

**External review of the first order draft of the land degradation and restoration assessment**  
**30 May - 11 July 2016**  
**Chapter 2**

Reviewer Name	Chapter	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	Response (from Chapter 2)
LI Qingfeng	0	0	general comment on FOD LDRA			1, The Report in overall is too academia, too detailed in scientific exploration and descriptions. In consideration of the principal aim "to facilitate the implementation of the National ... and the "Inter-governmental" nature of the organization, the Report has to be more "publicly explicit", rather than "scientifically complicated". If the Report is to be read by the policy makers, and to draw attentions from the public, the content is to be simplified and the volume greatly reduced, one third is more than enough.	In the chapter revision these points are taken into account. The content was simplified wherever possible. As far as chapter 2 is concerned, we believe that we managed to avoid being overly academic but rather succeeded in being policy relevant and clear.
LI Qingfeng	0	0	general comment on FOD LDRA			2, An Executive Summary and a List of Acronyms and Abbreviations are necessary.	Thank you, this has been done for the final draft of the Chapter 2 and all chapters of the report.
German government	0	0	general comment on FOD LDRA			We believe that the first order draft of the IPBES thematic assessment on Land Degradation and Restoration generally has a comprehensive and scientifically sound structure and we congratulate the authors for this achievement. This is a <i>first order draft</i> however, and, therefore, we hope that our comments will be useful for the further development and maturing of this assessment so that in the <i>second order draft</i> scientifically strong and comprehensive key messages can emerge. We very much look forward to the <i>second order draft</i> of this important assessment.	Thank you for taking the time to review the full report. We appreciate your feedback and the constructive comments you offered thereafter.
German government	0	0	general comment on FOD LDRA			<b>We request the co-chairs of this assessment to ensure that the general comments listed for this assessment are made available to the CLAs and LAs of all 8 chapters.</b> Reason: Cross-referencing between the 8 chapters of the FOD sections by chapter authors should help to (1) avoid repetition; (2) use the same terminology/definitions, (c) strengthen the logical connection between the 8 chapters and, thus, (d) strengthen the overall storyline of the assessment.	This has been done. 1) In the Second Author Meeting (SAM) in Bonn chapter boundaries were defined; 2) glossary has been made; 3) common drivers and ES were addressed from different chapter perspectives. The general comments have been distributed to all chapters and revisions have been made by chapters as stated above.
German government	0	0	general comment on FOD LDRA			It needs to be critically highlighted that chapter 1 needs to provide a sound basis on the scope of this assessment and on the key definitions/terminology used throughout the 8 chapters. This should help to develop a strong storyline throughout the chapters. Chapter 8 on decision support should reflect more strongly on the findings of the previous chapters and also discuss policy support tools. Currently, chapter 8 remains quite general. All in all, the chapter authors should analyse the findings of the other chapters of the assessment and cross-reference to these. As we are discussing a thematic assessment which should also add value to the IPBES global assessment (D2c), we strongly encourage the authors of the 8 chapters to also analyse the relevant findings emerging from the four regional IPBES assessments.	The work of the regional assessments is ongoing and there is some coordination that happened at strategic points. However chapter 2 has no corresponding chapter in the regional ones so it is not possible to compare them directly.
German government	0	0	general comment on FOD LDRA			A major cross-cutting issue throughout the document is that <b>land degradation and restoration are being "lumped" too much together</b> , without considering that each of these measures has different drivers, processes etc. Discussing both aspects separately and with a stronger biodiversity and ecosystems perspective would add value to the document.	In Chapter 2 we try to discuss degradation and restoration separately. We also have tried to make the links to biodiversity and ecosystems more prominent.
German government	0	0	general comment on FOD LDRA			The assessment should provide balanced scientific-based opinions and not overemphasize certain opinions, thereby possibly paying less attention to other perspectives. Therefore, the arguments in a chapter should not build just around one or two opinion-based citations.	We explain in the introduction of the chapter 2 that if IPBES wants social and human sciences to contribute, it also has to acknowledge that human and social sciences do not obey to the same regime of proof, nor the same kind of data. So, while we have used the available scientific evidence, we have also used other available information and knowledge to form a balanced opinion based on the literature we have assessed.

German government	0	0	general comment on FOD LDRA			Please ensure that all 8 chapters will start with an executive summary that includes a list of key messages and their degrees of confidences, based on the Platform's confidence framework in the Platform's guide on assessments (IPBES/4/INF/9). Such key messages will be extremely relevant for the user groups of this assessment and most certainly for identifying policy options.	This has been done in the final draft.
German government	0	0	general comment on FOD LDRA			Provide an annex for this assessment that lists all the acronyms, abbreviations and key terms (including their definitions) used in the assessment.	This has been done in the final draft.
German government	0	0	general comment on FOD LDRA			Ensure consistency in the wording and the use of the key terms provided in section 1.1.2 throughout the document (all 8 chapters) of this assessment. Please also ensure that the wording of definitions provided in section 1.1.2 corresponds to the wording of these definitions as outlined in Decision 3/1, Annex VIII.	Chapter 2 has tried to be consistent with the 1.1.2
German government	0	0	general comment on FOD			Ensure that prescriptive language is not used.	Text has been checked for prescriptive language and replaced with "if...then" phrasing.
German government	0	0	general comment on FOD LDRA			In the further development of the assessment report, please also refer to other IPBES work programme items that are thematically linked to this assessment (e.g. "capacity development (D1a/b)"; "indigenous and local knowledge (D1c)"; "regional assessments (D2b)"; "global assessment (D2c)"; "pollination, pollination and food production (D3a)"; "scenarios and modeling (D3c)"; "policy support tools (D4c)").	Cross-reference to the IPBES policy support tools has been made.
German government	0	0	comment on FOD LDRA			Regarding chapter 1 and in chapter 8: highlight the relevance of the LDR assessment for the Strategic Plan for Biodiversity 2011–2020 / Aichi Targets (specifically goal 15), and the SDGs (and especially SDG 15).	Done also in Ch2
German government	0	0	comment on FOD LDRA			Outline in chapter 1 and in chapter 8, how the land degradation and restoration assessment will deliver to/support the IPBES global assessment on biodiversity and ecosystem services (D2c).	Not applicable to Ch2
German government	0	0	general comment on FOD LDRA			The terms "sustainable land use" and "sustainable land management" are somewhat being used interchangeably. Please check the definitions of both terms and if necessary, please align the use of these terms accordingly throughout the assessment report (all 8 chapters).	In chapter 2 we have a profound discussion about the concept sustainability.
German government	0	0	comment on FOD LDRA			Throughout the document the terms "reduction" and "mitigation" are being used. Please provide information about the technical difference between both terms.	Not applicable to Ch2
German government	0	0	comment on FOD LDRA			Regarding figures, tables, photos/images: Ensure in the <i>second order draft</i> and the associated SPM that the <b>quality of all visual materials should be high</b> .	Visual materials have been improved to the best quality possible through using a specialized cartographer to redraw the figures and obtaining high quality photos.
German government	0	0	general comment on FOD LDRA			Information and data targeting the same or similar issues (e.g. on urbanisation/global extent of land degradation, deforestation rates ...), are outlined in the various chapters of the report, partly by referring to different statistical sources. We strongly encourage you to develop <b>comprehensive chapters-spanning tables and figures on similar issues</b> in order to align information throughout the 8 chapters so that strong key messages can emerge.	Not applicable to Ch2
German government	0	0	general comment on FOD LDRA			Ensure for all 8 chapters that data and other facts (numbers, percentages, statements, citations) are provided with at least one reference.	Done.
German government	0	0	general comment on FOD LDRA			Not all references cited in the text are to be found in the reference lists of the chapters. Please critically cross-check.	All reference material has been added to the reference manager to ensure correct citations.
German government	0	0	general comment on FOD LDRA			We have acknowledged that professional language editing will be taken care of at a later stage. We have therefore restricted ourselves to providing comments only on the thematic contents of each chapter. Therefore, please ensure that language editing is taken care of.	Text has been fully editing for the final draft .
Hamid Custovic (SPI)	0	0	comment on FOD LDRA			Perhaps excusable in a FOD, but the majority of the text needs substantial editing to improve English expression and ensure clarity.	Text has been fully editing for the final draft .

Hamid Custovic (SPI)	0	0	general comment on FOD LDRA			The document length should be substantially reduced, so that it is readable for the intended audience of policy-makers. Delete the text that does not relate directly to the topic of assessment of land degradation. Condense the explanatory text and provide references for further detail.	We aimed to be as concise as possible in the chapter revisions.
Hamid Custovic (SPI)	0	0	general comment on FOD LDRA			The report title is misleading. The assessment is not about land degradation but rather about biodiversity loss, because land degradation has been defined here as “processes that cause biodiversity loss and loss of ecosystem functions and services”. Ideally the title should be reworded to reflect the content.	Title used was given to us in the Scoping Document, which was approved by IPBES Plenary (please see annex VIII to Decision IPBES-3/1). We are not in the position to change the title.
Hamid Custovic (SPI)	0	0	general comment on FOD			We encourage the authors to elaborate on how land degradation/restoration can seamlessly integrate agriculture, ecosystems services and biodiversity.	This has been addressed in the final version of the assessment report.
Hamid Custovic (SPI)	0	0	general comment on FOD LDRA			It would be helpful if the report used the language of DPSIR; this could help to minimise the repetition between chapters, if authors can recognise that for example chapter 4 should be confined to pressure and state, and not also discuss drivers (ch3) and impacts (on ecosystems - Ch 5), and human responses (ch 6).	The assessment is build around DPSIR. Chapter 6 and part of 8 addresses the response part. Drivers, Pressures, State, Impact Response
Hamid Custovic (SPI)	0	0	general comment on FOD LDRA			Not all references cited can be found in the reference list. This needs to be taken care of.	All literature has been added to the referece manager to ensure correct citations.
Hamid Custovic (SPI)	0	0	general comment on FOD LDRA			The second order draft should include key messages and their level of confidence. This is currently lacking.	Executive summary has been developed, including level of confidence
Hamid Custovic (SPI)	0	0	general comment on FOD LDRA			Some item are repeated on introduction of different chapters.	OK. Some overlap in intro is OK, as long as being dealt with from a specific chapter angle.
Peter Onorato	0	0	general comment on FOD LDRA			<p>Considering IPBES’ role as the interface between science and policy, we consider it critical that the reports clearly communicate the key findings, implications and recommendations within chapters so that they can be readily used by policy makers. To assist this there may be value in the chapters having a uniform structure, similar to that in the Executive Summary of the IPCC Chapters. In addition to including an executive summary, the following headers might help focus the authors’ attention to ensuring their chapters are targeted to policy-makers as opposed to an academic audience:</p> <ul style="list-style-type: none"> <li>– Executive Summary</li> <li>1. Key Findings</li> <li>2. Critical Implications</li> <li>3. Gaps in Knowledge and Data</li> <li>4. Recommendations</li> <li>5. FAQ</li> </ul> <p>A clear and consistent structure, along with key findings and recommendations, could be of great benefit to policy makers.</p>	All chapters have an executive summary. SPM addresses all other elements presented.
Peter Onorato	0	0	general comment on FOD LDRA			some of the Chapters (particularly Chapter 2) competing scientific views on certain issues are presented, almost debate-like, one after another. While it’s important to understand the current state of the science, we do not think that IPBES Assessment Reports should be used as a platform to advance contested academic theories as this diminishes the report’s ability to be a clear and concise communication document. In order to best bridge the gap between science and policy, and to provide policymakers with clear guidance, Assessment Reports should present the latest knowledge and make recommendations based on this. Policy makers generally don’t have the depth of knowledge to balance contested scientific theories and will rely on IPBES’ work to clearly identify the best policy options available	This is too unspecific to be responded directly. However, through out the text we will try to avoid contested academic theories but note that as an assessment we do need to bring out both sides if there is some contested views.

