solutions? This would need to look into a wide array of values connected to issues you mention on page 5, lines 19-21 such as recreation, spiritual aspects. [Mariam Akhtar-Schuster, Germany]	Comment noted section totally updated and revised.
3914	20	20	21	19	Regarding market-based approach in the field of land and forest management, I would suggest to add context of REDD+ under the UNFCCC and/or voluntary market. It is because that huge investment to tropical forest management had been already done and even in now when the UNFCCC did not reach to agreement of REDD+ transaction, market still keep active trade (please see the paper of "State of the Voluntary Carbon Markets 2017"). Also I would suggest private funding to REDD+ had effective on not only carbon sequestration but also biodiversity and other aspects of SDGs. Anyway, as an example, REDD+ which is under voluntary market should be described in this chapter. [Motoshi Hiratsuka, Japan]	Comment noted section totally updated and revised.
14308	20	20	21	19	Regarding section 1.4.4 on market-based solutions: You may also wish to also discuss non-monetary solutions? This would need to look into a wide array of values connected to issues you mention on page 5, lines 19-21 such as recreation, spiritual aspects. [Rattan Lal, United States of America]	Comment noted section totally updated and revised.
4058	20	20	21	19	Payments for carbon reductions or storage - often through voluntary carbon markets - have incentivized forest protection and could be extended to farming practices and restoration of degraded lands. This is an important market-based tool and should be included here. In general, carbon pricing is neglected here. [Reid Detchon, United States of America]	Comment noted section totally updated and revised.
19294	20	20	21	21	Link between market-based solution and climate mitigation/adapation is vague and abstract. [Binaya Raj Shivakoti, Japan]	Comment noted section totally updated and revised.
16300	20	37	21	3	Please explain what you understand as market-based instruments? Why only eco-labels? Why not something else, like green payments or carbon taxes? What are the agricultural commodity roundtables? And what social networks do you have in mind that can be called/thought as institutions? [Lorenzo Giovanni Bellù, Italy]	Accepted; paragraph revised and expanded

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
14312	20	2	40	47	The delineation between chapter content is not clear when comparing section 1.3.4. to 6.4 and 6.5, which address the same issues and similar title. There may be a good reason for this but in this draft it's not entirely clear to the reader the boundaries between chapters and content. [Rattan Lal, United States of America]	Accepted chapter restructured.
2930	20	1		18	This chapter needs a better conceptual base/discussion about actors in the field of food production not only to discuss men-women... but role of smallholders in global food production, in their needs and contributions, their potential for SLM and LBM. .. and other actors? business? (paragraph below is not about business actors) governments? NGOs? [Cordula Ott, Switzerland]	Accepted chapter restructured.
2932	20	1			Title: field-based solutions? [Cordula Ott, Switzerland]	Accepted chapter restructured.
26768	20	1			This section seems incomplete, mentioning only gender disparities in Latin America. At minimum, the section should also highlight the role of indigenous peoples as ecosystem stewards -- especially for the world's remaining intact forests -- and whose rights remain largely unrecognized and defended. Recent papers (e.g., Blackman et al. 2017) demonstrate the impact of recognizing indigenous rights on deforestation and forest degradation. [Frances Seymour, United States of America]	Accepted chapter restructured.
25912	20	1			The section title sounds much more generic than the actual content of the section, which focuses on gender issues and local knowledge. Suggest to include the wider perspective on civil society actors, the responsibility of the private sector, and other formal and informal stakeholder groups. [Hans Poertner and WGII TSU, Germany]	Accepted chapter restructured.
2934	20	2		18	knowledge base is important, but also acknowledgment of capacity, agency.. for example: Women are most vulnerable. But are key potential/drivers for change, are economic and social force... But structural change is necessary to support their agency: (UN 2013): The message is simple. Women who are safe, healthy, educated, and fully empowered to realize their potential transform their families, their communities, their economies and their societies. We must create the conditions so they can do so. [Cordula Ott, Switzerland]	Accepted chapter restructured.
8892	20	4		18	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
25238	20	5			polycymaking - separate [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
5364	20	7			Emerging land management options for mitigation of climate impacts include deliberately planned crop rotations, timing, and water/irrigation. These are not emerging options but have been practiced for long. Conservation agriculture, use of varying fertility enhancement measures etc could be mentioned instead [Daniel Danano Dale, Italy]	Accepted - chapter restructured. Different land management options have been discussed.

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1984	20	16			pg 20, In 16. Social structures are quite rigid in certain societies especially those that tie with their religious beliefs in the developing world. Concerted effort is needed by the local government and leaders in the communities to impart this mechanism. Women most often do not have the money power to purchase land compared to their husbands. In Muslim societies, the women mostly get half of what their siblings get from their parents' inheritance, and only 1/6th of what they inherited from their husbands' wealth /land. [Mastura Mahmud, Malaysia]	Accepted chapter restructured.
2936	20	20			... better approach and structure needed; a bit not not critically enough... what are benefits and what are negative effects? .. what would be necessary to improve these approaches... [Cordula Ott, Switzerland]	Comment noted section totally updated and revised.
25914	20	20			Why is this a distinct section to the one before? There is a bias towards market-based solutions. The two sections could be merged. [Hans Poertner and WGII TSU, Germany]	Comment noted section totally updated and revised.
25240	20	23			development requiree - remove one e and should read require [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
148	20	23			Change "requiree" to "require" [Beth Middleton, United States of America]	Accepted - text revised.
21152	20	23			require instead of requiree [Hasnat Aslam, Pakistan]	Accepted - text revised.
8372	20	23			The spelling of 'require' is not correct. [Shijo Joseph, India]	Accepted and corrected
1988	20	38			pg 20, In 38. place ; and delete)(as two referred citations. [Mastura Mahmud, Malaysia]	Accepted - text revised.
26524	21	1	21	3	The Gaudier and Locatelli reference is not in the bibliography, and makes a rather obscure and limited point which is not well captured in this summary [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted; references expended; text revised
11808	21	3	21	3	Please instead of "Gautier D, Locatelli B 2016", write, "Gautier and Locatelli,2016" [Jacques Andre Ndione, Senegal]	Accepted - text revised.
25242	21	3	21	10	Remove initials for the cited work and should read Gautier and Locatell 2016 [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
16302	21	4	21	5	What are the appropriate regulatory measures you are referring to? [Lorenzo Giovanni Bellù, Italy]	Accepted; sentence revised - appropriate replaced with complementary regulatory measures (with examples)
14914	21	4	21	12	This paragraph should also deal with fiscalty and other policy instruments influencing land degradation; - Requier-Desjardins, M., Adhikari, B., & Sperlich, S. (2011). Some notes on the economic assessment of land degradation. Land Degradation & Development, 22(2), 285-298. - Prager, K., Schuler, J., Helming, K., Zander, P., Ratering, T., & Hagedorn, K. (2011). Soil degradation, farming practices, institutions and policy responses: An analytical framework. Land degradation & development, 22(1), 32-46. - Ezzine-de-Blas, D., Dutilly, C., Lara-Pulido, J. A., Le Velly, G., & Guevara-Sanginés, A. (2016). Payments for environmental services in a policymix: spatial and temporal articulation in Mexico. PloS one, 11(4), e0152514.. [Florian Claeys, France]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
3318	21	4	21	12	There need to be a mention of synergies between UNCCD and CBD with UNFCCC as an important policy requirement for SLM [Suresh Kumar, India]	Accepted; text revised.
20206	21	4	21	19	Without clarifying what are meant by "appropriate regulatory measures", and "narrow economic criteria" and what have to be reconciled between WTO and UNFCCC, these paragraphs are ambiguous. [Kaoru Kitajima, Japan]	Accepted; paragraph revised and expanded
1228	21	5	21	6	"appropriate regulatory measures" -- such as? Can a couple indicative examples be given? [Tonya Rawe, United States of America]	Accepted
3320	21	13	21	19	Market based solutions using local biodiversity have limitations: It confronts sovereign rights on biodiversity and associated legal instruments. Additionally these are also affected by issues of market access and benefit sharing mechanisms which are often poorly defined in National Laws. These need to find place in framing the issues [Suresh Kumar, India]	Accepted; paragraph revised and expanded
27204	21	13	21	19	The challenges associated with offsetting schemes seem to be underappreciated in this discussion. Private standards proliferate, but their effectiveness is unproven. Economic logic would suggest these unregulated systems to be weak at best and fraudulent at worse. Systems of high integrity are unlikely to be able to compete (race to the bottom.). Even if they are developed, efficient, wide-spread operations are made next to impossible in the absence of a regulated international framework that could ensure comparability and avoid multiple counting of performance (possibly beyond the control and responsibility of good-faith actors involved). Even the strictly controlled CDM had many failings (non-additional projects, etc.), [Zoltán Rakonczay, Belgium]	Rejected; outside the scope of the chapter (covered in chapter 7)
11810	21	15	21	15	Please instead of writing, "(WTO) (Elbehri et al. 2015).", write "(WTO; Elbehri et al. 2015)." [Jacques Andre Ndione, Senegal]	Accepted - text revised.
26690	21	15	21	19	And vice versa – global trade barriers should not be able to so easily be used to prevent a country from taking prudent climate action e.g. by government [Rianne ten Veen, Netherlands]	Taken into account - combined with other comment.
14316	21	20	21	20	A four-dimensional approach to socio-ecological systems thinking (Pilon, 2018) takes into account, in the diagnosis and prognosis of the events, the configurations formed by the ensemble of all dimensions of being in the world (intimate, interactive, social and biophysical), as they combine to induce the events (deficits/assets), cope with consequences (desired/undesired) and contribute for change (potential outputs); nonlinear interactions and feedback loops both within and between the different dimensions should be considered). Ref.: PILON, A. F., Global Transformation in the Mirror of the Ecosystemic Approach, posted on the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), 2018 [online]::https://www.ipbes.net/policy-support/tools-instruments/global-transformation-mirror-ecosystemic-approach [Rattan Lal, United States of America]	Taken into account - combined with other comment.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
26980	21	21	21	41	<p>Excellent mention of the socio-ecological systems and polycentric governance framework. However, the treatment of multi-layered institutions could have been much better. Authors could look at socio-technical transition literature that discusses multi-level perspective on innovation governance. Further, there is an emerging body of literature that integrates socio-ecological systems thinking and socio-technical systems thinking. Here are some examples.</p> <p>Smith, A., & Stirling, A. (2010). The Politics of Socio-ecological Resilience and Sustainable Socio-technical Transitions. <i>Ecology and Society</i>, 15(1), 11.</p> <p>Foxon, T. J., Reed, M. S., & Stringer, L. C. (2009). Governing Long-Term Social–Ecological Change: What Can the Adaptive Management and Transition Management Approaches Learn from Each Other? <i>Environmental Policy and Governance</i>, 19, 3-20.</p> <p>Pant, L. P. (2016). Paradox of mainstreaming agroecology for regional and rural food security in developing countries. <i>Technological Forecasting & Social Change</i>, 111, 305–316.</p> <p>Pant, L. P., Adhikari, B., & Bhattarai, K. K. (2015). Adaptive Transition for Transformations to Sustainability in Developing Countries. <i>Current Opinion in Environmental Sustainability</i>, 14, 206-212.</p> <p>Pant, L. P., KC, K. B., Fraser, E. D. G., Shrestha, P. K., Lama, A., Jirel, S. K., & Chaudhary, P. (2014). Adaptive Transition Management for Transformations to Agricultural Sustainability in the Karnali Mountains of Nepal. <i>Agroecology and Sustainable Food Systems</i>, 38(10), 1156 - 1183. doi: ID: 942022 DOI:10.1080/21683565.2014.942022 [Laxmi Pant, Canada]</p>	Accepted; SES Comment noted section totalluupdated and revised and expanded
25244	21	22	21	23	Acknowledge source for the sentence starting with sustainable land management options... [Abiud Kaswamila, United Republic of Tanzania]	Accepted; text revised
6532	21	22	21	23	For the source needed: Maybe consider the framing used by Gardner et al. 2013 [Ojong.E nee Enokeba Baa, South Africa]	Accepted - text revised.
17002	21	22	21	23	LEBEL, Louis, ANDERIES, John M., CAMPBELL, Bruce, et al. Governance and the capacity to manage resilience in regional social-ecological systems. <i>Ecology and Society</i> , 2006, vol. 11, no 1. / CARPENTER, Stephen R., WESTLEY, Frances, et TURNER, Monica G. Surrogates for resilience of social–ecological systems. <i>Ecosystems</i> , 2005, vol. 8, no 8, p. 941-944. [Romain Courault, France]	Taken into account - combined with other comment.
20680	21	23	21	23	Need to add source here as already mentionned, [Mahamadou Laouali Amadou, Niger]	Accepted- text revised.
16304	21	23	21	24	Please explain the terms: "social-ecological system framing" and "common-pool resources". [Lorenzo Giovanni Bellù, Italy]	Accepted; text revised and definitions added
15106	21	27	21	29	Ostrom and Cox (2010) developed a useful SES framework built on the foundations of the institutional analysis and development (IAD) framework applied for analyses on how institutions affect human incentives, actions and outcomes [Ahmed Imam, Egypt]	Noted no action needed.
20682	21	27	21	29	May be good to give the spacial scale at which the framework was developped: local, nation, or, ... [Mahamadou Laouali Amadou, Niger]	Accepted- text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
19624	21	27	21	36	<p>Add on continue line 36: "The IAD framework lacks sufficient attention to the dynamics of power enforcement in a governance system [3]. The application of the IAD framework requires the precise definition and categorization of outcomes as fundamental aspects of a policy issues. Many of these consequences can't be identified even by conducting a detailed analysis and detailed technical examination with a limited range of the related factors [1]. Although Common theory considers the underlying variables such as the size of the group or the complexity of the resources, real context assessment involves looking beyond these variables. In other words, considering people's decision-making and actions situations, understanding how to formulate rules and property rights requires identifying the underlying contextual factors and factors that are wider than the variables mentioned in the Ostrom's framework and varying according to each country and region [2]."</p> <p>References: 1.Ribor, J. C., A. Agrawal, and A. M. Larson. (2006). Recentralizing while decentralizing: how national governments re appropriate forest resources. World Development 34(11):1864-1886. 2. McCay, B. J. (2002). Emergence of institutions for the commons: contexts, situations, and events. Pages 361-402 in E. Ostrom, T. Dietz, N. Dolsak, P. C. Stern, S. Stonich, and E. U. Weber, editors. The drama of the commons. National Academy Press, Washington, D.C., USA. 3.Johnson, C.)2004(. Uncommon ground: the "poverty of history" in common property discourse. Development and Change 35 (3):407-434.. [sadegh ziayan, Iran]</p>	Accepted; text revised and IAD limitations stated and references.
1230	21	27	21	38	<p>Do Ostrom and colleagues include an example that could be briefly cited here? The description of the SES framework is useful but perhaps too conceptual. It's helpful that the framework is explicit re: the potential effect of socio-economic and political, as well as ecological, settings. The first sentence of the following paragraph would also benefit from - and be strengthened by - an example related to the SES framework that demonstrates quite concretely that governance must be addressed. [Tonya Rawe, United States of America]</p>	Noted no action taken (lack of space prevent using examples in this framing chapter)
15108	21	29	21	29	This proposed SES framework [Ahmed Imam, Egypt]	Accepted; corrected
15110	21	32	21	32	how they affect and be affected by [Ahmed Imam, Egypt]	Accepted; corrected
15112	21	37	21	37	Designing interventions in social-ecological systems to build climate resilience require [Ahmed Imam, Egypt]	Accepted; corrected
4060	21	42	21	42	replace "principals" with "principles" [Reid Detchon, United States of America]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24300	21	21	22	31	While SES thinking and LIK can be useful for climate change mitigation and adaption, its link to coping with the respective global change is not explicitly mentioned. In this frame, chapter 1.4.5 could benefit from exploring the link between SES thinking and LIK to integrated land-use planning in the realm of land degradation neutrality -- see Orr et al. (2017): Scientific Conceptual Framework for Land Degradation Neutrality https://www.unccd.int/sites/default/files/documents/2017-08/LDN_CF_report_web-english.pdf ; Cowie et al. (2018): Land in balance: The scientific conceptual framework for Land Degradation Neutrality https://www.sciencedirect.com/science/article/pii/S1462901117308146?via%3Dihub and UNCCD (2017): Global Land Outlook, first edition. Bonn, Germany https://www.unccd.int/sites/default/files/documents/2017-09/GLO_Full_Report_low_res.pdf (specifically on LIK/local knowdge related to land, see https://knowledge.unccd.int/GLO/part-one-big-picture/chapter-1-meaning-land) [Barron Joseph Orr, Germany]	Accepted; text revised and references added
19296	21	21	22	31	Socio-ecological system concept and why it could be relevant for cliamte change is well explained, again it is not suggesting a definitive answer on how it should be applied or implemeted on ground to deal with climate change problem. [Binaya Raj Shivakoti, Japan]	Accepted; SES Comment noted section totalluupdated and revised and link to CC stressed further
3916	21	21	22	31	Resilience on climate change is very related to social condition which includes rural people's knowledge and culture. I would suggest to add some sentences of rural people's knowledge (traditional knowledge) which reduce on pressures on natural disturbance and enhance values of natural resources in forest ecosystem. [Motoshi Hiratsuka, Japan]	Taken into account - combined with other comment.
4062	21	21	22	31	This seems like too much detail about an academic theory. Suggest you omit most or all of this section. If you retain it, the last paragraph (about Local Indigenous Knowledge) could be combined with similar language in section 1.4.3 (p. 20, lines 3-7). [Reid Detchon, United States of America]	Rejected; not consistent with the other favorable comments on keeping and reinforcing the SES framework
25598	21	37	22	2	In addition to defining interventions in terms of governance, ackowledging that internventions are to socio-ecological systems. Those systems have a strong ecological component. Adding a paragraph on ecological aspects of potential interventions is important. Ecological resilience is an example of that. [Laura Schneider, United States of America]	Accepted; text revised to bring in more ecological aspects of the SES
8894	21	2			remove bracket) [Amanullah Amanullah, Pakistan]	Accepted - text revised.
1990	21	3			pg 21, ln 3. Remove the initials of D and B. Reference should be (Gautier et al. 2016) [Mastura Mahmud, Malaysia]	Accepted - text revised.
8896	21	4		17	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
17768	21	7			Change "based on" to "developed around" [Donald Smith, Canada]	Accepted - text revised. accepted and corrected
1992	21	10			pg 21 ln 10. reference should be 'Gautier et al. 2016' [Mastura Mahmud, Malaysia]	Accepted - text revised.

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2938	21	21			system thinking should have a more prominent role... not as a sub-paragraph... What is mostly needed under current threats is an understanding of the world/planet as a socio-ecological system... and land management is a defined subsystem (open boundaries!). Applying IAD is one way of analysing and detecting governance issues within and beyond this subsystem [Cordula Ott, Switzerland]	Taken into account - combined with other comment.
17770	21	23			Change "dynamics" to the singular [Donald Smith, Canada]	Accepted - text revised.
9370	21	23			in the bracket "(source)" provide citation [Kennedy Ondimu, Kenya]	Accepted - text revised.
26942	21	23			Change "dynamics" to "dynamic". [Knute Nadelhoffer, United States of America]	Accepted - text revised.
25246	21	27			Include name of author (s) and if more than two use et al instead of colleaguessecond author Elbert and W..2014 [Abiud Kaswamila, United Republic of Tanzania]	Accepted; corrected
26692	22	3	22	4	Such SES should not be limited to 'western' style knowledge/ knowledge acquiring only, but also build on the vast knowledge of indigenous peoples around the world, and such not only as an afterthought (as eg mentioned in paragraph on this page from row 20)/ tick box exercise. [Rianne ten Veen, Netherlands]	Taken into account; combined with other comment (on linking SES with ILK).
15114	22	5	22	5	MCDA is a useful tool to [Ahmed Imam, Egypt]	Accepted; corrected
11812	22	5	22	5	Please, instead of writing "(MCDA) (Favretto et al. 2016)", write "(MCDA; Favretto et al. 2016)" [Jacques Andre Ndione, Senegal]	Accepted - text revised.
20684	22	5	22	10	I suggest adding recent publications on that, AMADOU et al. 2018, https://www.sciencedirect.com/science/article/pii/S0308521X17303402 [Mahamadou Laouali Amadou, Niger]	Accepted; reference added
20748	22	5	22	10	I suggest adding recent publications on that, AMADOU et al. 2018, on "Simulating agricultural land-use adaptation decisions to climate change: an empirical agent-based modelling in northern Ghana" is recently published at Agricultural System journal/ Elsevier [Mahamadou Laouali Amadou, Niger]	Accepted - text revised. Accepted; reference added
26982	22	11	22	19	Assuming food and agricultural systems as socio-ecological systems per se could be incorrect. It is a combination of socio-ecological systems as well as socio-technical systems depending on the local context. You could consider agricultural systems as simple as community forestry, agroforestry and leasehold forestry as socio-ecological systems, but these systems of food and agriculture can also have elements of technological innovations, which could be better explained by the socio-technical systems thinking or adaptive transition capacity development. You can have a look at the paper from the Karnali Mountains of Nepal. [Laxmi Pant, Canada]	Accepted; text revised and food systems are reframed as SES and socio-technical systems (ref added).
17004	22	16	22	19	"In the presence of strong and well-enforced institutions, you can engage in trade and maintain sustained fish stocks [...]" => It sounds like a quote, need to be reformulate + subject of the sentence to redefine [Romain Courault, France]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
25464	22	20	22	31	There is a plethora of terminology, including acronyms, in this field. Chapter 7 has favoured Traditional Educational Knowledge or TEK. One of the problems, though not an insuperable one, of Indigenous Knowledge or LIK as here is that it encourages the assumption, as here, that IK is held by "indigenous people". It is perfectly possible for communities who have settled in areas in relatively recent historical time to possess useful TEK, and in addition the very term "indigenous people" is problematic in Africa. [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account; combined with other comment; revised text with definition of ILK.
1232	22	20	22	31	The discussion of local and indigenous knowledge is welcome and a critical element to consider in designing solutions to the challenges in climate change, land use, and food security. [Tonya Rawe, United States of America]	Thank you for the positive comment.
16942	22	21	22	21	Suggestion of additional reference: Schneider&Buser 2018. [Vincenza Ferrara, Italy]	Accepted; reference added
25916	22	23	22	23	Suggest to refer to 'Indigenous and Local Knowledge' (ILK), like in the other IPCC special reports and much of the literature. [Hans Poertner and WGII TSU, Germany]	Taken into account - combined with other comment.
5108	22	23	22	31	ILK (Indigenous and Local Knowledge) is a more common abbreviation now, than LIK, used by UNESCO. Look, for example IPBES reports, IUCN, UNEP-WCMC. [Oksana Lipka, Russian Federation]	Accepted - text revised.
16926	22	25	22	25	"situated within" what? Noun missing [Pauline Midgley, Germany]	Accepted; text revised
17006	22	29	22	29	"LIK need not be viewed as needing confirmation" => "LIK need not be viewed as needing informations" / "to" is lacking [Romain Courault, France]	Accepted - text revised.
3958	22	30	22	30	disproval is to be changed into disapproval [Tarig Ibrahim, Sudan]	Accepted - text revised.
14916	22	32	22	32	Include in this section some elements about climate projection downscaling, such as CORDEX initiative. [Florian Claeys, France]	Comment noted section totally updated and revised.
20496	22	32	22	35	4. I suggest to increase the heterogeneity, homogeneity, diversity and their dynamics within or cross the environment or system etc. [Huai Jianjun, China]	Comment noted section totally updated and revised.
1994	22	33	22	35	Page 22 Line 33 to 35. "Section to be developed in the next version of the report". Why is this report put for review (FOD) when it is clearly not completed? This shows poor organization and management of the authors. [Mastura Mahmud, Malaysia]	Noted no action needed.
14318	22	34	22	35	It would be interesting to see specifics, regional similarities and vulnerabilities to climate change driven events, that affects land and causes land degradation (floods, drought, excessive deforestation). To show also regional beside global approach in this regard. [Rattan Lal, United States of America]	Rejected. Comment refers to previous section
2444	22	36	22	36	Following my point for P. 1-6, I suggest authors consider including a subsection in Sect. 1.4 (perhaps as Sect. 1.4.7) discussing the role of Earth Observation (and perhaps reanalyses) in monitoring the solutions proposed in Sect. 1.4. Alternatively, or in addition, authors could include a link to discussions about these issues elsewhere in the document. Inclusion of this information introduces the discussion of uncertainties in observations (and reanalyses, if discussed) in Sect. 1.5. [William Lahoz, Norway]	Accepted. Having an entire section dedicated to earth observations could unbalance the whole chapter. I added an additional recent reference which is a review on Earth Observations (Murray et al. 2018)

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3718	22	37	22	37	Key missing uncertainties relate to inventories and estimates of current GHG fluxes! Back to this being co-led by the Task Force on Inventories [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised. GHG fluxes observation uncertainties are already reported. The uncertainties reported as biomass in table is related to inventories methods at plot scale. I have added two references for global scale carbon balance reconciliation (Grassi et al. 2018) and country reporting uncertainties (IPCC 2006)
2446	22	41	22	41	I suggest the authors identify that observations are from remote sensing and in situ platforms, with examples (e.g., satellite, ground-based). [William Lahoz, Norway]	Accepted - text revised. Ok added some languages
17542	22		23		paragraph 1.5. suggest adding among the uncertainties "ethical-ideological-cultural biases". [TURI FILECCIA, Italy]	Accepted - text revised. see comment 1236
16128	22	37	30	20	Unclear rationale of section 1.5. Section 1.5 "Uncertainties" This section reads much better than the rest of the chapter. The content flows and it looks internally consistent. However, as per other sections, it is not clear to the reader why it is put here. Should it anticipate/summarize the content of chapter 7? Raise caution for the reader regarding the ease of reading through chapters 2 to 5? In any case it requires to be contextualized in the flow of the whole chapter. [Lorenzo Giovanni Bellù, Italy]	The chapter goal is to set the frame of the entire report. Uncertainty is a key element of any land based management strategy both in terms of mitigation and adaptation. The current section 1.5 try to give a first insight on the overall issue of uncertainty from a broad perspective i.e. from observations to decision making. The risk assessment that is the result of managing uncertainty is discussed in chapter 7.
1236	22	37	30	20	The discussion of uncertainty and decision-making is very science-heavy and top down. While science is obviously a critical factor, the human factor is missing: accessibility of information to make decisions, the capacities of different kinds of decision-makers (from policymakers to small-scale women farmers), and their access to appropriate resources to be able to make and implement a decision. [Tonya Rawe, United States of America]	Included some reference on accessibility of information (Liebig et al 2016). Additional reference can be found in chapter 7.
25248	22	1			remove the word just which is between pursue and distributions [Abiud Kaswamila, United Republic of Tanzania]	Accepted; corrected
8898	22	2		41	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
6492	22	3			Agent based modelling should take account of culture [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Accepted; sentence revised
6592	22	17			use of the term "you". I assume it should be a more general form or passive [Anna Haines, United States of America]	Accepted - text revised.
9372	22	17			replace the word "institutions" with "frameworks [Kennedy Ondimu, Kenya]	Accepted - text revised.
2940	22	20		31	Indigenous knowledge is often used in reference to eco-biology.. but also important is contextualized knowledge (ecosystem, social, political...) KIL and agency! ... understand and integrate local actors as agents of change... Not just instrumental use of indigenous knowledge of local actors.. but those actors are decisive in the future forming process, in shaping the development... in solution finding and innovation...i [Cordula Ott, Switzerland]	Noted no action needed.
11702	22	23			Note decision taken at SROCC LAM3 to separate out the terms Local Knowledge and Indigenous Knowledge - need consistency across the SRs [Debra Roberts, South Africa]	Accepted; a clear separation between local knowledge and indigenous knowledge is offered
6494	22	33			can you include cultural heritage when you do this please?! [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Accepted, revised