Peter Onorato	0	0	general comment on FOD LDRA			The SDGs constitute the new global paradigm for sustainable development. As such, we consider there to be value in drawing more links between the SDGs and IPBES' work within the reports. Again, this will help policymakers effectively prosecute the case for improved biodiversity policies, and help identify where clear links exist between biodiversity policy and other issues including development and broader environmental outcomes, strengthening the case for biodiversity policy priorities.	This has been done.
Ayman Batisha	0	0	general comment on FOD LDRA			The entire report should be homogenously arranged, logically build and fully integrated with no inconsistency, disharmony or overlapping within its chapters and sections. The titles of chapters and sections are generally too long to be professional.	Harmonization and the avoidance of overlaps are a work in progress throughout the whole development of the assessment. Concerning the titles, the CLAs and LAs of Chap2 carefully thought about appropriate and informative titles for each sections.
Ayman Batisha	0	0	general comment on FOD LDRA			Number of sections still requires more work and careful revision. As examples, in Chapter 1, There should be more sections to clarify 1.2 What constitutes Success in the restoration of degraded land?; 1.3.1.1 until 1.3.1.5 should be corrected; in Chapter 2, the classification of Natural and social science and the law, Human sciences, and Social inequities should be justified (or correct); in Chapter 3, how "3.6. Food security through tackling land degradation" is related with the direct and indirect drivers of land degradation and restoration; in Chapter 4, most of sections deals with multiple drivers and Key Human Drivers, although the reader expect that "the status and trends of land degradation and restoration and associated changes in biodiversity and ecosystem functions" will be analyzed; in Chapter 5, the reader expect that there are some sort of comparisons between the case of land degradation and the case of land restoration; in Chapter 6, Responses to avoid land degradation and restore degraded land, the reader expect that there is an Environmental assessment evaluation and a full Economic and financial mechanisms, how can it be applied in the mentioned Case studies and how he/she can estimate the total cost in his/her Case study; in Chapter 7, Issues not being raised include how soft computing techniques such as Fuzzy Logic and Neural Networks can develop scenarios of how land degradation and restoration could evolve in both Near-term and Long-term; in Chapter 8, the reader expect that there a focus on soft computing techniques, and the possible application in the fields of the decision support systems used to address land degradation and restoration based on a well-defined Environmental indicators.	The law is a social science and in the assessment what we mean by the law is all the legal sources admitted by this discipline: law, decree, code, international convention, jurisprudence, custom, constitution.
Ayman Batisha	0	0	general comment on FOD LDRA			The entire report should be homogenous and integrated with no interference within its chapters and sections. As a quick example, the first section in Chapters 1, 5 & 6 is Introduction; whereas in Chapter 2 is Executive summary: Key Messages; in Chapter 3 is Purpose and value of chapter; in Chapter 4 is Introduction to the degradation process; in Chapter 7 is Table of Content, Executive Summary (Key policy messages), At the global level, At the local level (only where different from global messages); and in Chapter 8 is Executive Summary. Similarly, the end section in Chapter 1 is 1.3 Case studies of successful land restoration; in Chapter 2 is Conclusions - Working with perceptions as a policy tool; in Chapter 3 is 3.7 References Cited; in Chapter 4 is 4.6 Conclusions, 4.7 Glossary, 4.8 References; in Chapter 5 is 5.5 Remaining Challenges; in Chapter 6 is 6.4.4.2 Case studies, 6.5 References; in Chapter 7 is 7.4.4 New approaches: Visioning LDR for Sustainable Futures; and in Chapter 8 is 8.4.3 Identify and prioritize responses to reduce trade-offs and/or enhance synergies to address land degradation and/or develop restoration.	The full assessment has gone through multiple revision rounds and streamlining across chapters. Consistent structuring across chapters has been developed as well.
Ayman Batisha	0	0	general comment on FOD LDRA			Numbers of topics still require work and revision, as examples, please compare "3.3.6 Fire regime change" with "4.3.6 Fire regime change", and "6.3.1.5 Fire regime change", also, compare "3.4 Climate change as a threat multiplier of degradation drivers", with "4.2 Cross cutting degradation processes common to multiple drivers", and "6.3.1.10 Climate change as a threat multiplier".	Not applicable to Ch2

Ayman Batisha	0	0	general comment on FOD LDRA		There should be examples/chapter to clarify how the biogeochemical cycle (carbon, oxygen, nitrogen, phosphorus, sulfur, calcium, rock and water etc.) through both biotic (biosphere) and abiotic (atmosphere, hydrosphere, and lithosphere) compartments of Earth can cause land degradation and restoration. Special attention should be emphasized to the human-caused cycle of atrazine, which may affect certain species. Land degradation and restoration should be assessed in the light of Global Changes; Global Warming; Global Sea Level Rise, and Global Ocean. Land degradation and restoration should be assessed into two categories which operates at different time scales: the biological – physical, (Near-term) and the geological, (Long-term). Land restoration opportunities, planning, economics, implementation constraints, and limits should be defined.	Not applicable to Ch2
Ayman Batisha	0	0	general comment on FOD LDRA		Assessment on land degradation and restoration should emphasize on multiple Land-use Categories; Forest Land, Cropland, Grassland, Wetlands, Peatlands, Settlements, and most important and significant Arid and Semi-arid land. Assessment on land degradation and restoration should emphasize on Policy Oriented Research. Human Settlements, Industry, and Infrastructure in both Urban and Rural Areas should be surveyed. Cross-cutting issues such that Agriculture, Water, Energy, Industrial Processes, CO2 Transport, Injection and Geological Storage, Waste Generation, Composition, Incineration, Treatment, Discharge, Disposal and Management should be focused.	Some of these are addressed already in Ch2
Ayman Batisha	0	0	general comment on FOD LDRA		Research related to the Science of land degradation and restoration should be emphasized on. Assessment on land degradation and restoration generally deal with multiple meanings of fuzzy concepts, so it is strongly recommended to add chapter/section to provide General Guidance to the subject of how applying fuzzy concepts in the context of land degradation and restoration using soft computing techniques. The scope of soft computing covers the areas of Fuzzy Logic, Neural Networks, Chaos Theory, Evolutionary Computing, Rough Sets, Ant Colony, Immunological Computing, Particle Swarm, Wavelet, Probabilistic Computing, Hybrid Methods and other similar techniques to address real world complexities achieving tractability, robustness and low cost solution. The chapter may be devoted to effective approaches to Data Collection; dealing with Uncertainties; Methodological and efficient technique Choice; Time Series Consistency Identification of Key Categories, and Quality Assurance/Quality Control and Verification. The application areas of soft computing include but are not limited to Detection and Attribution of land degradation: from Global to Regional and local, land degradation Projections and Predictability (Near-term and Long-term). Land degradation Phenomena and its relevance for future Global and Climate Change. Detection and attribution of observed and multi-sector degradation, emergent risks, key vulnerabilities, and opportunities should be addressed. Land degradation and restoration should be assessed in the light of statistical analysis and levels of confidence.	We discuss fuzzy concepts but the rest of the suggestions are not applicable to Ch2.
Ayman Batisha	0	0	general comment on FOD LDRA		Atlas of Global, Regional and local land degradation and restoration Existing, Projections and Predictability should be annexed.	We tried to integrate all relevant information within the body of the text, so as to not overload the final report with extensive back matter.
Anna Luise	0	0	general comment on FOD LDRA		The Chapters are disomogenous. Their structure is different as well as the degree of deepening of the topics which, in general, remains too weak. Some general concepts and the conceptual framework itself are repeated too many times with no real added value in the various Chapters. Even if all concepts should be based on sound scientific data and information, too many references could generate some confusion. The report should take into consideration its utilisation, among all, in policy making processes, and adopt an appropriate language. Some overlapping, for example for Chapter 7 and 8. On the contrary, some citations are disomogenous.	We solved inappropriate overlap between chapters and within chapters for the final draft.

Markus Giger	Chapter 2	0	0		<p>feel that the table of contents does not lead to a complete and balanced picture of concepts and perceptions. The choice to limit the discussion to only three stakeholder groups (scientist, local land users, "Human sciences and indigenous and local knowledge" and decision makers) is limiting, and certain subchapters are too long , narrative and judgemental.</p> <p><b>Science</b> is not only natural science and humanities. What about economics including environmental economics? What about concepts of environmental economists, that have tried to develop methods to quantify and value environmental services? Or economist that explain land degradation with perverse incentives and open access situations? I think this would merit a discussion - presently limited to some not cursory comments in "2.2.2.3 Social inequities vs. "the tragedy of the commons".</p> <p><b>Land users:</b> Perceptions of farmers in Western World is discussed in just one box. It is not only about keeping the fields "clean"- many try to maintain productivity of their land. What about the global movement for organic farming and their perceptions? What about the hundred of millions of farmers in Asia that have adopted high yielding varieties? Do they only see "production" or do they simply value food production higher than ecological concerns?</p> <p><b>Consumers:</b> why not discuss them? After all agriculture produces what consumer demand (maybe influenced to some extend by food companies).Do they not ask for cheap food and more meat ? - although a small segment also starts to by organic food and vegetarian diets.</p> <p>I would propose to <b>restructure the entire chapter 2.2</b> . more stakeholder categories but keep the discussion a bit shorter. Seperate into:</p> <ul style="list-style-type: none"> <li>-natural science (differentiating between ecology, soil science, land science)</li> <li>-social science (economics, antropology, others)</li> <li>-different categories of land users (western farmers, organic farmers, smallholders integrated in markets, subsistence farmers, pastoralist, forest people)</li> <li>-consumers</li> <li>-agro-business</li> <li>-conservation and enviromentalist NGOs</li> </ul>	<p>This is a rather broad comment, and we don't feel we can reply to it exhaustively. Nevertheless, we have followed most of the suggestions and we have worked a lot on the chapter based on this comment. Specifically we have now more discussion about farmers and we talk about consumption. We have not segmented our chapter into more categories as is suggested as we feel this would introduce too much small bits of text and the whole would be blurred. This would be the risk if we introduced more categories maainly because we have a limit in length we need to work with.</p>
German government	Chapter 2	0	0		<p>General comment: In chapter 1 (see also Conceptual framework in this chapter) the terms "restoration" and "rehabilitation" have been introduced. Chapter 2 should therefore consider differentiating between "restoration" and "rehabilitation" in its assessment.</p>	<p>This was considered while rewriting. However, based on the scoping document definitions the only difference between these two are the desired end point of the actions. Restoration aims to full recovery of the pre-degradation state while rehabilitation will not reach the full recovery. As such they may not need to be treated separately. This point has been included in the text though.</p>
Feras Youssef	Chapter 2	0	0		<p>In general, the text needs some indentions, particularly the right side of the pages</p>	<p>Comment about format, language or spelling - was fixed</p>
Feras Youssef	Chapter 2	0	0		<p>In general, there are some typing errors, capital or small letters are mixing</p>	<p>Editorial revisions to the chapter were done for the final draft.</p>
Feras Youssef	Chapter 2	0	0		<p>General comment: In general,additional examples about land use changes showed be given (i.e. China, Mideast and Mediterranean regions)</p>	<p>We have included some examples in the text but we are limited in space and therefore can not use that many</p>
Bo Wu	Chapter 2	0	0	53	<p>General comment on chapter: The opinions of this chapter are not consistent with other chapters. The concepts of LDR should be objective but not subjective so that quantitative indicators can be used to assess LDR.</p>	<p>Actually many of the opinions and data of this chapter are consistent with chapter 3 (drivers). The Key Messages will clarify this convergence.</p>
D. Pennock (ITPS)	Chapter 2	0	0	End	<p>General comment: The use of double quotes is ambiguous (and very widely used). In some cases it identifies direct quotes (e.g. l. 2042-2045); in others it identifies colloquial statements (e.g. human progress).</p>	<p>Editorial revisions to the chapter were done for the final draft.</p>
Hamid Custovic (SPI)	Chapter 2	0	0		<p>General comment on chapterR: This chapter has useful elements (eg explanation of the concept of worldviews), but also some of the most problematic text in the report - see issues raised below.</p>	<p>This comment will be elaborated below and need no action here</p>
Hamid Custovic (SPI)	Chapter 2	0	0		<p>General comment on chapter: However, the chapter's structure and coherency need to be further improved. Currently, the overall approach of this chapter is one of reportage. Critical assessment should be strengthened in order to integrate land degradation with ecosystem services and biodiversity.</p>	<p>We have made more indepts assessments through out the chapter.</p>

Meredith Root-Bernstein	Chapter 2	0	0			General: You are misusing the word normative. All policy statements are normative, meaning they say how things should be. Thus, the difference between the pre-degradation state and the reference state is normative, in that you are saying that two states with such a difference should be incorporated into policy about degradation and restoration. I suspect the word you are looking for is "subjective."	We have corrected this
Hamid Custovic (SPI)	Chapter 2	0	0			General comment on chapter: It is ironic that this chapter on perceptions and worldviews plainly portrays the worldview of the authors (anti-agriculture unless practiced by subsistence farmers; anti-development, anti-international policy processes; anti-global assessments) without acknowledging alternative worldviews; literature that does not support this worldview is excluded. The chapter must be revised to present an objective, unbiased assessment. Pejorative stereotyping, unreferenced statements and broad generalisations have no place in a scientific review.	We respectfully disagree with the position expressed by the reviewer. This chapter points at the weaknesses of science/policy interface. Being an assessment about land degradation and restoration, may we respectfully suggest that if intensive agriculture and agribusiness worldviews were not so dominant and even hegemonic, land would not be so degraded and there would be no point to this assessment. See for example Foley, J. A., DeFries, R., Asner, G. P., Barford, C., Bonan, G., Carpenter, S. R., ... & Helkowski, J. H. (2005). Global consequences of land use. <i>science</i> , 309(5734), 570-574.//// SEE ALSO Tilman, D., Cassman, K. G., Matson, P. A., Naylor, R., & Polasky, S. (2002). Agricultural sustainability and intensive production practices. <i>Nature</i> , 418(6898), 671-677.//// Lambin, E. F., & Meyfroidt, P. (2011). Global land use change, economic globalization, and the looming land scarcity. <i>Proceedings of the National Academy of Sciences</i> , 108(9), 3465-3472.//// AND Gibbs, H. K., Ruesch, A. S., Achard, F., Clayton, M. K., Holmgren, P., Ramankutty, N., & Foley, J. A. (2010). Tropical forests were the primary sources of new agricultural land in the 1980s and 1990s. <i>Proceedings of the National Academy of Sciences</i> , 107(38), 16732-16737.////AND ONE OLDER ONE: Southgate, D. (1990). The causes of land degradation along "spontaneously" expanding agricultural frontiers in the Third World. <i>Land Economics</i> , 66(1), 93-101.
Penny van Oosterzee	Chapter 2	1	2			This is an excellent and thorough chapter. Citations need to be checked and added to the reference. There are many references cited that are the basis of important discussion and yet the references are not listed which is quite frustrating when you're trying to do a review. I think that some of this chapter should go up to Chapter 1 and the case studies of Chapter 1 should be distributed throughout the rest of the chapters.	References have been formatted and checked for the final draft, but the comment is too vague to help us decide the division between Ch1 and Ch2
M. Y. Yazdandoost	Chapter 2	2	48	53	2300	Wherever possible, the emphasis broadly must be given to the following aspects: · Re-establishing functional ecosystems by ecological restoration that contains rich biodiversity to continue maturation by natural processes. · To evolve programs in response to changing environmental conditions. · To involve indigenous people in ecological restoration that shapes the Wild Community Structure (WCS) and allows suitable WCS to develop on specific land. · Eco-cultural restoration on Aboriginal lands should consider indigenous concepts on ongoing landscape planning, monitoring and management. · The restoration in the degraded areas should develop relationship between people and place and enhance indigenous management on native plants, ecosystems and Ecological Restoration Cycles (ERC). · Respect indigenous peoples' rights to support indigenous communities' self-determination, cultures and political resilience. (Indigenous peoples inherent rights, and dynamic cultures, deeply and richly interwoven in lands, languages, spiritual traditions, and artistic expression, rooted in self-determination and self-governance). · Develop harvest techniques by native people to maximize health and yield of native plants. · Develop productive mosaic of habitats through indigenous people and local community involvement. · Reconstruct the integrated management practices on endangered species.	We respectfully disagree with the suggestion of the reviewer to reorganize the chapter. The chapter is about concepts and perceptions, not about solutions.
Brajendra (ITPS)	Chapter 2	2	52	2	52	Section 2.1.2 is not clear to the extent that it has to be rewritten as how people perceive land, soil, soil related infertility syndrome, chemical degradation of lands.	We do not consider this to be in our scope in Ch2

John (Ebo) David	Chapter 2	3	98			Roughly the first quarter to half of the chapter, including the introduction, gives the impression that the entire chapter is anthropocentrically focused. The latter part of the document is more balanced and specifically addresses multiple viewpoints. Bring up issues like (line 1789) "Markets and economic competition still govern international relations..." in the intro would help the document appear more balanced from the start.	The IPBES focuses on benefits to people and human wellbeing and therefore the chapter should be more or less anthropocentric. Moreover, we deal with legal issues and the law is mainly anthropocentrically focused. Therefore we do not see a problem for the chapter to be anthropocentrically oriented while we do try to make a better balance in the text.
John (Ebo) David	Chapter 2	3	98	53	2301	citation style differs throughout the document, even for the same citation -- ex (Wegner & Pascual 2011) (G. Wegner & Pascual 2011). Please make it consistent throughout.	Editorial revisions to the chapter were done for the final draft.
Dr. Amanullah Khan (ITPS)	Chapter 2	3	99	3	123	Full justification of text is better in the whole text	Editorial revisions to the chapter were done for the final draft.
Marina Rosales Benites de Franco	Chapter 2	3	99	3	100	Diverse perceptions, concepts and worldviews serve to shape one's affinity to the land. Arriving at consensus regarding the state of land degradation and the need for restoration is never easy and it does not consider as an economic active.	We do not understand the point.
German government	Chapter 2	3	106	3	106	List central terms used in chapter 2 (e.g. "ecosystem-based human activities") with their explanations/definitions of terms, preferably in an annex that covers all central terms of this assessment.	This was taken care of via the glossary process
Pedro Jaureguierry	Chapter 2	3	108	3	108	Line 108: "Are" explored?, or "should" be explored?	Editorial revisions to the chapter were done for the final draft.
Victor M. Castillo (UNCCD)	Chapter 2	3	109	3	109	It is suggested including and/or." to avoid further degradation and/or to initiate restoration"	Editorial revisions to the chapter were done for the final draft.
John (Ebo) David	Chapter 2	3	110	3	110	Not necessarily avoidance and restoration need to be done simultaneously or subsequently	Editorial revisions to the chapter were done for the final draft.
						Is this just conceptualized, or do you mean 'understood' in this context?	Sentence deleted
John Parrotta	Chapter 2	3	110	3	111	must transcend sovereignty... I understand what the authors are conveying (and am sympathetic to this view) but a phrase such as this will unnecessarily provoke time-wasting reactions from national representatives in IPBES. So the authors may want to soften this somehow - perhaps putting a positive spin on it, emphasizing the value of transboundary collaboration, etc.	Good suggestion. We deleted that.
Pedro Jaureguierry	Chapter 2	3	113	3	123	Lines 113-123: I see this paragraph somehow disconnected from the previous paragraph.	Paragraph deleted
Kun Tian	Chapter 2	3	118	3	118	The Millennium Development Goals (MDGs) are explicitly recognized	Now we only mention SDG, and in the second paragraph.
Anna Luise	Chapter 2		120		123	See comment on Chapter 1, line 44 - 46 and wording on Chapter 6, lines 1428 - 1437. Suggestion: The Sustainable Development Goals (SDGs) adopted by the he United Nations explicitly recognize that land degradation is relevant to sustainable development, directly in Goal 15 and partially in Goal 12, 13 and 14, indirectly in Goals 1, 2, 3, 11. [ for reference, the comment on Ch1, line 44-46 is " Here, there is an evident editorial problem. The wording adopted is not correct and not in line with the wording adopted in other chapters, for example Chapter 2 and 6. Suggestion: The Agenda 2030 and the Sustainable Development Goals (SDG), adopted by UNGA in 2015, following the results of the UN Conference on Sustainable Development Rio+2, The Future We Want, contain, among all, a specific Goal on land an soil (Goal 15), and a specific Target (15.3) with the aim to halt and reverse land degradation while still promoting economic growth and human development."	Adopted. See second paragraph of the introduction.
Victor M. Castillo (UNCCD)	Chapter 2	3	120	3	123	The introduction mentions the SDG process but does not explain here (nor anywhere else in this chapter!) what the SDGs have to say on land degradation. This is a major shortcoming of the whole chapter as it thereby misses the latest and most authoritative form of how land degradation is conceptualized and perceived at the international level. We strongly suggest that this chapter engages with SDG 15 (and in particular its target 15.3) in numerous sections (see other comments)	We now mention this important point in the second paragraph of the introduction.
Mark Schauer	Chapter 2	3	123			reads (e.g.; Goals 12 and 15), should read (e.g., Goals 2, 12 and 15)	we have included the agri and food production aspect in this discourse more strongly
German government	Chapter 2	3	123			it currently reads "... (e.g., Goals 12 and 15) ..."; it should read (e.g., Goals 2, 12 and 15). Please include the agriculture and food production aspect in this discourse more strongly.	we have included the agri and food production aspect in this discourse more strongly