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21154	23	3	23	5	a certain degree of uncertainty always associate with decisions and methods [Hasnat Aslam, Pakistan]	Noted no action needed.
14972	23	3	23	6	Some thoughts from Bruno Latour about social action and uncertainties could usefully be reflected in this paragraph. Latour, B. (2005). Reassembling the social: An introduction to actor-network-theory. Oxford university press. [Florian Claeys, France]	Accepted - text revised. see comment 1236
15116	23	4	23	5	varying degrees not only on many knowns but also many unknowns [Ahmed Imam, Egypt]	Added in text
17330	23	7	23	29	Here, the role of satellites seems no clear regarding our current observational system. Please clarify. [Jhan Carlo Espinoza, France]	Rejected. Comment not clear, reference literature is presented. Here not meant to report satellite characteristics
25172	23	11	23	11	Cost of high resolution satellite is a handicap for many developing country to udertake land use assesment at landscape level that could help in local and country plans [Mohammed Yahya Said Yahya, Kenya]	Accepted - text revised. I have added a reference in text
21156	23	11	23	12	high resolution spatial data with different temporal resolutions are commerically available. Absence of freely available high resolution spatial data, data processing, envirnment and weather effects on electromegnatic reflectance and absence of ground surveyed data are major abstackles [Hasnat Aslam, Pakistan]	Accepted - text revised. Some reference to accessibility of data is included in text
10122	23	12	23	12	Remove reference 'Alexander et al. 2017a'. This publication does not deal with observations at all, but land-use change projections. [Reinhard Prestele, Germany]	Rejected . The reference is made in text in discussing potential limitations
10124	23	12	23	12	Additional reference: Congalton, R. G., J. Gu, K. Yadav, P. Thenkabil, and M. Ozdogan. 2014. Global land cover mapping: A review and uncertainty analysis. Remote Sensing. doi:10.3390/rs61212070. [Reinhard Prestele, Germany]	Accepted - text revised. included
14762	23	14	23	14	Please define SLM.....it is not in the Glossary [Paul Glaser, United States of America]	Noted no action needed.
21164	23	22	23	23	to overcome on temporal and spatial scale or resolutions of different observation methods large scale continous grided data is used for carbon [Hasnat Aslam, Pakistan]	Accepted - text revised. thi is part of modelling
2448	23	27	23	27	To my knowledge, the first mention of “data assimilation” in text. I suggest authors provide a general reference or two describing the method. If there were mention of reanalyses earlier in the text, this earlier place in the text would be a good place to introduce and reference the method of data assimilation. [William Lahoz, Norway]	Accepted - text revised. It is described in Scholze et al 2017
25698	23	28	23	28	Characterizing commercial oil palm expansion in Latin America: land use change and trade. Deforestation and Reforestation of Latin America and the Caribbean (2001–2010). Aide, T. M., M. L. Clark, H. R. Grau, D. López Carr, M. A. Levy, D. Redo, M. Bonilla Moheno, G. Riner, M. J. Andrade Núñez and M. Muñiz (2013) Biotropica 45(2): 262–271. Characterizing commercial oil palm expansion in Latin America: land use change and trade. Furumo, P. R. and T. M. Aide (2017) Environmental Research Letters 12: 024008. doi: 10.1088/1748-9326/aa5892. [Laura Schneider, United States of America]	Rejected . too specific not relevant

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8900	23	2		44	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
416	23	14			Please define SLM.....it is not in the Glossary [Paul Glaser, United States of America]	Accepted - text revised. I have changed in text from line 18 page 23 to line 20 page 30
21158	23	15			instrumentations specifications and limitaions and sensor capabilities [Hasnat Aslam, Pakistan]	Noted no action needed.
21160	23	18			information or relationship [Hasnat Aslam, Pakistan]	Comment noted section totally updated and revised.
21162	23	19			improvement in methodologies and advancement in sensor technology [Hasnat Aslam, Pakistan]	Comment noted section totally updated and revised.
8374	23	22		26	This argument has been well dcoumented in the following paper. de Sassi, C., Joseph, S., Bos, A.B., Duchelle, A.E., Ravikumar, A., & Herold, M. (2015). Towards integrated monitoring of REDD+. Current Opinion in Environmental Sustainability, 14, 93-100 [Shijo Joseph, India]	Accepted - text revised. included
2450	24	1	24	1	This mentions a "possible" inclusion of this table. I suggest the authors include this table here. [William Lahoz, Norway]	Accepted - text revised. Table in suplement
24552	24	1	24	2	Table 1.2 should be clearer in what the "Pros" and "Cons" refer to [Christopher Morhart, Germany]	Rejected. Wording self explained by the content
7886	24	2	24	2	I am concerned that the uncertainty estimates for GHG fluxes are too low for both in terms of spatial and temporal variability. Estimates derived from eddy covariance calculations are generally restricted to daytime periods when there is at least some wind and are also restricted to the footprint of the tower-mounted sensors. Chamber measurements, in contrast, are spatially limited to the footprint of the chamber and also during measurement period as well (unless the chambers are automated. I was also surprised by the very low level of uncertainty assigned to ET measurements. There are two gold-standard methods for estimating ET (eddy covariance and energy balance) and both are subject to serious errors. Also on Page 1-25 please change "unexpensive" to "inexpensive" for the water balance entries. [Paul Glaser, United States of America]	Accepted - text revised. Uncertainties in flux measurememnts are expressed as random errors, not including biases or interpretation errors which are sites specific. A note is included in table footnote
14764	24	2	24	2	I am concerned that the uncertainty estimates for GHG fluxes are too low for both in terms of spatial and temporal variability. Estimates derived from eddy covariance calculations are generally restricted to daytime periods when there is at least some wind and are also restricted to the footprint of the tower-mounted sensors. Chamber measurements, in contrast, are spatially limited to the footprint of the chamber and also during measurement period as well (unless the chambers are automated. I was also surprised by the very low level of uncertainty assigned to ET measurements. There are two gold-standard methods for estimating ET (eddy covariance and energy balance) and both are subject to serious errors. [Paul Glaser, United States of America]	Accepted - text revised. Uncertainties in flux measurememnts are expressed as random errors, not including biases or interpretation errors which are sites specific. A note is included in table footnote
3960	24	2	24	2	add space after the forward slash [Tarig Ibrahim, Sudan]	Accepted - text revised.
3340	24	4	24	5	missing reference [Farid RAHAL, Algeria]	Rejected . which reference?
17702	24	1	25	1	too much detailed table as an example [Sawsan Mustafa, Sudan]	Accepted - text revised. table moved to supplementary material

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16130	24	1	25		Explanatory notes needed. Table 1.2 requires explanatory notes re terms, measures etc, to allow the average reader understanding its content [Lorenzo Giovanni Bellù, Italy]	Comment noted section totally updated and revised.
8378	24		25		Table 1.2: The title of the second column, "Observations methodology", is misleading . In the table you can find the measurement technique and the variable in this column. It should be corrected. [Luca Brocca, Italy]	Noted no action needed.
8380	24		25		Table 1.2: It's not clear to me if Table 1.2 is including only ground-based measurements techniques or also remote sensing. Currently there's a mixture. Please check. [Luca Brocca, Italy]	Satellite remote sensing is referred in the table only to land cover change parameters.
25250	24	1			Table 1.2. Table should not cross several pages - use landscape for user friendliness [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised. table moved to supplementary materia
11880	24	1			Table 1.2: Some numbers in this table look incorrect and need checking. This can be potentially a serious issue, as present numbers are quite misleading. I will list approximate numbers in the comments below for each problematic number. [Burba George, United States of America]	Accepted - text revised. See further table revision
11882	24	1			Table 1.2: Uncertainty for GHG Emissions using Micrometeorological fluxes for CO2 is listed as 10-30%. However it is typically 5-15% for daily flux. It can go higher in very low flux environment, but then percentage become meaningless because it related to a flux number near zero. I suggest using 10-15% and also add actual numbers in mg CO2 m-2 d-1. [Burba George, United States of America]	Accepted - text revised. I have included uncertainty of H2O flux in evapotranspiration
11884	24	1			Table 1.2: Uncertainty for GHG Emissions using Micrometeorological fluxes for CH4 is listed as 8-24%. This is definitely incorrect and need to be revised. It is somewhere between 10-40%, definitely large than the uncertainty for CO2. It can go even higher in very low flux environment, but then percentage become meaningless because it related to a flux number near zero. I suggest using 10-40% and also add actual numbers in mg CH4 m-2 d-1. [Burba George, United States of America]	Accepted - text revised. The figures are coming from recent reviewed literature. If other references are available are more than welcome to reconsider it. The precentage are referring to random errors and to typical average fluxes.This is put in foot note
11886	24	1			Table 1.2: Uncertainty for GHG Emissions using Micrometeorological fluxes for N2O is listed as 3-5%. This is definitely incorrect and need to be revised. It is somewhere between 20-50%, definitely much large than the uncertainty for CH4 and CO2. It can go even higher in very low flux environment, but then percentage become meaningless because it related to a flux number near zero. I suggest using 20-50% and also add actual numbers in mg N2O m-2 d-1. [Burba George, United States of America]	Accepted - text revised. The figures are coming from recent reviewed literature. If other references are available are more than welcome to reconsider it. The precentage are referring to random errors and to typical average fluxes.This is put in foot note
11888	24	1			Table 1.2: Uncertainty for Emissions using Micrometeorological fluxes for H2O is not listed. This number is about 5-10% hourly and about 5% daily. It is somewhere between 20-50%, definitely much smaller than the uncertainty for CO2. It can go even higher in very low flux environment, but then percentage become meaningless because it related to a flux number near zero. I suggest using 5%. [Burba George, United States of America]	Accepted - text revised. The figures are coming from recent reviewed literature. If other references are available are more than welcome to reconsider it. The precentage are referring to random errors and to typical average fluxes.This is put in foot note

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
11890	24	1			Table 1.2: Uncertainty for Emissions using Soil Chamber for CO2 is listed at 15-50%. This seems incorrect. This number is about 5-15%. It can go even higher in very low flux environment, but then percentage become meaningless because it related to a flux number near zero. I suggest using 5-15% and add actual numbers in mg CO2 m-2 d-1 [Burba George, United States of America]	Accepted - text revised. The figures are coming from recent reviewed literature. If other references are available are more than welcome to reconsider it. The precentage are referring to random errors and to typical average fluxes.This is put in foot note
11892	24	1			Table 1.2: Uncertainty for Emissions using Soil Chamber for CH4 is listed at 53-100%. This is definitely incorrect. This number is about 5-25%. It can go even higher in very low flux environment, but then percentage become meaningless because it related to a flux number near zero. I suggest using 5-25% and add actual numbers in mg CH4 m-2 d-1. Studies citing 100% are probably at near-zero flux environment or have measurement issues and should not be cites in percentages. [Burba George, United States of America]	Accepted - text revised. The figures are coming from recent reviewed literature. If other references are available are more than welcome to reconsider it. The precentage are referring to random errors and to typical average fluxes.This is put in foot note
11894	24	1			Table 1.2: Uncertainty for Emissions using Atmospheric Inversions for CH4 is listed at 3-8%. This is definitely incorrect. This number is definitely larger than for CO2. It can go even higher in very low flux environment, but then percentage become meaningless because it related to a flux number near zero. I suggest finding the correct percentage and add actual numbers in mg CH4 m-2 d-1. [Burba George, United States of America]	Rejected . Atmospheric inversion errors are well defined, using a baysian approach. It is not comparable to turbulent fluxes
3572	24	1			This table again misses the point that mitigation is often linked to national greenhouse gas inventories (the Paris Agreement, the Kyoto Protocol, and EU regulations and other emission trading systems all use such links). Therefore, it is a mistake, and it is a misconception to think that only scientific studies (oftent with point measurements only) should be mentioned here. No, please cite information from greenhouse gas inventories (that cover large areas): https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018 [Zoltán Somogyi, Hungary]	Accepted - text revised. Taken into consideratyion in reply to comment 2444
20578	24	2			Table column 2: observations methodology: perhaps place method and measured components in separate columns. Measured component can be directly combined with uncertainty [Bettina Weber, Germany]	Noted no action needed.
20580	24	2			Table column 3: consider separate columns for space and time. [Bettina Weber, Germany]	Noted no action needed.
20582	24	2			Table column 5: consider separate columns for pros and cons [Bettina Weber, Germany]	Rejected . There is already a distinction between process and observations
1996	24	2			pg 24. In 2. table 1.2 is incomplete (notes from authors in brackets) [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
1654	24	2			the uncertainty for N2O fluxes, micrometeorological, seem to be too low. A particular uncertainty with those measurements is the need of gap-filling, where no agreed method in terms of N2O exists, adding uncertainty to the fluxes. Also, in many articles there is a large number a gap-filled data (sometimes more than 50%), leading to a rather high uncertainty in the fluxes. [Tobias Rütting, Sweden]	Accepted - text revised. see comment 3572
8902	24	3		42	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
832	24	14			water balance: please change "unexpensive" to "inexpensive" [Paul Glaser, United States of America]	Accepted - text revised.
834	24	14			I was astounded by the low level of uncertainty assigned to the ET fluxes. The two gold standard methods for estimating ET (eddy-covariance and energy balance) produced very different estimates for ET from the same lake (a very simple system compared to most if not all terrestrial systems) (see Stannard et al. 1997). ET is widely recognized among hydrogeologists as perhaps the most difficult parameter to measure in the field. But why leave out precipitation and runoff (the other two components of groundwater recharge)? (Stannard et. al 1997. Exchanges of carbon dioxide and water vapor bewtween Williams Lake and the atmosphere. United States Geological Survey, Water Resources Report 96-4215, pp. 41-46) [Paul Glaser, United States of America]	Rejected. Measurement of Evaporation from lake by micrometeorological methods are far more complicated than terrestrial vegetated surface evapotraspiration mainly due to more complicated turbulent trasnport of water-air surfaces. The range of errors is based on random errors from cited literature.
150	24				Change "unexpensive" to "inexpensive" [Beth Middleton, United States of America]	Accepted - text revised.
11296	24				Please spell out all acronyms in the table. Please also explain what this table means, if you decide to include it. It is very technical, and its relevance is not clear. [Debra Roberts, South Africa]	Table in supplement
418	24				<p>Table:</p> <p>a) I believe the micrometerological fluxes (CO2, CH4) are associated with higher fluxes since the tower mounted sensors using eddy covariance require momentum to measure fluxes and therefore miss most night time fluxes (which could approach 50% of the total annual flux). Most chamber measurements are even more limited in space and also time (except for the few sites instrumented with automated chambers). There will always be a significant degree of error associated with all measurements since it is impossible to close the energy balance term since some sensors record almost instantaneous changes (e.g. radiometers), whereas others (soil moisture sensors) are slower and integrate changes over a longer time period.</p> <p>b) water balance: please change "unexpensive" to "inexpensive"</p> <p>c) I was simply astounded by the low level of uncertainty assigned to the ET fluxes. There are two gold standard methods for estimating ET (eddy-covariance and energy balance) and measurements of the same lake (a very simple system compared to most if not all terrestrial systems) failed to yield similar results (see Stannard et al. 1997). ET is widely recognized among hydrogeologists as perhaps the most difficult parameter to measure in the field. But why leave out precipitation and runoff (the other two components of groundwater recharge)?</p> <p>Stannard et. al 1997. Exchanges of carbon dioxide and water vapor bewtween Williams Lake and the atmosphere. United States Geological Survey, Water Resources Report 96-4215, pp. 41-46 [Paul Glaser, United States of America]</p>	Accepted - text revised. see comment 14764 above

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
830	24				I believe the micrometeorological fluxes (CO ₂ , CH ₄) are associated with higher fluxes since the tower mounted sensors using eddy covariance require momentum to measure fluxes and therefore miss most night time fluxes (which could approach 50% of the total annual flux). Most chamber measurements are even more limited in space and also time (except for the few sites instrumented with automated chambers). There will always be a significant degree of error associated with all measurements since it is impossible to close the energy balance term since some sensors record almost instantaneous changes (e.g. radiometers), whereas others (soil moisture sensors) are slower and integrate changes over a longer time period [Paul Glaser, United States of America]	Accepted - text revised. see comment 14764 above
7888	25	0	25	0	Please change "unexpensive" to "inexpensive" for the water balance entries. [Paul Glaser, United States of America]	Accepted - text revised.
8382	25		25		Table 1.2 (soil moisture) It was surprising to me not to see the use of remote sensing sensors for measuring soil moisture. The remote sensing of soil moisture is well advances, with products available (for free) on a global scale, also by recent missions (SMOS, SMAP, ASCAT). I believe it should be mentioned. [Luca Brocca, Italy]	It is already covered in table (i.e. Karthikeyan, L.)
8384	25		25		Table 1.2 (soil moisture) Among ground-based measurements techniques, GPS (https://doi.org/10.1029/2008GL036013) and geophysical measurements (http://dx.doi.org/10.3390/w9020140) should be added. [Luca Brocca, Italy]	ok it is modified.
11896	25	1			Table 1.2: Uncertainty for Emissions using Water Balance for Evapotranspiration is listed at 10-20%. This number is probably correct, but large portion of ET measurements are now done using flux towers, with much smaller uncertainties. It would probably makes sense to add H ₂ O measurements to Micrometeorological fluxes. The uncertainty for H ₂ O fluxes measures by micrometeorological methods is about 5-10% hourly and about 5% daily. It can go even higher in very low flux environment, but then percentage become meaningless because it related to a flux number near zero. [Burba George, United States of America]	Accepted.
8904	25	8		39	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
24932	26	1	26	1	reading the paragraph, the title maybe should be "uncertainties in the accuracy of DSS linked with early warning system" [Valerie Dermaux, France]	Accepted - text revised. This is changed in text
25466	26	1	26	12	This focuses excusively on "high tech" early warning systems, and disregards community-based ones, or those based on direct observation of conditions or socio-economic indicators like relative prices. SWIFT,J.(2001) District-level drought contingency planning in arid districts of Kenya.p p. 40–84.In: Pastoralism, Drought and P lanning: Lessons from Northern Kenya and Elsewhere .Chatham, U K: Natural Resources Institute, is one rather old source (declaration, I am the editor of the volume) [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised. A new reference has been introduced Liebig et al 2016 in decision making sub session

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
5110	26	1	26	12	Early warning systems - the term is usually connected to Disaster Risk Reduction Management. Look: An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes that enables individuals, communities, governments, businesses and others to take timely action to reduce disaster risks in advance of hazardous events. - United Nations Office for Disaster Risk Reduction (UNISDR) [2 February 2017] Actually, you use the term for early prediction of crop yield. Please change the term or write how to use REAL Early warning systems for Land Use Management. [Oksana Lipka, Russian Federation]	The term EWS is referred in the cited literature and exactly this is a new frontier for application in agricultural practices. The concept is analogous to risk assessment in other sectors with a specific meaning in the case of land use management.
21194	26	1	26	12	The process based crop simulation models are being used not only for time of planting but also for several other forecast applications including yield forecast. Further these models are also used for climate change impact assessments and for assessing adaptation gains on crops such as wheat (Naresh Kumar et al., 2014), rice (Naresh Kumar et al., 2013), soybean, maize, wheat (Rosenzweig et al., 2014-17; mustard (Naresh Kumar et al., 2014), potato Naresh Kumar et al., 2015) coconut etc. For instance model for coconut (Naresh Kumar and Aggarwal, 2013) was used for identification of specific adaptation gains in this plantation crop. 36. Naresh Kumar, S., P. K. Aggarwal, Rani Saxena, Swaroopa Rani, Surabhi Jain and Nitin Chauhan. 2013. An assessment of regional vulnerability of rice to climate change in India. Clim. Change. DOI 10.1007/s10584-013-0698-3. 118 issue 3-4 June 2013. p. 683 – 699 37. Naresh Kumar, S. and P.K. Aggarwal. 2013. Climate change and coconut plantations in India: Impacts and potential adaptation gains. Agril. Syst. http://dx.doi.org/10.1016/j.agry.2013.01.001 30. Naresh Kumar S, P. K. Aggarwal, D. N. Swarooparani, Rani Saxena, Nitin Chauhan, Surabhi Jain (2014). Vulnerability of wheat production to climate change in India. Climate Research. doi: 10.3354/cr01212 ; Vol. 59: 173–187, 2014; 25. Naresh Kumar Soora, Pramod Kumar Aggarwal, Kumar Uttam, Jain Surabhi, D. N. Swaroopa Rani, Nitin Chauhan and Rani Saxena (2014). Vulnerability of Indian mustard (Brassica juncea (L.) Czernj. Cosson) to climate variability and future adaptation strategies. Mitigation and Adaptation Strategies to Global Change. 10.1007/s11027-014-9606-Z; 21(3), 403-420; 23. Naresh Kumar S., P.M. Govindakrishnan, D.N. Swarooparani, Ch. Nitin, J. Surabhi, P.K. Aggarwal 2015. Assessment of impact of climate change on potato and potential adaptation gains in the Indo-Gangetic Plains of India. International Journal of Plant Production 9 (1), 151-170. [Soora Naresh Kumar, India]	Rejected. The discussion is on early warning system or decision support system whose scope is beyond yield forecast.
1234	26	1	26	12	Prior to the utility of early warning systems, climate information services and scenario planning are useful decision-support systems for food producers, particularly those who are constrained in their ability to make last minute changes in how they will plant, etc. because of economic and physical access to necessary inputs. Scenario planning also facilitates connections between local communities, officials, and the scientific community, to ensure LK is taken into account and information regarding scenarios is captured and communicated in ways that are accessible to end users, including small-scale food producers living in poverty and in remote rural areas. [Tonya Rawe, United States of America]	The comment is accepted with changes in the sub-session title to reflect the relation with decision support systems, which indeed can include long term planning and climate scenarios, to which EWS are also part of.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
7890	26	2	26	2	There are so many acronyms and abbreviations that I hope the final report opens with a summary of all abbreviated terms used in the text. [Paul Glaser, United States of America]	Thank you for the positive comment.
18932	26	9	26	9	It says "(corps that", it should say "(crops that..." [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
20688	26	9	26	9	Please check the word ' corps' in brackets, [Mahamadou Laouali Amadou, Niger]	Accepted - text revised.
748	26	9	26	9	write "crops" instead of "corps" [Rolf Sommer, Kenya]	Accepted - text revised.
2452	26	9	26	9	corps -> crops. [William Lahoz, Norway]	Accepted - text revised.
4064	26	9	26	12	replace "corps" with "crops"; delete "low profit" after "returns"; replace "depending" with "depends" [Reid Detchon, United States of America]	Accepted - text revised.
8692	26	13	26	21	mention more explicitly the limitation of data, especially in developing countries [Delphine Deryng, Germany]	Accepted. sentence added (1.3.3.1)
5112	26	13	26	32	Please add here about the principle difference between climate modelling (CMIP) and any social, economic or biological modellings. [Oksana Lipka, Russian Federation]	Accepted. clarified that issues related to uncertainty analysis applies for all types of models used in the SRCL
10070	26	13	26	32	I think it is very important to discuss the uncertainties in land-climate interactions and also appreciate the distinction between observations, models, etc. However, this section about model uncertainty should be restructured and improved. It would be quite important to distinguish between land-use change models (including IAMs) that provide land-use (change) projections and process-based Earth System and Vegetation models (Prestele et al. 2017). Both groups have very different sources of uncertainty and also the approaches to deal with uncertainties are largely different (which is basically the model-ensemble mean vs. model-intercomparison approach). Moreover, land-use change models are largely not yet evaluated against observational datasets, and outputs are more dependent on the modeling approach and/or assumptions in a model (Alexander et al. 2017a, Prestele et al. 2016). Full references: Prestele, R., A. Arneth, A. Bondeau, N. de Noblet-Ducoudré, T. A. M. Pugh, S. Sitch, E. Stehfest, and P. H. Verburg. 2017. Current challenges of implementing anthropogenic land-use and land-cover change in models contributing to climate change assessments. Earth System Dynamics 8. Copernicus GmbH: 369–386. doi:10.5194/esd-8-369-2017.; Prestele, R., P. Alexander, M. D. A. Rounsevell, A. Arneth, K. Calvin, J. Doelman, D. A. Eitelberg, K. Engström, et al. 2016. Hotspots of uncertainty in land-use and land-cover change projections: a global-scale model comparison. Global Change Biology 22: 3967–3983. doi:10.1111/gcb.13337.; Alexander, P., R. Prestele, P. H. Verburg, A. Arneth, C. Baranzelli, F. Batista e Silva, C. Brown, A. Butler, et al. 2017. Assessing uncertainties in land cover projections. Global Change Biology 23: 767–781. doi:10.1111/gcb.13447. [Reinhard Prestele, Germany]	Accepted. I agree in parts - although the general issues raised in the section apply to all models. Unfortunately, word limits restricts a more extended discussion, but I tried to clarify some of the aspects in the revisions

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
10072	26	13	26	32	<p>One major source of uncertainty (besides the process representation and lack of process understanding) is the current model coupling (or rather data exchange between different models) in land-climate interaction studies, where uncertainties are probably adding up, but are not systematically studied yet (Prestele et al. 2017). This source of uncertainty should be included here as well, including potential development pathways such as a more direct coupling allowing two-ways-feedback such as described in Di Vittorio et al. (2014) or Alexander et al. (2018). Full references: Prestele, R., A. Arneth, A. Bondeau, N. de Noblet-Ducoudré, T. A. M. Pugh, S. Sitch, E. Stehfest, and P. H. Verburg. 2017. Current challenges of implementing anthropogenic land-use and land-cover change in models contributing to climate change assessments. <i>Earth System Dynamics</i> 8. Copernicus GmbH: 369–386. doi:10.5194/esd-8-369-2017.; Collins, W. D., A. P. Craig, J. E. Truesdale, A. V. Di Vittorio, A. D. Jones, B. Bond-Lamberty, K. V. Calvin, J. A. Edmonds, et al. 2015. The integrated Earth system model version 1: formulation and functionality. <i>Geoscientific Model Development</i> 8. Copernicus GmbH: 2203–2219. doi:10.5194/gmd-8-2203-2015.; Alexander, P., S. Rabin, P. Anthoni, R. Henry, T. A. M. Pugh, M. D. A. Rounsevell, and A. Arneth. 2018. Adaptation of global land use and management intensity to changes in climate and atmospheric carbon dioxide. <i>Global Change Biology</i> 24. Wiley/Blackwell (10.1111): 2791–2809. doi:10.1111/gcb.14110. [Reinhard Prestele, Germany]</p>	<p>Rejected . good point, but difficult to add due to length limits, and part of it also covered in chapter 2</p>