German government	Chapter 2	3	124	3	126	The title of chapter 2 indicates that concepts and perceptions of land degradation <u>and</u> restoration will be discussed. It is therefore a bit surprising that the assesment should focus on land degradation only. Please include a section discussing "restoration".	We have included discussions on restoration
German government	Chapter 2	3	126	3	126	Consider deleting the term "long-term". The term "survival" should be sufficient.	Done
Kun Tian	Chapter 2	3	130	3	130	Subchapter 2.2 is dedicated to perceptions, concepts and approaches in land degradation	This is a factual statement. We did not take this to mean any action needed to be taken.
Hamid Custovic (SPI)	Chapter 2	3	133			Ch 2 deals with perceptions of land degradation. The scope is restricted, as described: "By an editorial decision, we limited the first subsection to these stakeholders who directly influence land degradation and restoration issues, or whose survival as cultural groups depend on those." The stakeholders included are scientists, indigenous and local people and decision-makers. The definition of "local people" excludes farmers other than subsistence farmers. This is exclusion is contrary to the stated aim to include those stakeholders who directly influence land degradation and restoration issues. Excluding assessment of their perspectives overlooks the critical factor that they are the ones who will implement change in land management, either of their volition or in response to governance measures enacted by policy-makers, thus understanding their perspectives is vital to mitigation of land degradation in agriculture. Ch6 section 6.4.1.3 disscusses the need to understand the perceptions of farmers.	True. We will include more stakeholders, and especially develop a section on farmers in general.
John (Ebo) David	Chapter 2	3		9		introduce concept of resilience a little earlier. Prefereably in the introduction.	We kindly disagree as we feel that introducing the concept of resilience so soon would change the flow and logic behind the organisation of the chapter.
Peter Onorato	Chapter 2	4	136	4	136	stakeholders could have been mentioned here, such as NGO's and professional ecosystem services	Done
John Parrotta	Chapter 2	4	137			insert "the discussion" at the end of the sentence, following "...without deepening"	Editorial revisions to the chapter were done for the final draft.
Kun Tian	Chapter 2	4	140	4	140	Natural scientists describe the state of ecosystems and measure	Editorial revisions to the chapter were done for the final draft.
Kun Tian	Chapter 2	4	144	4	146	We focus this section on cross-disciplinary concepts within that body of knowledge such that it might facilitate new approaches and relevant policy propositions.	Editorial revisions to the chapter were done for the final draft.
Kun Tian	Chapter 2	4	155	4	155	collective management, not only at local scale,	Editorial revisions to the chapter were done for the final draft.
Kun Tian	Chapter 2	4	157	4	159	Understanding what appears as political inertia and indecision is central to the desired shift from a policy that aims to slow down degradation to one that aims to reverse it. Please reword and restructur,it is difficult to understand	It has been reworded
Royal C. Gardner	Chapter 2	4	159	4	160	Much of this chapter appears to be policy prescriptive. For example, it appears to advocate that a worldview based on "ecological solidarity" needs to be adopted.	We have turned the chapter less prescriptive. But "ecological solidarity" is not a worldview, it is a legal principle that could be a good basis for international negotiations.
Hamid Custovic (SPI)	Chapter 2	4	163			Reword in less provocative language.	True. We will reformulate and be unprescriptive. We will also try to be more positive about policy makers' reactions
John (Ebo) David	Chapter 2	4	175	4	175	"taken into consideration when deciding whether to develop a short-term or long-term policy." You need both -- short term policies applicable for management action and long-term policy/strategy	Understood.
John (Ebo) David	Chapter 2	4	177	4	177	another example is deforestation/LUC affecting precipitation patterns hundreds of miles away.	We have many examples and accommodate a few that are most important
John (Ebo) David	Chapter 2	4	178	4	178	(noun/verb plurality) "fuzzy concepts" that can form an obstacle => "fuzzy concepts" can form obstacles.	Editorial revisions to the chapter were done for the final draft.
Royal C. Gardner	Chapter 2	5	184	5	186	Again, this language (referring to policymakers as cautious and weak) appears to go beyond IPBES's mandate of providing policy-relevant advice.	True. We will reformulate and be unprescriptive. We will also try to be more positive about policy makers' reactions
German government	Chapter 2	5	189	5	189	Is it the "preamble" or rather the planned executive summary or the introductory section of chapter 2?	This is the introductory section

Brajendra (ITPS)	Chapter 2	5	191	5	254	SectionWhat do we mean by perceptions, concepts, and worldviews is very slim and narrow. There are a number of ways by which people have perceived the degraded lands, some of which are not reflected such as vast stretch of lands affected with acidity and sodicity,salinity.	We don't understand this comment. We deal with concepts and perceptions so we have to define the cognitive processes they are embedded with. At that stage, we cannot be more specific. In any case we are not in a position to introduce each and every perception of degradation but rather we try to provide an understanding that there are differences
Kun Tian	Chapter 2	5	199	5	199	We aim to explain to the reader, as clear as possible,	Editorial revisions to the chapter were done for the final draft.
Pedro Jaureguiberry	Chapter 2	5	201	5	201	Line 201: Shouldn't "worldviews" be mentioned here too?, as they are defined in Line 227.	That is correct. Worldviews have been added.
Peter Onorato	Chapter 2	5	208	5	209	Finally, an example of how conservative worldviews about farmers' role may hamper the adoption of eco-friendly policies (Box 2.1).	Was rewritten - Finally, an example of how <b>conservative</b> worldviews about farmers' role may <b>hamper-impact</b> the adoption of eco-friendly policies
Dr. Amanullah Khan (ITPS)	Chapter 2	5	211	5	212	when the citation is not in bracket then write like this Damasio (1994), Laplane (2005), Norman (1988) and Pinker (1999). No need to use ; here.	Editorial revisions to the chapter were done for the final draft.
Dr. Amanullah Khan (ITPS)	Chapter 2	5	211	5	212	In case inside brackets then use (Damasio, 1994; Laplane, 2005; Norman, 1988; Pinker, 1999). Follow same format in whole chapter/book.	We have a problem with Mendeley. It affected all the reference system. This has been fixed for the final draft.
Meredith Root-Bernstein	Chapter 2	5	213			I think it would be more felicitous to define what you call "reality" as "scientific assessment" or something like that. Since you are talking about worldviews this is particularly sensitive. Each worldview is its own definition of reality. Obviously, as scientists you are entitled to think that scientific methods describe reality, but indigenous leaders might not appreciate this lack of perspective on the internal validity of other worldviews.	We have tried to explain that reality exists and that science tries to capture the reality. We have edited the text and developed the argument better.
Fujiang Hou	Chapter 2	5	213	5	213	" <b>current</b> " state	Editorial revisions to the chapter were done for the final draft.
Hamid Custovic (SPI)	Chapter 2	5	214			Add footnote to explain the regional assessment?	Regional assessments have been mentioned in the Preface of the assessment
Kun Tian	Chapter 2	5	215	5	215	ecosystem services and particularly in this thematic global assessment	This has been reformulated.
Meredith Root-Bernstein	Chapter 2	5	219			Why "see"? What about "sense"?	Is there such a difference?
Pedro Jaureguiberry	Chapter 2	6	223	6	223	Line 223: It says here that filters in the perception stage are influenced by collective worldviews. But Fig. 2.1 only shows one-way arrows from stage 1 (Perception) to stage 2 (Concepts).	True. However, putting double arrows everywhere tend to create misunderstandings. The figure was simplified.
Pedro Jaureguiberry	Chapter 2	6	231	6	231	Line 231: There is an "in" too many	Actually the sentence is correct.
Meredith Root-Bernstein	Chapter 2	5	232			In this use of the term reality, why not just say "the environment" or "non-human elements of socio-ecological systems" or something like that? Everyone knows what you mean and what perspective (worldview) you come from, but you would not be making a strong claim about the nature of what is real and what is not real. With this use of the term reality, you give the impression that the IPBES thinks that worldviews describe the imaginary parallel fantasy worlds that indigenous people think they live in. You can be a lot more sensitive to these other stakeholders while still asserting your belief that science should be the basis for environmental policy.	We have worked on that but kept reality to stress that it actually does exist without human perceptions.
Fujiang Hou	Chapter 2	6	233	6	233	Please insert a sentence at the end "Informally, worldview is to tell people what they can do, what they can not do, and what they must not do."	This is not our definition of worldview.
Pedro Jaureguiberry	Chapter 2	6	234	6	234	Line 234: I think we need a more clear and concise definition of "wellbeing" here.	Here we adopt a common sense definition of HWB. The prior version gave different definitions but we were suggested that this was not the scope of the chapter.
Pedro Jaureguiberry	Chapter 2	6	234	6	237	Lines 234-237: Does the word "impact" (also mentioned in Line 217) have a special connotation or meaning in this context? Why not using "influence" or "effect"?	Editorial - was fixed
Kun Tian	Chapter 2	6	235	6	237	Land degradation and restoration have both direct and indirect impacts on the quality of life and human wellbeing. When perceived, these impacts may modify perceptions, reord concepts	Accepted.
Pedro Jaureguiberry	Chapter 2	6	235	6	236	Line 235-236: "...When <u>perceived</u> , these impacts may modify <u>perceptions</u> ..." Given the focus of the Chapter, the use of "perceived" and "perceptions" in this sentence is a bit confusing. It is not very clear how the relationships mentioned in the sentence are reflected in Fig. 2.1.	We reformulated with "once acknowledged"

Josu G Alday	Chapter 2	6	240	6	240	The figure 2 is quite complex to understand without a clear explanation of the different sections and lines included.	The figure is explained in depth in the text
Pedro Jaureguierry	Chapter 2	7	244	7	244	Line 244: What does the term "categories" refer to?	According to Merriam-Webster dictionary, category of people is "a group of people or things that are similar in some way". We believe that the use of categories in the text could not lead to confusion and kept it as it was.
Sally Valdes	Chapter 2	7	246	7	247	I like the illustration of reality perceptions & concepts provided.	Thank you.
Pedro Jaureguierry	Chapter 2	7	253	7	253	Line 253: I believe "adverse or positive" needs some clarification.	Replaced with "adapted or inefficient", but not sure if it is better.
Meredith Root-Bernstein	Chapter 2	7	Figure 2.3			OK I see now that Diaz et al. 2015 gave you the term reality and you probably have no choice in using it. That is unfortunate. However, I see no reason why you could not add a sentence when you first introduce the term, indicating that by reality you mean "reality as constructed by scientific practices" and that you do not mean to invalidate indigenous worldviews and so on.	Actually the question of what reality is is too complex for the scope of the chapter. Anyway, in response to previous comments (101 & 108) I added "including scientific community" when mentioning worldviews specific to different class of people.
Victor M. Castillo (UNCCD)	Chapter 2	7	Figure 2.3			On different stakeholders' perspective on land degradation a good reference could be found in Reynolds and Stafford-Smith 2002 Do Human Cause Deserts? Page 12 in Global Desertification: Do humans cause deserts? Reynolds and Stafford-Smith (Eds). Dahlem University Press. Berlin They show a pioneering figure, Figure1.2 of the vastly different perceptions by stakeholder on land degradation	Thank you for the reference. I checked the figure and it is indeed quite close to ours. But ours presents the 2 steps of perceiving and conceptualizing, so we will stick to it.
Brajendra (ITPS)	Chapter 2	8	255	8	291	Box 2.1: Linking worldviews to practices and impacts should also include the newer concepts of restorative assessments methods such as Conservation agriculture which by and large farmers have adopted across the globe. This has a potential to change the degradative processes.	This box has been transferred in a subsection about farmers and agribusiness (2.2.3)
Victor M. Castillo (UNCCD)	Chapter 2	8	255	8		Box 1: Additional case studies focused on different perception of land degradation and desertification can be found in M. Juntti and Geoff A. Wilson 2005 Conceptualizing desertification in Southern Europe: stakeholder interpretations and multiple policy agendas European Environment 15, Issue 4 Pages 203–261. It shows the result of several research projects on land degradation and desertification conducted by multi-disciplinary teams funded by the EU research Framework	Thank you for the suggestion. We will add this reference in section 2,2,3, as we transferred the box there.
Kun Tian	Chapter 2	8	266	8	266	Despite the visibly negative environmental impacts	Editorial - was fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	8	267	8	267	Kohler et al., 2008	Editorial - was fixed
Hamid Custovic (SPI)	Chapter 2	8	268			Do not imply that this is a view shared by all farmers.	Box edited and transferred section 2,2,3 with more examples.
Hamid Custovic (SPI)	Chapter 2	8	288			By "gas" do you mean "fuel"?	Corrected.
Meredith Root-Bernstein	Chapter 2	8	Box 2.1			"However, a new vision is starting to emerge from small farmers converted to agroecology. This proves that the perception of land degradation and human health's issues leads to new concepts and practices, in spite of its small scale." These sentences are problematic. It is not shown or described how or why the agroecologist farmers converted to those techniques, so stating that their existence proves that land degradation and human wellbeing lead to changes in worldview is entirely unconvincing. Why not remove some of the quotes above, which illustrate an extremely well-known issue that is somewhat tangential to the current report (e.g. attitudes towards tidiness and towards the CAP), and provide quotes explaining why farmers decided to become agroecologists? Also in the phrase "in spite of their small scale," it is not clear what is being referred to. The small scale of the farms that converted?	This box has been transferred in a subsection about farmers and agribusiness. It will be developed to cover differing practices.
Hamid Custovic (SPI)	Chapter 2	8	Box 2.1			This is presented as the stakeholder assessment of "conventional agriculture". It is a very biased, narrow view presented in an inappropriately derogatory manner. This box should be deleted and replaced with a section that provides a balanced review of the relevant literature, on the perceptions of conventional farmers, including family farms and large-scale agribusiness. Some relevant references: Graeub, B.E., Chappell, M.J., Wittman, H., Ledermann, S., Kerr, R.B. and Gemmill-Herren, B., 2015. The state of family farms in the world. World development.	We checked the reference. But I don't understand how a box based on farmers' own words can be derogatory. Anthropology might be qualitative, but it is not derogatory nor dishonest.
Ashish Upadhyay	Chapter 2	9	296	9		According to Schild (2010) ecosystem services, can be valued both for their quantity and quality in such a way that they either affect benefits or change costs associated with human activities.	Noted

John (Ebo) David	Chapter 2	9	302	9	302	"... biodiversity and ecosystem functions (Nature) and services (Nature's benefits to people)." There needs to be a comma in here some place to distinguish between what is to be grouped by the 'and's	Editorial - was fixed
Kun Tian	Chapter 2	9	309	9	309	the cosmological, spiritual, and subsistence impacts (Good quality of life) on land	Editorial -was fixed
Royal C. Gardner	Chapter 2	9	314	9	318	Sovereignty hampers international negotiations on LDR, including IPBES? While that may be true, an examination of this issue is well beyond the mandate of this assessment. (Isn't there a separate review of the effectiveness of the IPBES process?) The LDR assessment is not meant to question the Westphalian notion of sovereignty. At a minimum, it should be made clearer that these are viewpoints or perceptions of different stakeholders, rather than the authors.	We reformulated
John (Ebo) David	Chapter 2	9	316	9	316	"economic growth (Good quality of life)" Isn't economic growth (a financial metric) orthogonal to the metrics of quality of life (health, happiness and wellbeing)? I would either remove the parenthetical qualification or break it out into a separate phrase connected to human wellbeing.	We simplified and reduced the scope of our chapter.
John (Ebo) David	Chapter 2	9	324	9	324	"... scientists study and create knowledge (Anthropogenic asset) about degraded land (Nature and Nature's benefits to people)..." As per total anthropogenic discussion mentioned above, it may be helpful to break out "degraded land (Nature and Nature's benefits to people)" into two separate things. Maybe something like "degraded ecological functions (Nature), and degraded land (Nature's benefits to people)".	We simplified and reduced the scope of our chapter.
Meredith Root-Bernstein	Chapter 2	9	325		326	Does this not include the possibility that indigenous and local people create knowledge about land degradation or nature? I am worried about the report giving the impression that it says all the right buzzwords but doesn't put them into practice itself (Chapter 1, page 2: "The key aspects of the IPBES approach are its transparent and participatory structure, with explicit consideration of diverse scientific disciplines, stakeholders, knowledge and evidence sources, inclusive approach incorporating differing world views, including Indigenous and Local Knowledge (ILK) Systems.") At least, please justify why in your report indigenous and local practices (but not knowledge or beliefs) are relevant to management, but not to knowledge production.	We do not say that ILK is irrelevant for knowledge production. We clarified this sentence.
Ashish Upadhyay	Chapter 2	9	332			Fortunately, scientists around the world started long ago to look at the problem of land degradation and have developed assessment and monitoring methods. Therefore assessment methods has been developed to determine the status of the land, extent and impact of land degradation and to help designing possible conservation activities. Accurate and relevant assessment methods of land degradation in drylands with a flexible scale combining socio-economic, institutional, and biophysical aspects and driving forces are needed to plan actions and investments to reverse land degradation, improve socio-economic livelihoods, and conserve dryland ecosystems and its unique biological diversity (Snel and Bot, 2003).	ok
Pedro Jaureguiberry	Chapter 2	9	332	42	1812	Lines 332-1812: The subsections 2.2.1, 2.2.2 and 2.2.3 (within section 2.2 "How different stakeholders...") seem to be imbalanced in terms of the information they contain. Probably this imbalance is mainly due to two factors: a) the inherent differences between the stakeholders considered; and b) differences in the amount of information available for each stakeholder. In any case, I think it is worth mentioning this somewhere in section 2.2.	We developed the sections about other stakeholders.
German government	Chapter 2	9	332	9	332	On page 9, line 304, "law" is considered among social sciences. Now the title of 2.2.1 sounds as if "law" is not considered among social sciences as it is listed separately. Please clarify.	From now on, we will focus on legal concepts and principles derived from scientific knowledge, ecological issues, and Indigenous and Locals claims (e.g. collective intellectual property, benefit sharing, etc.)
German government	Chapter 2	9	333	9	333	Why is there only a differentiation between natural and social sciences? Include humanities in line 333 as well as there is a clear difference, how experts in the fields of social sciences and humanities work. You after all mention 'humanities' explicitly in line 335. It would be useful to include definitions for both scientific fields as well.	The field of humanities seems too wide to be categorized. If I refer to the Cambridge dictionary, Humanities are defined as "literature, language, history, philosophy, and other subjects that are not a science, or the study of these subjects". I believe we have no experts in our team to deal with this. So, we could juste remove the reference to humanities at the line 335.
Marina Rosales Benites de Franco	Chapter 2	353	354	10	10	We also discuss other relevant key concepts that are not supported by our everyday perceptions and are therefore difficult to comprehend <b>as invest in restoration, rebuild natural capital.</b>	Editorial -was fixed