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
21196	26	13	26	32	Uncertainty due the model structure was studies for 32 wheat models (Asseng et al., 2013) and thereafter several papers appeared in this field for maize (Bassu et a., 2015). Considie adding some of this information availan]ble in literature. 32. Asseng, S., F. Ewert, C. Rosenzweig, J.W. Jones, J. L. Hatfield, A. Ruane, K. J. Boote, P. Thorburn, R. P. Rötter, D. Cammarano, N. Brisson, B. Basso, P. Martre, P. K. Aggarwa, C. Angulo, P. Bertuzzi, C. Biernath, A. J. Challinor, J. Doltra, S. Gayler, R. Goldberg, R. Grant, L. Heng, J. Hooker, L. A. Hunt, J. Ingwersen, R. C. Izaurralde, K. C. Kersebaum, C. Müller, S. Naresh Kumar, C. Nendel, G. O’Leary, J. E. Olesen, T. M. Osborne, T. Palosuo, E. Priesack, D. Ripoche, M. A. Semenov, I. Shcherbak, P. Steduto, C. Stöckle, P. Stratonovitch, T. Streck, I. Supit, F. Tao, M. Travasso, K.Waha, D.Wallach, J.W. White, J. R.Williams and J.Wolf (2013). Uncertainty in simulating wheat yields under climate change. Nature Climate Change doi:10.1038/nclimate1916; Nature Climate Change 3: 827-832.; 31. Simona Bassu, Nadine Brisson, Jean-Louis Durand, Kenneth Boote, Jon Lizaso, James W. Jones, Cynthia Rosenzweig, Alex C. Ruane, Myriam Adam, Christian Baron, Bruno Basso, Christian Biernath, Hendrik Boogaard, Sjaak Conijn, Marc Corbeels, Delphine Deryng, Giacomo De Sanctis, Sebastian Gayler, Patricio Grassini, Jerry Hatfield, Steven Hoek, Cesar Izaurralde, Raymond Jongschaap, Armen R. Kemanian, Christian K. Kersebaum, Naresh S. Kumar, David Makowski, Christoph Müller, Claas Nendel, Eckart Priesack, Maria Virginia Pravia, Soo-Hyung Kim, Federico Sau, Iurii Shcherbak, Fulu Tao, Edmar Teixeira, Dennis Timlin and Katharina Waha (2014). How do various maize crop models vary in their responses to climate change factors?. Global Change Biology, DOI: 10.1111/gcb.12520.; 24. Martre, Pierre, Daniel Wallach, Senthold Asseng, Frank Ewert, James W. Jones, Reimund P. Rötter, Kenneth J. Boote, Alex C. Ruane, Peter J. Thorburn, Davide Cammarano, Jerry L. Hatfield, Cynthia Rosenzweig, Pramod k. Aggarwal, Carlos Angulo, Bruno Basso, Patrick Bertuzzi, Christian Biernath, Nadine Brisson, Andrew J. Challinor, Jordi Doltra, Sebastian Gayler, Richie Goldberg, Robert F. Grant, Lee Heng, Josh Hooker, Leslie A Hunt, Joachim Ingwersen, Roberto C Izaurralde, Kurt Christian Kersebaum, Christoph Müller, Soora Naresh Kumar, Claas Nendel, Garry o’Leary, Jørgen E. Olesen, Tom M. Osborne, Taru Palosuo, Eckart Priesack, Dominique Ripoche, Mikhail A. Semenov, Iurii Shcherbak, Pasquale Steduto, Claudio O. Stöckle, Pierre Stratonovitch, Thilo Streck, Iwan Supit, Fulu Tao, Maria Travasso, Katharina Waha, Jeffrey W. White and Joost Wolf . 2014 Multimodel ensembles of wheat growth: Many models are better than one. Global Change Biology. DOI: 10.1111/gcb.12768.; 2. Enli Wang, Pierre Martre, Zhigan Zhao, Frank Ewert, Andrea Maiorano, Reimund Rötter, Bruce Kimball, Michael Ottman, G. Wall, Jeffrey White, M. Reynolds, Phillip Alderman, Pramod Aggarwal, Jakarat Anothai, Bruno Basso,	Rejected . Both papers are very ambitious efforts, however, they represent the more "traditional" MIPs (w calibrated and non-calibrated models), ratherthan statistical model-internal sampling across e.g., parameter value distribution
2454	26	16	26	16	I suggest mention that data assimilation involves the confrontation of observations with models. [William Lahoz, Norway]	Noted no action needed.
3322	26	19	26	20	Observational datasets are not always uncertain; they are sometimes uncertain. [Suresh Kumar, India]	Rejected. Perhaps a matter of debate, but I would argue that all observations will have uncertainty (at least the ones on context of the SRCL).
2644	26	19	26	21	This sentence is quite difficult to understand and could benefit from a more positive reframing. Would something along the lines of this work better? "Benchmarking using observational datasets can benefit from transparency around the measurements used and their inherent uncertainties, as well as from the inclusion of multiple, regularly updated data sources." [Sarah Connors, France]	Accepted, revised .
9762	26	22	26	32	This is an important paragraph. Please check consistency with the two other SRs. I think this para cold be expanded to adress the different types om models used in SRCL. [Jan Fuglestedt, Norway]	Rejected . thanks. Unfortunately space limits prevents expansion of the existing discussion. But I would argue that in principle all models need to do better to quantify various sources of uncertainty.
15118	26	23	26	25	The latter implies that the mean across a range of models “averages-out” and some of the structural and parameter related uncertainties yields more robust results [Ahmed Imam, Egypt]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
9760	26	24	26	24	I suggest you use a more precise wording than "averages out" [Jan Fuglestedt, Norway]	Accepted.
11298	26	26	26	32	Re "models being re-tuned": this is a potentially major pitfall in all modelling exercises, and probably deserves a more detailed critical discussion. Training a model until it fits all the data does not necessarily produce a valid model. Also, when the outputs of various models are combined to produce a 'mean' and a 'range', are the models weighted by their validity? How much critical model evaluation is done in this regard? You mention that methods exist, that they are costly, but could you give an indication of how much model testing is being done? Even on the RCPs? [Debra Roberts, South Africa]	Rejected. I would very much like to have a much more extended discussion but am restricted by word limits. However, the cited literature does provide a good discussion on these aspects and provides the interested reader with substance.
26694	26	29	26	29	Not just "computationally costly" but also "inequitable" and "intrinsically unjust"; cf impact of use of Discounted value of deaths (DICE)/ Negishi weighting e.g. page 16 of Stanton, E.A. and Ackerman, F., 2009, November. Climate and development economics: Balancing science, politics and equity. In Natural Resources Forum (Vol. 33, No. 4, pp. 262-273). Oxford, UK: Blackwell Publishing Ltd. [Rianne ten Veen, Netherlands]	Rejected. I did not understand why statistical sampling across parameter space in a model would be unjust.
14320	26	33	26	33	Instead of taking current prospects for granted and project them into the future (exploratory forecast), the definition of desirable goals and the exploration of new paths to reach them should be pursued in view of socio-ecological objectives (Pilon, 2018) Ref.: PILON, A. F., Global Transformation in the Mirror of the Ecosystemic Approach, posted on The British Academy of Management, 10th April 2017 [on line]: https://www.bam.ac.uk/news-story/9275 [Rattan Lal, United States of America]	See cross-chapter box on scenarios
25918	26	37	26	38	Introduce acronym SSP here [Hans Poertner and WGII TSU, Germany]	Accepted - text revised.
9764	26	33	27	29	section 1.5.1.4. is important; please check consistency with the two other SRs. I think this section should be expanded. Can be more specific on the different types of modelling used in SRCL. [Jan Fuglestedt, Norway]	Thanks - some of this text now in the cross-scenario box.
26770	26	1			This section should also reference the rapid improvement in Early Warning Systems for forest management, e.g., the ability of remote sensing to alert authorities to illegal logging and clearing. [Frances Seymour, United States of America]	accepted.
3574	26	1			Mortality of forests (including the increased probability of forest fires) is a huge risk in the future. I would suggest to cover this issue together with related uncertainties, of course. [Zoltán Somogyi, Hungary]	accepted.
420	26	2			There are so many acronyms and abbreviations that I hope the final report opens with a summary of all abbreviated terms used in the text. [Paul Glaser, United States of America]	Noted
836	26	2			There are so many acronyms and abbreviations that I hope the final report opens with a summary of all abbreviated terms used in the text. [Paul Glaser, United States of America]	Noted
21166	26	4			Early warning system only use for alters generations. Early warning system are not used to optimize fertilisers. Decision support systems use to for optimization of fertilisers [Hasnat Aslam, Pakistan]	Accepted - text revised. EWS are presented as part of DSS. They can be used to trigger specific agricultural practices in response to anomalous seasonal behaviour, including fertilizer application outside of planned management

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
1998	26	9			pg 26. In 9. spelling - should be crops [Mastura Mahmud, Malaysia]	Accepted - text revised.
17772	26	10			Make "returns" singular [Donald Smith, Canada]	Accepted - text revised.
2000	26	20			pg 26, In 20. Section 1.5.1.1 is preferable [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
8906	26			40	correct format (Author, year) and (author et al., year) in whole document please, [Amanullah Amanullah, Pakistan]	Accepted - text revised.
10126	27	3	27	3	Fuchs et al. 2015 does not explore uncertainties in land-use projections, but deals with historical reconstruction of land use instead. [Reinhard Prestele, Germany]	Taken into account. Agreed and accepted - text modified
20208	27	4	27	4	extent (not extend) here. [Kaoru Kitajima, Japan]	Accepted - text revised.
4066	27	4	27	4	replace "extend" with "extent" [Reid Detchon, United States of America]	Accepted - text revised.
2456	27	4	27	4	I think it should be "extend" -> "extent". [William Lahoz, Norway]	Accepted - text revised.
10074	27	4	27	6	The fact that there is a large uncertainty range within similar scenarios should be strengthened. For example by rephrasing to '[...] both between scenarios which is to be expected, but more importantly also within a single scenario'. [Reinhard Prestele, Germany]	Taken into account. The uncertainty of models has been further developed in the cross-chapter box on scenarios
9766	27	5	27	6	This is a very important point that needs more attention. I suggest expanding. [Jan Fuglestedt, Norway]	Taken into account. This point has been further developed in the cross-chapter box on scenarios
10076	27	6	27	8	It would be more correct to state that the differences in projected land-cover changes caused by different model structure is 'at least as large' as differences attributable to scenarios. [Reinhard Prestele, Germany]	Taken into account. This has now been stated in the cross-chapter box on scenarios
27274	27	8	27	10	"This raises concerns" is certainly an appropriate reaction. It should precipitate a very cautious approach to IAM results in the rest of the report, including but not limited to the model outputs on CDR requirements of large-scale afforestation and BECCS. There should be very clear and transparent explanation of assumptions used by these models, with respect to a range of parameters related to land use, for example, the amount of pasture land that might be available for conversion to bioenergy production. Include a bullet in the placeholder description of the cross-chapter box on scenario land-use-related assumptions. [Doreen Stabinsky, United States of America]	Taken into account. Agreed and this point has been taken up in the cross-chapter box on scenarios, as well as being tackled in more detail in other chapters of this assessment, notably chapters 2 and 6
9768	27	10	27	11	Very good that you will have this box. I suggest that the authors consider the cross chapter box in SR1.5 and in SROCC. And also involve Kate Calvin (who is in the cross WG team on scenarios). [Jan Fuglestedt, Norway]	Taken into account. The cross-chapter box on scenarios refers explicitly to the cross chapter box in the SR1.5, especially concerning definitions, and the discussion of the RCPs/SSPs. Kate Calvin is part of the team that is developing this new box.
9770	27	11	27	16	I suggest you make it clear what is different for SRCCCL compared to SR1.5 and SRCL in the use of scenarios. [Jan Fuglestedt, Norway]	Taken into account. The differences between the two assessments is explained further in the cross-chapter box