Markus Giger	Chapter 2	10	355	15		2.2.1.1 and 2.2.1.2 are very interesting and illustrative subsections, which clearly show some of the conceptual issues in assessing degradation.	Thank you
Saija Kuusela	Chapter 2	10	355	10	355	The title is somewhat misleading. Reader thinks that the chapter should include the description of how the term degradation has evolved over time (i.e. has had different meanings or weightings) and what is the current consensus about the term. Now, all the reader gets is a one example (plus another in a box). Consider rephrasing the title, e.g. The scientific conceptual understanding of degradation is constantly evolving, or Examples of the evolution of...	We have edited this section to be part of the main text and eliminated the subheading
Brajendra (ITPS)	Chapter 2	10	355	10	369	2.2.1.1 Evolution of scientific conceptual understanding of degradation	this is our title yes.
Victor M. Castillo (UNCCD)	Chapter 2	10	356	10	369	Key references are missing in this section. For instance: Herrmann and Hutchinson (The changing contexts of the desertification debate, 2005, Journal of Arid Environments 63:538-555) provide a review of the evolution of the scientific conceptual understanding of degradation in drylands from a climatically driven concept of desert encroachment to a complex understanding of ecosystems services and their degradation, including both biophysical and socio-economic dimensions. Votg et al 2011 Land Degradation and Development 22:150-165 reviewed the "in practice" interpretation of the definition of land degradation and desertification by the UNCCD (1994)	thank you for the reference
Dr. Amanullah Khan (ITPS)	Chapter 2	10	359	10	359	et al., always use full stop followed by comma after et al when inside brackets	Comment about format, language or spelling - were fixed
Gerardo Ojeda	Chapter 2	10	361	10	363	I suggest to add the following sentence after "(... von Wehrden et al. 2012)" -> "Soil compaction by grazing could increase available water capacity by increments of smallest mesopores (Villamil et al., 2011), however, reductions in the residence time of soil-water or changes in soil wettability due to increments in temperature (Bachmann and van der Ploeg, 2002) could be expected" References: Villamil MB, Amiotti NM, Peinemann N, 2001. SOIL DEGRADATION RELATED TO OVERGRAZING IN THE SEMI-ARID SOUTHERN CALDENAL AREA OF ARGENTINA. Soil Science 166, 441-452; Bachmann J, van der Ploeg RR, 2002. A review on recent developments in soil water retention theory: interfacial tension and temperature effects. Journal of Plant Nutrition and Soil Science 165, 468-478	This section was completely reorganised to the main text
Fujiang Hou	Chapter 2	10	361	10	361	Please insert a sentence that and large "spatial-temporal and interspecific system discordance between grassland supply and livestock demand result in the rangeland degradation, which often are aggravated by some external factors, i.e.,"	This seems to be rather specific and jargon like sentence and we decided not to include it.
Penny van Oosterzee	Chapter 2	10	361			Now it is understood References for this statement are needed.	Done
German government	Chapter 2	10	361	10	366	Regarding the statement: "Now it is understood that large climatic variation in many drier rangelands has more impact on vegetation than grazing does, although the rangelands can still be overgrazed": It is true that climate variability has considerable impacts on inter- and intra-annual availability of grazing resources in drylands. However you also state in chapter 3 (page 16, lines 393-399), that: "Within the grassland and savanna ecosystems of the globe, the grassland savannas of sub-Saharan Africa and Asia have experienced significant degradation or are at particularly high risk of degradation. ...". Therefore, please verify and expand your discussions on rangeland degradation in drylands due to land use.	This was an example and this section has been edited a lot.
John (Ebo) David	Chapter 2	10	362	10	362	"... many drier rangelands has more impact..." climatic variation *have* more impact.	Editorial - was fixed
Penny van Oosterzee	Chapter 2	10	362			I doubt this is the case in Australia where grazing has caused major decline in species and broadscale degradation.	this was a specific example but has been modified
Dr. Amanullah Khan (ITPS)	Chapter 2	10	363	10	368	for one or two authors use comma before year, also use ; for separating the work of different authors	Editorial - was fixed
Fujiang Hou	Chapter 2	10	366	10	366	Please insert a sentence between ecosystems and Other "Other improper grazing management, such as wrong grazing time, herd structure and so on, result in rangeland degradation as well."	Thank you, we chose not to do this
Brajendra (ITPS)	Chapter 2	10	370	11	400	Difficulty in attributing the causes of degradation: the case of ferricrete outcrops	This section was deleted
Pedro Jaureguiberry	Chapter 2	10	372	10	372	Line 372: "Fig. 2.3" should be changed for "Fig. 2.4"	done
Dr. Amanullah Khan (ITPS)	Chapter 2	10	375	10	375	either use & or and but be uniform	Editorial - was fixed

Hamid Custovic (SPI)	Chapter 2	10	379			Substitute absorption with infiltration.	This box has been deleted
John (Ebo) David	Chapter 2	10	380	10	380	(Thompson, 1911) => (Thompson et al., 2011) there are no Thompson papers from 1911, or you are missing a citation altogether.	This box has been deleted
John (Ebo) David	Chapter 2	10	381	10	381	Another example similar to the ferrocrete of outcrops is glassification of high clay soils during intense fires	This box has been deleted
Dr. Amanullah Khan (ITPS)	Chapter 2	11	392	11	392	All references belongs to this author are missing delete all from the text are give it in the references section, thanks., (Padonou et al., 2015a&c). 393 Bowalization is the result of ferricrete exposure due to soil surface hardening and erosion, related to 394 a combination of deforestation and climatic dryness (Padonou et al., 2014 2015a&c). Thus, both 395 early groups of scientists were partially correct. Bowé could be restored by planting native plant 396 species that have adapted to bowé and are resistant towards drier climate(Padonou et al., 2015b).	This box has been deleted
Pedro Jaureguiberry	Chapter 2	11	398	11	398	Line 398: "Fig. 2.3" should be renamed as "Fig. 2.4", and current Fig. 2.4 should be renamed to Fig. 2.5, and so on.	Editorial - was fixed
Ashish Upadhyay	Chapter 2	11	401	15		Changes in these costs and benefits affect in turn human welfare either through market or non-market activities (Costanza et al., 1997). With the concept of total economic value, all components of an ecosystem can be valued (Pearce, 1992). Use values constitute the values of production and consumption goods (direct values), ecosystem functions and services (indirect values) and possible future uses (option values). Non-use values consist of existence values, which constitute the intrinsic significance of ecosystems. By using the concept of total economic value ecosystem services can be valued more accurately and comprehensively, as it considers the attributes of an ecosystem as a whole (Noel & Soussan, 2010).	I do not understand the nature of this comment.
Saija Kuusela	Chapter 2	11	403	11	404	The reference to fig 2.1 is redundant and could be omitted.	Done/
John (Ebo) David	Chapter 2	11	407	11	407	there are many things that can keep a system from recovering unaided including: continued stress (that are not necessarily only management related), local extinction of key species, and others	if there is a continued stress it will be considered a regime shift and if there is loss of species it is also crossing a tipping point so basically these are just examples of the broader definitions we have in chapter 2. However we will consider if there are other major issues and where for example anthropogenic climate change should be placed.
Pedro Jaureguiberry	Chapter 2	11	408	11	411	Lines 408-411: I think it would be helpful to illustrate these two situations with brief examples. Perhaps from references included in the section "Resilience, regime shifts and irreversibility" (Line 1233)	We will consider this but do not want to overpopulate the conceptual text too much with examples as they undoubtedly nearly always narrow the focus
Kun Tian	Chapter 2	11	413	11	413	is considered degraded provided it cannot fully recover, a grammar mistake	Editorial - was fixed
Kun Tian	Chapter 2	11	415	11	415	degraded, it not only needs to know	Editorial - was fixed
Victor M. Castillo (UNCCD)	Chapter 2	12	417	12	421	An understanding of succession and community assembly processes alone is not sufficient. Variables related to ecosystem functions and services are also needed to assess whether a system can recover.	We take this into consideration in para 412-416 in SOD
Pedro Jaureguiberry	Chapter 2	12	418	12	419	Lines 418-419: The use of "community assembly processes" in line 418 and "community composition" in line 419 can be confusing. Perhaps it is better to either use the same term in line 419, or to add text to help linking "community assembly..." with the four mechanisms of "community composition".	We modified the text to be more clear on the issue.
John (Ebo) David	Chapter 2	12	419	12	419	only 4? What about invasion?	indeed only 4 - invasion is first dispersal and after that selection (competition with other species is selection if it influences the abundances of the species)
Sally Valdes	Chapter 2	12	419	12	419	Extinction of a component will also influence community composition. It can be impossible to recreate a community when critical species members are unavailable.	Extinction is a result of either selection (competition with other species, inbreeding etc) or drift (random chance).
Pedro Jaureguiberry	Chapter 2	12	422	12	425	Lines 422-425: It is not very clear why the second sentence ("Therefore, degraded land will specifically be understood...") is a consequence of the first ("However, assessing ecosystem degradation and recovery...").	It is unreasonable to try to assess degradation with the level of detail requested by the scoping and THEREFORE we suggest not trying to do that. We do not see a problem in our original text
Pedro Jaureguiberry	Chapter 2	12	422	12	423	Lines 422-423: Moreover, the phrase "...with a level of detail needed for the mechanistic understanding..." wrongly implies that mechanistic approaches are only suitable for community-level analyses. Perhaps changing the phrase to "...needed for the community-level mechanistic understanding..." helps clarifying this point.	This is not the implication of our text
Kun Tian	Chapter 2	12	423	12	423	which needed for	Editorial - was fixed

German government	Chapter 2	12	425	12	429	How can the pre-degradation state be realistically derived? In many cases, humans have been using certain areas for millennia. This aspect is important for any restoration measures (not necessarily for rehabilitation measures). Please expand on this issue.	It is not a historical state but it is counterfactual - i.e., what would we have now if we did not disturb the environment. We consider this discussion relevant and will add section on this referencing e.g. the Finnish study where the approach is explained.
Josu G Alday	Chapter 2	12	435	12	435	Box 2.3, from my view the ecosystems are dynamic so it is hard to define a current state something that was snapshot 4 years ago. The changes between should include the intrinsic change of each ecosystem in time. If not, maybe we are misclassifying the state of an ecosystem based only in past pictures of it.	This is well known and understood
Saija Kuusela	Chapter 2	12	435	13	504	Inconsistent use of hyphen in the words "short-term" and "long-term". Please unify. Otherwise well-written and important part of the assessment!	Editorial - was fixed
John (Ebo) David	Chapter 2	12	437	12	437	you mention assessment, but not post monitoring assessment. In the past there were instances where the trajectory of the succession was such that things got better enough to pass some test momentarily, and then dropped back a little before stabilizing.	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
Jorge Luis Garcia R	Chapter 2	12	444	12	445	Add text: The Current State is the state of biodiversity and ecosystem functions and services around the year <b>"or base year of the assessment more recent" 2012.</b>	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
John (Ebo) David	Chapter 2	12	444	12	444	why did you choose 2012 and not the year that the initial assessment was taken?	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
John (Ebo) David	Chapter 2	12	447	12	452	Each ecosystem function operates within a given spatial-temporal scale or reference frame. For processes which have seasonal cycles across a year, 20 to 30 years is sufficient that simple statistics can be used to tease out the relationships. Less observations than that require greater sophistication and more subtle analysis. For processes with decadal cycles, centuries of observation (or their proxies) are needed to evaluate. For example, in the southern Rio Grande Valley (USA) there is an interaction between the processes behind the PDO and ENSO which drives flood return intervals and gross precipitation. Old timers in the area have commented to me that they had noticed a ~20 year cycle of the deserts greening and browning, and ecologists have subsequently tied this back to variances in the El Nino and through the proxies of dendrocronology and riparian gallery forest recruitment.	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
German government	Chapter 2	12	448	12	449	Provide some information/logic, why the "short term reference state" is the state around the year 1992?	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
Diane L. Douglas	Chapter 2	12	452	12	454	The Long Term Reference State being associated with the date of 1750 CE may result in skewed perception of anthropogenic impacts on land degradation. This time period falls toward the later half of what is commonly referred to as the Little Ice Age (LIA). While the term LIA predominately applies to northern Europe climate phenomena from ca. 1400 - 1850, below average temperatures and increased precipitation (at variable frequency and magnitude) have been reconstructed for many regions of Africa, Asia and the Americas for this time interval. Following the Medieval Warm Period (900-1300 CE) high latitude and high altitude vegetation communities shifted and alpine glaciers and ice sheets advanced in the northern Hemisphere. Environmental conditions during the Medieval Warm Period are more comparable to current climate conditions and may provide a more realistic baseline of optimal environmental conditions that can be achieved over the next 50 to 100 years. For example, see IPCC (2007 Box 6.4), <a href="https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch6s6-6.html">https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch6s6-6.html</a> Mann et al. (2009) <a href="http://science.sciencemag.org/content/326/5957/1256">http://science.sciencemag.org/content/326/5957/1256</a> ; Trouet et al. (2009) <a href="http://science.sciencemag.org/content/324/5923/78">http://science.sciencemag.org/content/324/5923/78</a> ; (Orsi et al. 2012) <a href="http://onlinelibrary.wiley.com/doi/10.1029/2012GL051260/full">http://onlinelibrary.wiley.com/doi/10.1029/2012GL051260/full</a> ; and Miller et al. (2012) <a href="http://onlinelibrary.wiley.com/doi/10.1029/2011GL050168/full">http://onlinelibrary.wiley.com/doi/10.1029/2011GL050168/full</a> ; Rhodes et al. (2012) <a href="http://www.clim-past.net/8/1223/2012/cp-8-1223-2012.pdf">http://www.clim-past.net/8/1223/2012/cp-8-1223-2012.pdf</a>	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
Hamid Custovic (SPI)	Chapter 2	12	Box 2.3			If these are the definitions used throughout they should appear in the first chapter.	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.

German government	Chapter 2	13	466	13	466	Can all forms of degradation (changes/declines in biodiversity features) be captured through the exclusive use of satellite data? Isn't field work/experience required to ground truth what we see in the pixels of satellite images? Please cross-check with the statement provided in chapter 4, page 48 (lines 1234-1236) as well that states that "... any single remote sensing monitoring methodology is unlikely to identify the variety of outcomes". Please also cross-check with the following sentence in Chapter 8, page 30 (lines 920-922): "However, models and robots can only approximate nature and human judgement and their use should not replace actual field monitoring programs, which are needed to ground-truth and calibrate the models". Therefore consider inserting the word "not". The sentence would read: "... with a reasonable reliability and globally consistent observation, especially <b>but</b> not exclusively using satellite data, ...".	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
Kun Tian	Chapter 2	13	480	13	480	because(??) the main purpose	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
John (Ebo) David	Chapter 2	13	482	13	482	I agree that the 'Desired State' is value-based, but I am not sure I agree that it must be explicitly utilitarian.	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
Josu G Alday	Chapter 2	13	486	13	486	Box 2.3. I am fully agree that the target state should not be universal. In my view the conditions of each degraded area, surroundings and people cares should be included in the target.	The box is going to be in Chapter 1 and developed by Co-Chairs. Your comments have been considered in the revision of the box and the overall discussion on baselines.
John (Ebo) David	Chapter 2	13	495	13	495	"as factually..." reads awkwardly. I think this clause can be taken out as it is not the subject of the discussion, but "about our desire to restore..."	This is an important distinction and statement made to pre-empt the discussion about human as part of nature or not
Dr. Amanullah Khan (ITPS)	Chapter 2	13	501	14	518	Kotiaho, Kuusela, et al., 2016; please correct this is this one author then use last name only of first author	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	13	505	13	506	50 years is suggested as a time period to assess changes	Editorial - fixed
Kun Tian	Chapter 2	13	509	13	509	on both	Editorial - was fixed
Kun Tian	Chapter 2	14	520	14	520	may be seem	Incorrect editorial
Saija Kuusela	Chapter 2	14	521	14	522	A more general comment: This sentence is of vital importance and care should be taken that the assessment as a whole reflects this. Has there been an attempt to estimate the degree of degradation against pre-degradation state baseline in other chapters of the assessment? If not, we cannot honestly assess the damage, as pointed out here.	An important comment that other chapters should consider. We have a made a point about this in executive summary and thus it will be considered across the whole assessment.
Kun Tian	Chapter 2	14	523	14	524	it is important to note that there is also a pre-degradation state for ecosystem services	Editorial - was fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	14	530	14	530	Bennett et al., 2009). Add comma before year	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	14	533	14	534	while the target should be directly towards the pre-degradation state baseline, and the pre-degradation state itself does not need to be the target.	Incorrect editorial
Saija Kuusela	Chapter 2	14	534	14	534	...needs not TO be the target.	Editorial - was fixed
John (Ebo) David	Chapter 2	14	537	14	546	novel ecosystems needs clarification and context within the restoration/rehab debate. There are places which have latched onto the restoring of degraded lands to push an agroforestry agenda over the natural ecosystems. Developing specific terms, and describing them here, would be immensely helpful.	It is hardly the place for this assessment to settle a scientific debate. We mention this briefly but do not want to dwell on it indepth.
Sarah Dalrymple	Chapter 2	14	540	14	545	Remove "Richard J." from the various citations?	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	14	542	14	542	"(sensu (IPBES, 2015))" the outer parens is not closed. I think you meant "(sensu IPBES, 2015)"	Editorial - was fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	14	542	14	542	rehabilitation (sensu (IPBES, 2015). Need correctio to starting brackets.	Editorial - was fixed
Kun Tian	Chapter 2	14	543	14	543	should be refered to	Editorial - was fixed

Meredith Root-Bernstein	Chapter 2	14	545			I don't know why you hedge with the word "apparen+G203:G224tly" here when you make bold and broad statements everywhere else. By doing so you undermine the concept. Since you phrase the definition as "should refer to" you are making a claim about what traits a novel ecosystem should have in order to be valid, so there is no reason to cast doubt on the validity of your own definition. But also, I wonder why you do not define novel ecosystems in a way that would be parallel to your other definitions, i.e as an ecosystem that does not correspond to the pre-degradation state or the reference state, but that provides well-being and ecosystem services. If you believe that such states are rare, or should not be the goal of anti-degradation efforts, state this.	Good comment that we took into consideration for revision.
Dr. Amanullah Khan (ITPS)	Chapter 2	14	545	14	545	wrong format if two authors then write as Richrd and Hobbs, 2009. if more then write Hobbs et al., 2009;	Editorial - was fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	14	545	14	546	Perring et al.,	Editorial - was fixed
Royal C. Gardner	Chapter 2	14	547	14	551	In Figure 2.4, why does the biodiversity feature increase in value after the pre-degradation baseline? Doesn't that suggest that the feature improved when the site was being degraded?	Well in biodiversity more is not better but it is the deviation (positive or negative) from the baseline that determines the degradation. We will nevertheless consider redrawing this figure.
John (Ebo) David	Chapter 2	14	547	14	547	I disagree that the target state of restoration must be explicitly utilitarian. I will agree that it is inherently values-based.	agreed
Saija Kuusela	Chapter 2	14	547	14	551	The figure is important but needs to show more options. I understand the chosen reference state as it is important to show that it can be very misleading. However, in most cases the direction of the line is not this. With e.g. broken line (or in another figure panel altogether) there should be other, more common options shown and explained also in the figure caption. In many cases, for example, the pre-degradation state baseline point should be the highest. I also suggest that you refer to the text or explain the alien tree species example in the figure caption, because at the moment the reader is unable to understand the figure.	The figure will be developed and in the beginning it had more options. We will work on this.
Kaisu Aapala	Chapter 2	14	547	14	551	Figure 2.4. is confusing. What could be a biodiversity feature that increases / improves due degradation? Usually biodiversity loss is linked to degradation. What kind of drivers there are that causes this biodiversity feature to start to get better, improve (development towards the pre-degradation state) 50 years ago? And finally, what is the justification of restoration in current state if the biodiversity feature has already improved so much and obviously without restoration efforts? I understand what is the point the writers try to make, but this figure does not do it very well.	We worked on clarifying this section and the figure.
John Parrotta	Chapter 2	15	557	15	561	The point needs to be made that (traditional) societies with strong oral traditions often do possess knowledge of the ecological/environmental conditions that existed over several generations.	This may not be correct as these people are also influenced by the shifting baseline problem as we try to indicate in the text. (see lines 558-559)
Dr. Amanullah Khan (ITPS)	Chapter 2	15	557	15	557	Papworth et al., 2009	Editorial - was fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	15	559	15	559	use comma after full stop eg et al.,	Comment about format, language or spelling - fixed
Brajendra (ITPS)	Chapter 2	15	562	16	620	Approaches to assess degradation, restoration, and rehabilitation	We do not understand what the comment refers to.
Victor M. Castillo (UNCCD)	Chapter 2	15	562	16	620	In order to become more up to date and balanced, section 2.2.1.3 should mention SDG 15.3 on land degradation and the latest discussion on the corresponding monitoring approach. The indicator for SDG 15.3 is "Proportion of land that is degraded over total land area" for which the UNCCD has proposed a computation method incl. sub-indicators (namely land cover, land productivity and carbon stocks above and below ground, enhanced and complemented with other nationally relevant indicators). This method is consistent with the UNCCD progress indicators. For more information see <a href="http://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-15.pdf">http://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-15.pdf</a>	Thank you very much for this information! We will include SDG 15.3 and the appropriate indicator in this section.
Dr. Amanullah Khan (ITPS)	Chapter 2	15	573	15	573	Bai et al., 2008	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	15	574	15	574	satellites which is needed to	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	15	578	15	578	Restoration success is easier to assess and monitor in practical terms	Comment about format, language or spelling - fixed