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
10128	27	14	27	16	Prestele et al. (2017) discuss in detail why a broader range of scenarios would be required and is a relevant reference here. Full reference: Prestele, R., A. Arneth, A. Bondeau, N. de Noblet-Ducoudré, T. A. M. Pugh, S. Sitch, E. Stehfest, and P. H. Verburg. 2017. Current challenges of implementing anthropogenic land-use and land-cover change in models contributing to climate change assessments. Earth System Dynamics 8. Copernicus GmbH: 369–386. doi:10.5194/esd-8-369-2017. [Reinhard Prestele, Germany]	Taken into account. Reference has been included
14974	27	17	27	29	- Paillard, S., Treyer, S., & Dorin, B. (Eds.). (2014). Agrimonde—scenarios and challenges for feeding the world in 2050. Springer Science & Business Media. - Ten years for agroecology in Europe (TYFA) [Florian Claeys, France]	References useful. Thanks for the literature suggestion
11300	27	24	27	27	These examples hold great potential value for policy. Are there other such examples? Are the models at a stage where a policy maker in a particular region can extract different pathway options to meet particular targets, given local conditions and predictions? [Debra Roberts, South Africa]	Taken into account. The cross-chapter box on scenarios takes up the point about using pathways to inform policy, including at the regional scale. But it is unable to go into the detail of local policy needs
3720	27	30	27	31	A coherent approach to and definitions of uncertainty and risk is needed across all chapters (and indeed across all AR6 products). Suggest this is dealt with at a lead author meeting. Relates to glossary development also. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised. abbreviated definition from glossary added, w reference to glossary and ch.7
2458	27	32	27	32	situations. [William Lahoz, Norway]	Accepted - text revised.
20834	27	32	27	33	The risk definition used in this report should be well aligned with that used in SR1.5. Otherwise, the differences in the definitions should be well described and justified. [Carolina Vera, Argentina]	Accepted - text revised. Abbreviated definition from glossary added, with reference to glossary and ch.7
24302	27	30	28	33	If considered complementary, the following reference presents an additional approach to dealing with uncertainties that relates to climate change as well: Luedeling, E. & Shepherd, K. (2016): Decision-Focused Agricultural Research. The Solutions Journal 7(5): 46-54. https://www.thesolutionsjournal.com/article/decision-focused-agricultural-research/ [Barron Joseph Orr, Germany]	references useful some or all added.
20818	27	31	28	18	Uncertainties in decision-making: some arise from the different methods used to measure what seems to be the same thing (but they measure it differently, leading to differing estimates). See paper below for review of valuation methods for land ecosystems: Quillérou, E., Thomas, R.J. (2012) Costs of land degradation and benefits of land restoration: A review of valuation methods and their application. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources. Volume: 7 Issue: 060, 1-12. Invited submission. [Emmanuelle Quillerou, France]	Comment noted section totally updated and revised.
3722	27	32	28	3	This is not quite in line with ISO definitions of risk and uncertainty. Uncertainty is the higher level concept referring to quantifiable and unquantifiable risk. Risks exist even if quantifiable. See ISO standard 31000 and ISO guide 73 risk management vocabulary [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised. Glossary at the moment has placeholder for deep uncertainty, but not yet defined; suggest to use the agreed definition, once available.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
20836	27	32	28	18	The discussion must introduce and consider the IPCC guidelines of uncertainties. [Carolina Vera, Argentina]	Noted, accepted, uncertainty language added or revised.
9772	27	30	30	20	This needs to be coordinated with SROCC and SR1.5 for consistency. [Jan Fuglestedt, Norway]	Text primarily coordinated with SRCL chapter 7
25252	27	4			the word extend should read extent [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
9374	27	4			change the word "extend" to "extent" [Kennedy Ondimu, Kenya]	Accepted - text revised.
2002	27	11			pg 27. In 11. incomplete box to be developed by authors [Mastura Mahmud, Malaysia]	Comment noted section totally updated and revised.
2004	27	12			pg 27 In 12 . word high should be in italics [Mastura Mahmud, Malaysia]	Accepted - text revised.
17774	27	27			Remove "in addition" [Donald Smith, Canada]	Comment noted section totally updated and revised.
17776	27	27			Adding the bioenergy-demand target may be more possible if based only on sustainably exploited crop residues [Donald Smith, Canada]	Rejected . That may or may not be the case, but it was not reported in the cited literature.
11704	27	32			Need to clarify how this relates to WGII's definition of risk. [Debra Roberts, South Africa]	Accepted - text revised. abbreviated definition from glossary added, w reference to glossary and ch.7
8908	27				correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Accepted - text revised.
18816	28	4	28	5	Reference needs correction [Debora Ley, Guatemala]	Accepted - text revised.
18688	28	4	28	5	"Error!" due to missing reference should be corrected. [Hiroaki Kondo, Japan]	Accepted - text revised.
910	28	4	28	5	Please, add reference [Jose Luis Vicente Vicente, Germany]	Comment noted section totally updated and revised.
20690	28	4	28	5	Please check the source [Mahamadou Laouali Amadou, Niger]	Accepted - text revised.
2006	28	4	28	5	pg 28, In 4 to 5. This error (as stated in brackets) should be rectified before sending for review under FOD. [Mastura Mahmud, Malaysia]	Accepted - text revised.
2646	28	4	28	5	Mendeley reference error. [Sarah Connors, France]	Accepted - text revised.
3912	28	4	28	5	Check reference: 'Error! Reference source not found' [Thiago Metzker, Brazil]	Accepted - text revised.
2460	28	4	28	5	Reference link missing. [William Lahoz, Norway]	Accepted - text revised.
25468	28	7	28	18	Discussion of the term "wicked problem" could usefully be introduced here [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Rejected . agreed; length restriction preven it unfortunately. Also, chapter 7 only mentions wicked problems very briefly, so from a cross-chapter perspective not crucial to define here.
16928	28	15	28	15	I am not sure that the average reader will know what is meant by "deontological reasoning"; I suggest paraphrasing [Pauline Midgley, Germany]	Thank you for the positive comment.
2008	28	17	28	18	pg 28, In 17 to 18. sub-section should be identified [Mastura Mahmud, Malaysia]	Thank you for the positive comment.
9376	28	4			Consider deleting" error" and stentence if sources not known [Kennedy Ondimu, Kenya]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
17778	28	7			Add "the" after "In" [Donald Smith, Canada]	Accepted - text revised.
8910	28				correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Accepted - text revised.
17704	29	1	29	3	this table 1.3 ,it donot make sense [Sawsan Mustafa, Sudan]	Accepted - text revised. Table moved to Supplementary
2462	29	2	29	2	I suggest a reference to uncertainties in observations (and perhaps reanalyses), as well as in models. The observations and models together provide information on our understanding of the target system. [William Lahoz, Norway]	Rejected. This is discussed already in sub-session on uncertainty
25470	29	2	29	3	The issue of discount rate, which has received great prominence in policy discussions, and bears on inter-generational justice, could be highlighted more, here or in the accompanying text. [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised. text primarily coordinated with SRCL chapter 7 (which at this point in time does not discuss discount rate in depth)
20498	29	3	29	3	5. In the table, at the line of "uncertainty of demarcation", certain options are not, "sen" as they are outside current ideologies [Huai Jianjun, China]	Rejected . Comment was not easy to follow; however table has been removed to Appndix
14976	29	4	29	4	About uncertainty and action: - Barthe, Y., Callon, M., & Lascoumes, P. (2014). Agir dans un monde incertain. Essai sur la démocratie technique. Le Seuil. - Dupuy, J. P. (2009). Pour un catastrophisme éclairé. Quand l'impossible est certain: Quand l'impossible est certain. Le Seuil. - Mermet, L., & Benhammou, F. (2005). Prolonger l'inaction environnementale dans un monde familier: la fabrication stratégique de l'incertitude sur les ours du Béarn. Écologie & politique, (2), 121-136. [Florian Claeys, France]	Reference noted but point already covered by current used citations.
14322	29	4	29	4	"Backcasting" is a planning method that starts with defining a desirable future and then works backwards to identify policies and programs that will connect that specified future to the present. According to the precautionary principle, criteria to evaluate risks are: probability of occurrence, extent of damage, incertitude, ubiquity, persistency, reversibility, delay effect, potential of mobilization. (Klinke & Renn, 2001). Ref.: Klinke, A. & Renn, O. Precautionary principle and discursive strategies: classifying and managing risks, Journal of Risk Research, 2, (4) 2001: 159-173. [Rattan Lal, United States of America]	Comment noted section totally updated and revised.
10480	29	6	29	6	cost-benefit analysis (CBA) only considers economic uncertainties, which should be crossed with othe uncertainties [Zitouni Ould-Dada, Italy]	Accepted - text revised.
2014	29	0			Pg 29, Line 0? . "seen" [Mastura Mahmud, Malaysia]	Accepted - text revised.
2016	29	0			Pg 29, Table 1.3. The contents appear as notes and not as full sentences [Mastura Mahmud, Malaysia]	Accepted - text revised.
2010	29	1			pg 29. In 1. delete '(following' [Mastura Mahmud, Malaysia]	Accepted - text revised.
2012	29	1			Pg 29, Line 1. Table 1.3 is not referenced in any text [Mastura Mahmud, Malaysia]	Accepted - text revised.
3576	29	1			Decision making is interesting. However, what could happen to land in future, under the effec of climate change, would be a much more interesting topic to discuss in a report about land. [Zoltán Somogyi, Hungary]	Accepted - text revised. Same principles apply for land-use change, although the SRCL is charged with emphasis on climate change. Sentence slightly revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
8912	29	2		40	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Accepted - text revised.
2942	29	4			higher degrees of uncertainties need higher involvement of society/normative decision-making...=> sustainable development/ SLM is a normative question.... Would be important to include here the discussion about how to integrate society, make science-society interface workable on equitable base in order to address normativity ... how to organize the science-society interface in order to jointly define problems , set targets identify solutions ... show how process can be jointly monitored... [Cordula Ott, Switzerland]	Rejected .
2944	29	4			This paragraph should be related to (7): decision-making.. Therefore the concept on science-society interface must be introduced [Cordula Ott, Switzerland]	Accepted - text revised. We include more cross-references to chapter 7 to make the interlinkages clearer
18934	30	5	30	5	"Such an approach includes stakeholder involvement" are you referring to elicitation methods? [Carlos Matias Figueroa, Mexico]	Accepted - text revised.
16930	30	13	30	13	It will not be obvious to a more general reader what is meant by "As regards COP21"; presumably the Paris Agreement. If so, please say so [Pauline Midgley, Germany]	Comment noted section totally updated and revised.
4068	30	15	30	15	replace "Durham platform (County Durham Climate Change Delivery Plan 2015)" with "Durban Platform for Enhanced Action (2011)" [Reid Detchon, United States of America]	reference noted but point already covered by current used citations.
2464	30	22	30	22	I suggest authors mention use of Earth Observation (and perhaps reanalyses) to address environmental challenges. [William Lahoz, Norway]	Accepted chapter restructured.
3724	30	22	30	42	This section is OK on the content of individual chapters but could be expanded to set out the report narrative and how the chapters connect to each other. Chapter 2 as the physical foundation, 3-5 as the goals-oriented pillars and 6-7 as the integrative elements for SLM, risk and sustainable development. [Jim Skea, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
16132	30	22	30	42	Unclear rationale of section 1.6 in the current structure of chapter 1. Section 1.6 "Introduction of remaining chapters and story of the report" . This very short section which now looks as a 'residual' one, should possibly create the backbone of chapter 1, as the goal of this chapter may exactly be to tell the reader "the story of the report", i.e illustrating the conceptual framework, the goals, and the logical pattern of the report, by linking all the chapters in a continuous flow. All in all, the "story of the report" is precisely what is missing in chapter 1, as it reads now. [Lorenzo Giovanni Bellù, Italy]	Accepted chapter restructured.
17706	30	22	30	42	1.6 it look to be as part from executive summary of the report [Sawsan Mustafa, Sudan]	Accepted chapter restructured.
26696	30	23	30	23	Re: "Land use is an environmental challenge" - fundamentally a political (choices) challenge, each with their own environmental consequences/ impacts, thus clarifying the fundamental role humans play accountability for which cannot too easily be absolved [Rianne ten Veen, Netherlands]	Accepted chapter restructured.
2648	30	23	30	23	Land use and land use change? [Sarah Connors, France]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
10380	30	23	30	23	"Land use is an environmental challenge but can also contribute to address climate change." Not all land use is environmental challenge [Zitouni Ould-Dada, Italy]	Accepted chapter restructured.
26944	30	23	30	24	Change to, "Land use management is an environmental challenge but can also contribute to addressing climate change, hence, land provides opportunities to maximise the several solutions that exist, beyond energy-based solutions." [Knute Nadelhoffer, United States of America]	Accepted chapter restructured.
18828	30	23	30	27	How to clear distinguishing chapter 3 from chapter 4 is important, because desertification is land degradation occurred in dryland, chapter 4 is land degradation occurred in other land use types. In addition, food security and SLM should be linked to the eradication of poverty. [Jianguo Wu, China]	Accepted chapter restructured.
25472	30	32	30	32	see comment on p.13 above - "other forms of land degradation" or "land degradation outside the drylands" [John Morton, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
2650	30	32	30	37	This sentence reads as an assessment but not references or ipcc uncertainty language is accompanied. [Sarah Connors, France]	Accepted chapter restructured.
10330	30	38	30	38	"Chapters 6 and 7 then are faced with the challenge to take up the issues identified in Chapter 1". I can't see how chapters of a report can be faced with a challenge? [John Devaney, Ireland]	Accepted chapter restructured.
2652	30	38	30	42	This is a very weak final paragraph and does not introduce the mandate of chapters 6 and 7 sufficiently. Suggest to refer to the SRCL bullet point outline for guidance: http://www.ipcc.ch/meetings/session45/Decision_Outline_SR_LandUse.pdf [Sarah Connors, France]	Accepted chapter restructured.
8914	30	2		36	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Accepted - text revised.
17780	30	9			Add "being" after "despite" [Donald Smith, Canada]	Accepted - text revised.
11706	30	15			Not clear what the reference to the Durham platform has to do with COP21 [Debra Roberts, South Africa]	Accepted - text revised.
17782	30	18			Remove "from". [Donald Smith, Canada]	Accepted - text revised.
2946	30	22		42	story of the report should be placed earlier... vision. Mandate, approach, goal should directly be followed by structure [Cordula Ott, Switzerland]	Accepted chapter restructured.
2018	30	22			Pg 30, Line 22. Rename the title as 'Introduction of the remaining chapters' [Mastura Mahmud, Malaysia]	Accepted chapter restructured.
6594	30	23			Use of the term land use. I prefer land cover when talking about forests, urban, wetlands, agriculture, pasture, etc. I use land use to refer to particular types of urban land uses, such as residential, commercial, industrial. [Anna Haines, United States of America]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
5344	30	23			Land use is an environmental challenge but can also contribute to address climate change. Not all land uses are environmental challenge [Daniel Danano Dale, Italy]	Accepted chapter restructured.
2020	30	29			pg 30. In 29. Add " after security. [Mastura Mahmud, Malaysia]	Noted, copyedit to be completed prior to publication.
2948	30	38			specify 'issues': trends, dangers, scenarios... [Cordula Ott, Switzerland]	Accepted chapter restructured.
16918	31	1	31	1	there is no reason to use a Google Scholar link for chapters of the IPCC SR5 as is done for Denton et al, Fleurbaey et al, because these chapters are available to download from the IPVCC web site. Moreover these two links do not work as written. Similar comment for link to Ciais et al. [Pauline Midgley, Germany]	Accepted - text revised.
2036	31	15	31	16	pg 31. In 15 16 .Suggest delete (Accessed November 2, 2017) [Mastura Mahmud, Malaysia]	Accepted - text revised.
2038	31	31	31	32	pg 31. In 31-32. delete the https reference, The doi is sufficient, this is a standard notation for reference as with the others [Mastura Mahmud, Malaysia]	Noted, copyedit to be completed prior to publication.
2022	31	1			Pg 31, In 1. For completeness and consistency in the References section, it is suggested that: [Mastura Mahmud, Malaysia]	Accepted - text revised.
2024	31	1			1. All names of authors are included in the citation. Change 'Coauthors' to the complete names or to 'et al.' [Mastura Mahmud, Malaysia]	Noted, copyedit to be completed prior to publication.
2026	31	1			2. Some journal references do not have the url. For consistency the doi is sufficient as a reference. [Mastura Mahmud, Malaysia]	Noted, copyedit to be completed prior to publication.
2028	31	1			3. For referred journals the accessed date is not necessary. Suggest delete the sentence '(Accessed January 18, 2018) as not all references are listed with the dates accessed. However, nearly all references have the doi number. [Mastura Mahmud, Malaysia]	Noted, copyedit to be completed prior to publication.
25254	31	5			show names of other others instead of coauthors [Abiud Kaswamila, United Republic of Tanzania]	Noted, copyedit to be completed prior to publication.
2030	31	5			pg 31. In 5. List the names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2032	31	7			pg 31. In 7.Suggest delete (Accessed January 18, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
8916	31	8		25	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
2034	31	10			pg 31. In 10. Suggest delete (Accessed April 22, 2018) [Mastura Mahmud, Malaysia]	Accepted - text revised.
152	31	30			reformat to left justify, hanging indent [Beth Middleton, United States of America]	Noted, copyedit to be completed prior to publication.
2040	31	36			pg 31. In 36. delete (Accessed April 25, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2042	31	40			pg 31. In 40 .delete (Accessed January 18, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
25256	32	7	7	8	replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
25258	32	7	7	8	Where there is 2017a there should b, c etc [Abiud Kaswamila, United Republic of Tanzania]	Noted, copyedit to be completed prior to publication.
2050	32	17	32	18	pg 32. In 17-18. delete (Accessed January 20, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.

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2044	32	2			pg 32. In 2. dated reference of 2013, authors must give full journal information, not in press anymore [Mastura Mahmud, Malaysia]	Accepted - text revised.
2046	32	6			pg 32. In 6. delete (Accessed January 19, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2048	32	7			pg 32. In 7. List full names of authors [Mastura Mahmud, Malaysia]	Accepted - text revised.
25260	32	9			where there is 2017b there should a [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
25262	32	29			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
25264	32	31			Not consistently written [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
25266	32	38			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2052	32	38			pg 32. In 38. List full names of authors [Mastura Mahmud, Malaysia]	Accepted - text revised.
25268	32	40			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2054	32	40			pg 32. In 40. List full names of authors [Mastura Mahmud, Malaysia]	Accepted - text revised.
8918	32			45	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
8920	32				biodiversity (Smith and Gregory, 2013; Peterson et al. 2017). Correct it [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
8922	33	4		27	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
2056	33	12			pg 33. In 12. delete (Accessed November 9, 2017). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2058	33	22			pg 33. In 22. Delete (Accessed April 22, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
25270	33	32			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2060	33	32			pg 33. In 32. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2062	33	34			pg 33 In 34. delete (Accessed May 23, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2064	33	35			pg 33 line 35 for reference 'F. H., Eswaran, H., Reich, P. F. and Van Den Berg, E.,' the initials should be placed before the surnames for consistency. [Mastura Mahmud, Malaysia]	Accepted - text revised.
2066	33	39			pg 33 In 39. Delete (Accessed November 7, 2017). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2070	34	16	34	17	pg 34 In 16-17. Delete (Accessed September 27 2016) [Mastura Mahmud, Malaysia]	Accepted - text revised.
2074	34	29	34	30	pg 34 In 29-30 delete the https [Mastura Mahmud, Malaysia]	Accepted - text revised.
8924	34	7		18	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
25272	34	8			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2068	34	10			pg 34 In 10. Delete (Accessed May 24, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2072	34	23			pg 34 In 23. delete (Accessed February 22, 2016) [Mastura Mahmud, Malaysia]	Accepted - text revised.

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25274	34	27			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
25276	34	31			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2076	34	31			pg 34 ln 31. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
25278	34	35			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2078	34	35			pg 34 ln 35. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2080	34	39			pg 34 ln 39. Delete (Accessed May 24, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
8926	34			18	impact (Shtienberg, 2013; Rossi et al., 2014). [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
2098	35	27	35	29	pg 35 ln 27-29. Campbell, B. M., D. J. Beare, E. M. Bennett, J. M. Hall-Spencer, J. S. I. Ingram, F. Jaramillo, R. Ortiz, N. Ramankutty, J. A. Sayer, and D. Shindell. 2017. Agriculture production as a major driver of the Earth system exceeding planetary boundaries. <i>Ecology and Society</i> 22(4):8. https://doi.org/10.5751/ES-09595-220408 [Mastura Mahmud, Malaysia]	Accepted - text revised.
2100	35	31	35	32	pg 35 ln 31-32. Campioli M, Malhi Y, Vicca S, Luysaert S, Papale D, Peñuelas J Reichstein M, Migliavacca M Arain MA, Janssens I., 2016. Evaluating the convergence between eddy-covariance and biometric methods for assessing carbon budgets of forests. <i>Nature Communications</i> Volume 7, doi:10.1038/ncomms13717. [Mastura Mahmud, Malaysia]	Accepted - text revised.
8932	35	3		43	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
8928	35	3			(Caffi et al., 2012; Shtienberg 2013). Correct it [Amanullah Amanullah, Pakistan]	Accepted - text revised.
8930	35	7		8	(Caffi et al., 2012; Shtienberg 2013). Correct it [Amanullah Amanullah, Pakistan]	Accepted - text revised.
25280	35	8			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2082	35	8			pg 35 ln 8. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2084	35	10			pg 35 ln 10. Delete (Accessed January 9, 2017). [Mastura Mahmud, Malaysia]	Accepted - text revised.
25282	35	11			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2086	35	13			Delete (Accessed January 9, 2017). [Mastura Mahmud, Malaysia]	Accepted - text revised.
25284	35	17			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2088	35	17			pg 35 ln 17. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2090	35	21			pg 35 ln 21. Add doi [Mastura Mahmud, Malaysia]	Accepted - text revised.
2092	35	22			pg 35 ln 22. Incomplete citation [Mastura Mahmud, Malaysia]	Accepted - text revised.
2094	35	26			pg 35 ln 26. (Accessed May 21, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
25286	35	27			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2096	35	29			pg 35 ln 29. Delete (Accessed October 17, 2017). [Mastura Mahmud, Malaysia]	Accepted - text revised.
25288	35	30			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2102	35	43			pg 35 ln 43. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.

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2112	36	26	36	27	pg 36 ln 26-27. Christophe Sibertin-Blanc, Olivier Therond, Claude Monteil, Pierre Mazega. 2011. Formal Modeling of Social-Ecological Systems. Jean-Pierre Muller. European Social Simulation Association, , France. 2011. <hal-00819501>. https://hal.inria.fr/hal-00819501/document [Mastura Mahmud, Malaysia]	Accepted - text revised.
2104	36	2			pg 36 ln 2. Delete (Accessed April 22, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2106	36	5			pg 36 ln 5. delete (Accessed January 18, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2108	36	8			pg 36 ln 8. delete (Accessed May 24, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
25290	36	12			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
25292	36	18			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2110	36	18			pg 36 ln 18. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
25294	36	26			Not consistently written [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
25296	36	28			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2114	36	28			pg 36 ln 28. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2116	36	38			pg 36, ln 38. delete (Accessed May 26, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
2118	36	39			pg 36 ln 39. delete 'No Title', as County Durham Climate Change Delivery Plan, is the name/title of the document [Mastura Mahmud, Malaysia]	Accepted - text revised.
25298	36	42			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2120	36	45			pg 36 ln 45. delete (Accessed May 24, 2018). [Mastura Mahmud, Malaysia]	Accepted - text revised.
8934	36			44	projection [Schaphoff et al. 2006; Sitch et al. 2008; Ahlstrom et al. 2012]. Correct it [Amanullah Amanullah, Pakistan]	Accepted - text revised.
25300	37	3			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2122	37	3			pg 37 ln 3 List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2126	37	3			pg 37 ln 3. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
8936	37	5		27	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
25302	37	27			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
25304	37	32			not consistently written [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2124	37	32			pg 37 ln 32. notation of the reference, should be initials before the surname [Mastura Mahmud, Malaysia]	Accepted - text revised.
25306	37	41			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2128	37	41			pg 37 ln 41. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
25308	37	44			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
8938	37			27	(e.g. Lempert et al. 2004; Kandlikar et al. 2005; Swart et al. 2009). Correct as suggested [Amanullah Amanullah, Pakistan]	Accepted - text revised.
25310	38	5			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2132	38	5			pg 38 ln 5 List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.

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25312	38	7			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2134	38	7			pg 38 ln 7 List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
25314	38	17			reference not consistently written [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2136	38	19			pg 38 ln 19. delete 'and A'. Correct reference is Ebert, A.W. 2014. Potential of Underutilized Traditional Vegetables and Legume Crops to Contribute to Food and Nutritional Security, Income and More Sustainable Production Systems. Sustainability 6, 319-335. [Mastura Mahmud, Malaysia]	Accepted - text revised.
25316	38	31			replace coauthors with names [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2138	38	31			pg 38 ln 31 List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
25318	38	38			reference not consistently written [Abiud Kaswamila, United Republic of Tanzania]	Accepted - text revised.
2130	38	44			pg 38 ln 44. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2140	38	60			pg 38, line 60. Delete '(' and replace by '.' [Mastura Mahmud, Malaysia]	Accepted - text revised.
8940	38			26	Alexander (1975) brackets needed [Amanullah Amanullah, Pakistan]	Accepted - text revised.
8942	39	6			be wrong (Rittel and Webber 1973). Remove full stop [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
8944	39	7			(Hansson 1996: Hansson 2004a) [Amanullah Amanullah, Pakistan]	Accepted - text revised.
8946	39	18			outcomes (Lempert et al., 2003:3f). [Amanullah Amanullah, Pakistan]	Accepted - text revised.
8948	39	33		34	correct format (Author, year) and (author et al., year) in whole document please [Amanullah Amanullah, Pakistan]	Noted, copyedit to be completed prior to publication.
8950	40	2			why big arrow [Amanullah Amanullah, Pakistan]	Accepted - text revised.
2142	40	37			pg 40 ln 37. List full names of coauthors as 'Denis Gautier, Bruno Locatelli, Christian Corniaux and Véronique Alary' [Mastura Mahmud, Malaysia]	Accepted - text revised.
2144	40	39			pg 40 ln 37 Add doi [Mastura Mahmud, Malaysia]	Accepted - text revised.
10130	41	20	41	23	Duplicate! [Reinhard Prestele, Germany]	Accepted - text revised.
2146	41	17			41. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2148	41	20			41. List full names of coauthors [Mastura Mahmud, Malaysia]	Accepted - text revised.
2150	42	3			pg 42 ln 3. incomplete reference [Mastura Mahmud, Malaysia]	Accepted - text revised.
2152	42	43			Pg 42.ln 43. correct reference is: Hinkel, J., P. W. G. Bots, and M. Schlüter. 2014. Enhancing the Ostrom social-ecological system framework through formalization. Ecology and Society 19(3): 51. https://www.sciencedirect.com/journal/soil-and-tillage-research/vol/102/issue/1 [Mastura Mahmud, Malaysia]	Accepted - text revised.
8952	45	27			no need to write co-authors here. Write all names in the required format. Check all. Check all references with text twice. [Amanullah Amanullah, Pakistan]	Accepted - text revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
2154	46	2	46	3	pg 46. lines 2-3.Change title of article from uppercase font to sentence form [Mastura Mahmud, Malaysia]	Accepted - text revised.
2156	55	18			pg 55 ln 18. incomplete reference. Smith P, et al. (2014) Agriculture, forestry and other land use (AFOLU). Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, ed Edenhofer O, et al. (Cambridge Univ Press, Cambridge, UK), p 179. https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter11.pdf [Mastura Mahmud, Malaysia]	Accepted - text revised.
2158	56				56. publisher -incomplete reference. Tal, A., 2010: Desertification. In Uekotter F. (Editor) The Turning Points of Environmental History. University of Pittsburgh Press, Pittsburgh. 146–161. [Mastura Mahmud, Malaysia]	Accepted - text revised.
18690	58	42	58	42	"CO 2"-->CO2 [Hiroaki Kondo, Japan]	Noted, copyedit to be completed prior to publication.
2160	59	2	59	5	Pg 59, line 2 to 5. Duplication of reference as on pg 58 line 44. Deryng, Delphine, Conway, Declan, Ramankutty, Navin, Price, Jeff and Warren, Rachel (2014). Global crop yield response to extreme heat stress under multiple climate change futures.Environmental Research Letters, 9 (3). 034011. DOI: 10.1088/1748-9326/9/3/034011 [Mastura Mahmud, Malaysia]	Accepted - text revised.
2168	59	30	59	31	Pg 59. Line 30-31. "WWF Report: 2010 and Beyond: Rising to the Biodiversity Challenge", Management of Environmental Quality: An International Journal, Vol. 20 Issue: 1, https://doi.org/10.1108/meq.2009.08320aee.005 [Mastura Mahmud, Malaysia]	Accepted - text revised.
2170	59	41	59	42	Pg 59. Ln 41-42. Capitalized fonts should be changed to a Sentence case [Mastura Mahmud, Malaysia]	Accepted - text revised.
20124	99	3	99	3via climate-induced changes in soil moisture. [Sabit Erşahin, Turkey]	Noted no action needed.
20292		1	1	12	perhaps add in line 12: properly and timely [Petra Minnerop, United Kingdom (of Great Britain and Northern Ireland)]	Thank you for the positive comment.
19100			1	12	perhaps add in line 12: properly and timely [Petra Minnerop, United Kingdom (of Great Britain and Northern Ireland)]	Thank you for the positive comment.
20306		1	2		I was wondering whether there should be an explanation of the nexus between law agreement and robust evidence, especially explaining the term 'robust' [Petra Minnerop, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
20294		3	3		around line 5, the role of environmental regulation especially in keeping animals in accordance with certain standards (animal welfare, standards of sustainable farming and improving environmental protection thereby) [Petra Minnerop, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
20296		3	11		at line 42-44, the notion traditional knowledge of women, this seems to be rather general, what exactly does this mean? [Petra Minnerop, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.
20298		4	13	23	Perhaps it would be clearer to start with the definition, so reversing the paragraphs? Also, how does carbon storage affect land use/ degradation? [Petra Minnerop, United Kingdom (of Great Britain and Northern Ireland)]	Comment noted section totally updated and revised.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
18810			61	1	Too many cycles in the left figure, making confusion. For example, why "Planetary", "Boundary" were put in one cycle. These repret two completely different spatial scale. Additionally, it's not easy to understand "GHG Fluxes", "Problem space", "solution space" were put together. Suggest re-plot. [Fulin Yang, China]	Accepted - text revised.
18660					<p>This chapter is a nice overview of the linkages between climate change, land use, and the food system. It summarizes the work that several actors of the society have devoted to better understanding two of the major global challenges that humanity is currently facing: climate change and land use change. The report should invite us, as well, to wonder why after so many meetings of the Conference of the Parties we have not fully fulfilled Paris COP21 objective's, yet. It is tempting, then, to consider that the land-based climate change mitigation and adaptation strategies that have been taken into account throughout these years need innovative variants to overcome what has not been reach so far.</p> <p>Presently, there is a fraction of the society comprised by government representatives and the scientific community that has been working and investing time and financial resources to better understand and gain knowledge on the anthropogenic climate change impacts. But the remaining fraction of the society, comprised of children, teenagers, farmers, housekeepers, teachers, businessmen, sportsmen, etc, is not aware of these major challenges and thus, it should be taught in order to learn good practices leading to sustainable land management and uses, and the preservation of the environment. As this does not occur in practice, this arises as an Educational Gap. It is deemed important to instruct this huge fraction of the society with simple and precise examples on land system and food system drivers and enabling conditions that would prevent global warming by diminishing GHG fluxes. Overcoming this educational gap would successfully introduce a novel variant to land-based climate change mitigation and adaptation strategies.</p> <p>In parallel, substantial scientific information related to land use types, land-based ecosystem services, global warming, GHG fluxes, climate change, land degradation and desertification, and the food system is available and a matter of debate in climate change and land-use change meetings. However, this knowledge is far away from the aforementioned significant part of the society that on a daily basis may or may not harm the environment. Efforts should be made to improve what could be called Communicational Gap between scientists and this fraction of the society. The take home lessons emerging from scientific conclusions should be communicated and decoded, if it is necessary, in order to be comprehensive to the ears of the society as a whole. Overcoming this communicational gap would successfully introduce another novel variant to land-based climate change mitigation and adaptation strategies.</p> <p>In addition to the priceless contribution of traditional teaching entities, the educational and communicational gaps could be also addressed and hopefully overcome with the help of social networks, the INTERNET and special and specific programs on public and private broadcast</p>	Comment noted section totally updated and revised.
6956					In general, not completely homogenised. Coherence with other chapter paragraphs as well as other chapter (i.e.chapter 3 and chapter 4) [Anna Luise, Italy]	Taken into account - combined with other comment.
10774					The scoping chapter hould better reflect the role of agriculture in mitigation and achievingzero hunger. Need to adress climate change, poverty and food security together [Anne Mottet, Italy]	Accepted. Sections on objective and framing augmented. Role of agriculture in mitigation properly reflected in framing; ties to SDG 1 and 2 explicitly mentioned (in text and graph)
10776					Capter 1 hould refer to FAO upcoming publication on prospective to 2050 [Anne Mottet, Italy]	Taken into account - combined with other comment.

IPCC SRCLL First Order Draft Review Comments and Responses - Chapter 1

Comment No	From Page	From Line	To Page	To Line	Comment	Response
19262					I find the whole chapter problematic. I was expecting it to be something more specific to the relationship between climate change and land issues, what readers like me expect from an IPCC report. In the current form, the chapter looks more like an assessment of land issues (which have been already done in other regional/global assessments) in which climate change is a part of the discussion. I strongly suggest to reframe the whole chapter to prostrate climate science and impacts on land (more on value addition) and by that report could be substantially shortened, which would be a relief to the future readers and policy makers expecting the report. [Binaya Raj Shivakoti, Japan]	Chapter has been restructured; however, the content has been discussed also with the other chapters in the SRCLL and it reflects to some degree their expectations on chapter 1
6598					land management' is opposed to 'forest management' please change as forests are also located on land [Cornelia Rumpel, France]	Accepted - text revised.
5290					page 1.4 [Daniel Danano Dale, Italy]	Noted, copyedit to be completed prior to publication.
5308					commensurate problems related to degradation of ecosystems, heightening. The problems will not just commensurate may also surpass [Daniel Danano Dale, Italy]	Noted no action needed.
5310					Page 1-5 [Daniel Danano Dale, Italy]	Noted, copyedit to be completed prior to publication.
5316					page 1-9 [Daniel Danano Dale, Italy]	Noted, copyedit to be completed prior to publication.
5320					from a shrinking carbon budget is getting smaller [Daniel Danano Dale, Italy]	Noted, copyedit to be completed prior to publication.
5322					page 1-10 [Daniel Danano Dale, Italy]	Noted, copyedit to be completed prior to publication.
5326					1.2.3 Competition for land (1-12) [Daniel Danano Dale, Italy]	Noted, copyedit to be completed prior to publication.
122					Overall this chapter, compared to others, is poorly written, full of jargon and difficult to understand, and does not reflect well or really frame the following chapters. [Elizabeth Penelope Davies, United States of America]	Comment noted section totally updated and revised.
6470					could include reference to culture - both in terms of cultural practices and their role in land management and cultural heritage as impacted by many of the approaches discussed. Cultural elements to landscape are as important (e.g. WHS definitions, European Landscape Convention) [Hannah Fluck, United Kingdom (of Great Britain and Northern Ireland)]	Accepted chapter restructured.
26428					Chapter seems great on providing context and associated assessments. [Hans Poertner and WGII TSU, Germany]	Thank you for the positive comment.
26430					Avoid abbreviations as much as possible, explain repeatedly if needed (e.g. OWL, SOM, OH sink, BVOC even in heading, UHI) [Hans Poertner and WGII TSU, Germany]	Accepted - text revised.
26434					A box explaining the difference between ecosystem services and NCP would be useful, placed into context of different value systems. [Hans Poertner and WGII TSU, Germany]	Accepted. Cross-chapter box is being discussed, led by chapter 6
26438					Chapter has great quantitative information on context but not so much on climate related issues? [Hans Poertner and WGII TSU, Germany]	Comment noted section totally updated and revised. Climate aspects where appropriate highlighted more
24628					Where are we heading to? [Lizzy Igbine, Nigeria]	Accepted chapter restructured.
24642					Climate policies can also play a role in affecting land competition [Lizzy Igbine, Nigeria]	Accepted - text revised.
24644					And to profare better and equitable land use and distribution. [Lizzy Igbine, Nigeria]	Accepted chapter restructured.

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Comment No	From Page	From Line	To Page	To Line	Comment	Response
24646					Equity in land allocation and distribution will go to a large extent to reduce hunger and poverty [Lizzy Igbin, Nigeria]	Accepted chapter restructured.
24648					Key issues related to land use, land cover and land use change [Lizzy Igbin, Nigeria]	Accepted chapter restructured.
24680					Tap and collect facts and information from local sources and best practices already on ground. [Lizzy Igbin, Nigeria]	Accepted chapter restructured.
7028					General comment: there seems to be a slight imbalance between discussions on land-based climate change mitigation and land-based climate change adaptation, rather favouring discussions on mitigation. Please check, whether discussions could be more balanced. [Mariam Akhtar-Schuster, Germany]	Adaptation section added
1900					Page 5, Line 29 to 30. Box 1.1. Issues to be covered (not yet complete): [Mastura Mahmud, Malaysia]	Accepted - text revised.
16900					I applaud the use of language describing weight of evidence/agreement right from the start of this chapter. However I miss any explanation of what this means and a description of the use of calibrated IPCC uncertainty language. Please insert at least a footnote at the start and consider including a description, perhaps as a cross-chapter box?, in section 1.5 which currently only talks qualitatively about uncertainties. [Pauline Midgley, Germany]	Noted, accepted, uncertainty language added or revised.
16902					I am sorry to have to rate the use of English in much of this chapter (especially the Executive Summary, 1.5) as poor and certainly below the standard expected of an IPCC report. I have refrained from making any detailed comments on this aspect but it needs not just a professional copy-edit but a thorough edit by someone with a native or professional standard of English writing. Examples include incorrect prepositions, lack of agreement between noun and verb, missing articles, incorrect or inconsistent use of commas, missing or inconsistent use of hyphens, ... [Pauline Midgley, Germany]	Comment noted section totally updated and revised.
20300					overall, the chapter is very well drafted and provides excellent information on the topic. It is really difficult to add anything to this. Maybe it would be a good idea to make the architecture of the chapter slightly leaner, in some paragraphs, it felt like there is a lot of interesting information, without necessarily providing a very clear structure for the reader which sometimes made it necessary to go back several pages [Petra Minnerop, United Kingdom (of Great Britain and Northern Ireland)]	Thank you for the positive comment.
26560					An important reference on the impacts of biochar application on greenhouse gas fluxes: [Rachel Smolker, United States of America]	Noted no action needed.

IPCC SRCL First Order Draft Review Comments and Responses - Chapter 1

Comment No	From Page	From Line	To Page	To Line	Comment	Response
26584					There is little recognition that large scale biochar production would require large scale supply of biomass. 1.3.4.4 states that “enhancing soil carbon storage and addition of biochar can be practised without competing for land”. Yet where would the biomass that is to be pyrolyzed into biochar come from? Several times there is citation of a study by Woolf et al 2010 (Sustainable biochar to mitigate climate change. Nature Communications DOI: 10.1038/ncomms1053. That study offers the potential for biochar to reduce global emissions by 12%. Such a scale of production and application would be truly monumental, especially given that during pyrolysis, only around 12-40% of the biomass C is typically retained. What is not obvious from initial reading (see supplementary material) is that the claim was based on assumed conversion of 556 million hectares of land to grow and supply feedstocks. [Rachel Smolker, United States of America]	Cross-chapter box is being discussed, led by chapter 6
26618					Does not properly identify the vast scale of deforestation/tree cover loss that has already occurred: Deforestation and forest degradation is a major contribution to GHG emissions, and halting it is urgent and essential. This is not prominently stated in the report as it should be. For example 1.3.1.2 (Past and ongoing trends) states “Recent studies not only agree that global forest loss in the last decades has decreased compared to the 1990s, but forest loss has also partly (approximately 50%) been compensated by forest gains, mainly forest plantations (ca. 1.3-1.9 Mkm ² yr ⁻¹ (Keenan et al. 2015; Sloan and Sayer 2015; Hansen et al. 2013; Birdsey and Pan 2015) (high agreement,13 robust evidence).” Such statement lead to inaccurate conclusions that forests/tree cover is in balance and that plantations can “compensate” for loss of natural forests. The scale of the problem is not adequately represented. For example, recent analyses indicate that global tree cover has diminished by near 50% over the past century with 2017 being the second worst year on record for tropical tree cover loss. [Rachel Smolker, United States of America]	Accepted chapter restructured.
26620					See data referred to here: https://blog.globalforestwatch.org/data/2017-was-the-second-worst-year-on-record-for-tropical-tree-cover-loss . [Rachel Smolker, United States of America]	Accepted chapter restructured.
26622					Studies indicate that tropical forests have become a net source of emissions. [Rachel Smolker, United States of America]	Accepted chapter restructured.
26624					Baccini, A. et al, 2017. Tropical forests are a net carbon source based on aboveground measurement of gains and loss. Science 13 Oct 2017: Vol. 358, Issue 6360, pp. 230-234, DOI: 10.1126/science.aam5962 [Rachel Smolker, United States of America]	Accepted chapter restructured.
26626					The report fails to differentiate clearly between natural forests (multi-age (including ancient), diverse species, no synthetic fertilizers or chemicals etc) versus tree plantations (same age monocultures, often a single and non-native species grown with fertilizers and chemicals for the purpose of short rotation re-harvesting). These represent two opposite extremes along a continuum of forest and tree cover types, but failure to distinguish between them results in dangerous confounding of statements found throughout the report in various chapters. Ancient trees and intact forest ecosystems must be protected [Rachel Smolker, United States of America]	Accepted - text revised.

IPCC SRCCL First Order Draft Review Comments and Responses - Chapter 1

Comment No	From Page	From Line	To Page	To Line	Comment	Response
26628					Watson, J.E.M. et al. 2018. The exceptional value of intact forest ecosystems, <i>Nature Ecology & Evolution</i> 2, 599-610 [Rachel Smolker, United States of America]	Accepted - text revised.
26630					Global efforts to facilitate restoration of natural forests should be emphasized. There is misconception that young trees are somehow “better” for carbon sequestration which has been proven incorrect [Rachel Smolker, United States of America]	Comment noted section totally updated and revised.
26632					Köhl M, Neupane PR, Lotfiomran N (2017) The impact of tree age on biomass growth and carbon accumulation capacity: A retrospective analysis using tree ring data of three tropical tree species grown in natural forests of Suriname. <i>PLoS ONE</i> 12(8): e0181187. https://doi.org/10.1371/journal.pone.0181187 [Rachel Smolker, United States of America]	Noted; references were reviewed and incorporated as appropriate