Dr. Amanullah Khan (ITPS)	Chapter 2	15	581	15	581	no reference found for (Underwood 1994)	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	15	593	15	593	use comma after full stop eg et al.,	Comment about format, language or spelling - fixed
Gerardo Ojeda	Chapter 2	16	600	16	602	I think that it is good idea of restoration indication is to take into account the origing of soil organic matter in pre-degradation sites. Total lipids or phospholipid analyses could help to know what are this origing (marine, terrestrial) and the main plant and microorganisms contributing with organic matter to soil.	There is a list of indicators approved by the IPBES. Moreover, since we are arqing that the baseline is site specific we are not trying to say in Ch2 what specific aspects should be measured in any specific case.
Dr. Amanullah Khan (ITPS)	Chapter 2	16	600	16	647	use comma after full stop eg et al.,	Comment about format, language or spelling - fixed
Diane L. Douglas	Chapter 2	16	607	16	620	IPBES may want to consider using proxy data to identify pre-disturbance environmental conditions in areas where historical records are lacking or limited. For example pack rat middens (Neotoma sp.) , geomorphology, palynology, and various other proxy data (e.g., gastropods, ostracods, etc) could all be used to reconstruct local to regional environmental conditions that were extant prior to intensified human use of the landscape. For many regions, these data have already been gathered and are available in national and international databanks, and could contribue valuable insights to pre-degradation landcapes -- and enable reconstructions of biotic communities preceeding historic use of natural resources (i.e., generations of farming/grazing, forestry)	While the suggestion may be appropriate for certain area we maintain that here in Ch2 we need to develop general principles rather than give specific examples of the potential proxies.
Kun Tian	Chapter 2	16	613	16	613	the damaged target ecosystem had before it was damaged are identified,a grammar mistake	Comment about format, language or spelling - fixed
Aleksei Kotko	Chapter 2	16	622	16	637	For my mind, somewhere near here if may be mentioned also RECARÉ project classification of soils degradation threats. It includes 11 main positions: soil erosion by water, soil erosion by wind, decline of organic matter (OM) in peat, decline of OM in minerals soils, soil compaction, soil sealing, soil contamination, soil salinization, desertification, flooding and landslides and decline in soil biodiversity	Thank you very much for the information! Indeed, this project is worth mentionning in this section (2.2.1.4 outcomes of using various definitions or reference frames to assess degradation) or in the previous section (2.2.1.3 Approaches to assess degration, restoration, and rehabilitation).
Victor M. Castillo (UNCCD)	Chapter 2	16	627	17	651	A review of approaches to assess degraded lands at the global scale is provided by Votg et al, 2011 Ladn Degradation and Dev. 22:150-165,Gibbs, H. K. and J. M. Salmon. 2015. "Mapping the world's degraded land." Applied Geography 57: 12-21	Thank you for the suggestion. The approach described by Vogt et al., 2011 was added to the section and/or figure 2.5. Concerning the paper by Gibbs and Salmon, note that two of the datasets that they used are already included and discussed in this section (Olderman et al., 1990 and Bai et al., 2008). The Cai et al., 2011 reference and the overall assessment of Gibbs and Salmon will be investigated and potentially added to this section. Nonetheless, as explained earlier in the chapter, we would not consider that the abandonment of cropland (i.e. the cessation of human pressure on the land) is a form of degradation, as it was the case in the Campbell et al., 2008 paper, that is used as one of the layers of the Gibbs and Salmon analysis. This is just to say that this point could limit our use of the Gibbs and Salmon reference.
Royal C. Gardner	Chapter 2	17	649	14	651	A mention about wetlands may be warranted. The GBO-4 technical report also contained the Wetland Extent Index, which showed approximately a 40% decline across the world in the extent of both marine/coastal and inland wetlands over 40 years, although regional differences exist. Note that Dixon et al. (2016) furthered refined the index to find about a 30% decline: <a href="https://www.researchgate.net/publication/284235148_Tracking_global_change_in_ecosystem_area_The_Wetland_Extent_Trends_index">https://www.researchgate.net/publication/284235148_Tracking_global_change_in_ecosystem_area_The_Wetland_Extent_Trends_index</a>	This is a very good point and we agree that we should adress wetland degradation and how it is assessed in this section of the chapter. Thank you for providing the reference!
Fujiang Hou	Chapter 2	17	650	17	651	Some report that at least half of grasslands have degraded globally at different grades.	This comment is not really helpful as it is not specific enough. Do you have a reference to support this estimate? Here we are using a figure on grassland degradation provided in the Global Biodiversity Outlook 4 (Target 5 - Habitat Loss and degradation, van Kolck et al., 2014)
Fujiang Hou	Chapter 2	17	654	17	654	Please delete "and pastures", because here pasture seems to mean sown grassland, in fact which is a kind of cropland.	I kindly disagree that "pastures" should be deleted. We refer here to grazed land (sown or not) so the use of "pasture" seems appropriate.

Dr. Amanullah Khan (ITPS)	Chapter 2	17	659	17	659	Navarro et al., n.d.). What is n.d.	The Navarro et al., paper is currently in preparation. Since it doesn't have a publication date yet, the referencing software added "nd" for "no data" in the empty year field. This will be replaced by "in prep". The paper should be published by the time the IPBES assessment is finished and "nd" will then be replaced by the appropriate year.
Saija Kuusela	Chapter 2	17	678	17	679	Here it would serve the reader to also mention the percentages of the extent of degraded area alone, without the component of degree of degradation. That would pinpoint the need to actually consider both the extent of area and the degree of degradation, as the extent only - figures were about 20 percentage points larger for both forests and all assessed ecosystems. Hence, not all the degraded area is FULLY degraded, which is an important notion.	This comment refers to the Finnish example and the numbers requested can be added.
Royal C. Gardner	Chapter 2	18	685	18	692	Wetland losses should be included here, especially since in chapter 4 LD is identified as the greatest stressor impacting freshwater quality. For data on wetland losses, see Davidson (2014) discussed in chapter 5.	Again, thank you for the suggestion and the reference. We will make sure to include wetland in this section.
Ashish Upadhyay	Chapter 2	18	685			Land degradation is increasing in severity and extent in many parts of the world, with more than 20% of all cultivated areas, 30% of forests and 10% of grasslands undergoing degradation (Bai et al., 2008). Millions of hectares of land per year are being degraded in all climatic regions. It is estimated that 2.6 billion people are affected by land degradation and desertification in more than a hundred countries, influencing over 33% of the earth's land surface (Adams and Eswaran, 2000). This is a global development and environmental issue highlighted at the United Nations Convention to Combat Desertification, the Convention on Biodiversity, the Kyoto protocol on global climate change and the millenium development goal (UNCED, 1992; UNEP, 2008).	Thank you for this addition to the text. I would like to consider adding it to our chapter, but in a different place that what the page and line given by the reviewer suggest, but still in section 2.2.1.4. The Adams and Eswaran (2000) estimate can also be added to figure 2.5. Nonetheless, it is a book chapter to which I am not sure to be able to gain access in a timely manner. If you could share the PDF of the publication directly, this would be much appreciated.
John Parrotta	Chapter 2	18	685	18	692	for parameters using estimates from references (2), (3), (5) and (7), what is the baseline date/year?	For references 2 and 3, the estimates indicates the percentage of a given element (soil, grasslands, forests) that is degraded in absolute term. Likewise, for references 5 and 7, the estimates relate to the absolute area of terrestrial land that is converted for human use. This means that the baseline is either the absence of degradation (ref. 2 and 3), or the absence of human use (ref. 5 and 7) and cannot be quantified as a date or year. Since this might be confusing, it will be made more explicit in the caption, with the addition of "Note that some of these estimates are dynamic and show an increase in degradation between two points in time (e.g. 1) while others are static and refer the current percentage of a system being degraded (e.g. 3)".
Dr. Amanullah Khan (ITPS)	Chapter 2	18	687	18	687	Pereira et al. (2014). use this format in whole chapter/book.	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	18	689	18	691	need correction	Comment about format, language or spelling - fixed
Sally Valdes	Chapter 2	18	693	19	724	Concerned how to integrate climate change into baseline. Some areas may not be restorable to the previous baseline. Need to understand baseline but also the possible trajectory of climate conditions that could affect what can and should be restored in a given area. A coastal wetland, for example, may need restoration but recognize in some areas of coasts may be inundated within a few years where water levels are rising rapidly.	The comment confuses the baseline and the target even though earlier we stressed that the target or restoration or rehabilitation is not necessarily the natural state. Baseline is the state against which degradation at the moment should be compared and as such it is not needed to include climate change to the baseline.
German government	Chapter 2	18	693			The line of arguments is continuously jumping between EU, national law and national constitutional level: one para on multi-layer governance or the interface between the levels would be good.	The hierarchy of norms and legal olders is added as new text in SOD (609-616)
Kun Tian	Chapter 2	18	694	18	694	The concept of baseline is also central to the law,	Thank you
Marina Rosales Benites de Franco	Chapter 2	694	695	18	18	The concept of baseline is central also to the law, as impacts <b>direct and indirect</b> and damages <b>on the ecosystems process and functions</b> need to be assessed in comparison to a state of reference before the jurisdiction has been seized.	Thank you

Kun Tian	Chapter 2	18	698	18	701	the "baseline condition" means the condition at the time of the damage of the natural resources and services that would have existed had the environmental damage not occurred, estimated on the basis of the best information available, please restructure this sentence, it is difficult to understand	Done. Thank you
Saija Kuusela	Chapter 2	18	707	18	709	An example would greatly help the reader here. As I understand it, the features that are assessed are selected so poorly that they do not actually represent the real degradation caused by programmes and projects. Which are examples of those features? If this is the system that is widely used to secure nature and it does not work, it would be important to notice it here.	Examples were added
Royal C. Gardner	Chapter 2	18	709	18	709	What does it mean that land restoration can't be targeted?	Sentence replacement: instead of "As a result..." added: "In other words, if law does not perceive the land as degraded, there cannot be legal obligation to restore..."
Dr. Amanullah Khan (ITPS)	Chapter 2	18	710	18	710	Wyatt, 2008). Remove abbreviation of authors names in whole text	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	18	712	18	712	last name of single author only	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	19	717	19	718	last name of single author only, and remove abbreviation of authors names in whole text	Comment about format, language or spelling - fixed
German government	Chapter 2	19	721	19	721	The term "remediation" emerges for the first time in the document. Please define, what "remediation" means in relation to the terms "rehabilitation" and "restoration".	Added to Glossary: Remediation shall consists of actions on the soil aimed at the removal, control, containment or reduction of contaminants so that the contaminated site, taking account of its current use and approved future use, no longer poses any significant risk to human health or the environment (EU proposal for the directive establishing the framework for the protection of soil, is already referenced) 639 SOD: (see glossary)
Royal C. Gardner	Chapter 2	19	726	19	727	I think the perception about the need to protect or preserve land has evolved since 1991.	Thanks, we added more recent references
German government	Chapter 2	19	726			Has there been a comprehensive comparative analysis of constitutions, land laws at the European level? Is it valid to state that Switzerland is the only country which recognizes land to be scarce? Is it the Swiss people who take urbanization and food security as an objective or have the authors been selective in choosing some out of many others? Please verify.	Maylis: I will be less prescriptive. But in general, this comment reaches a methodological issue: is it required to analyze the legal orders of more than 200 countries to point out the innovative ones? This question is addressed to the secretariat and the co-chairs maybe.
Peter Onorato	Chapter 2	19	726	19	727	Generally, land is perceived as a non-scarce resource that does not need to be protected or preserved (Kiss & Shelton Dinah, 1991).	Kiss is a recognized author in the Environmental law doctrine. More recent references added on top.
Marina Rosales Benites de Franco	Chapter 2	726	727	19	19	Generally, land is perceived as a non-scarce resource that does not need to be protected or preserved (Kiss & Shelton Dinah, 1991), <b>also many countries do not manage this resource as an economic active.</b>	As we do not have a reference for the suggested text we may not act on the comment.
Sarah Dalrymple	Chapter 2	19	730	19	731	Upper case letters needed for "constitution of the swiss confederation"	Comment about format, language or spelling - fixed
Sally Valdes	Chapter 2	19	733	19	733	"performing"? Perhaps another word like proactive	Done
Peter Onorato	Chapter 2	19	733	19	733	As a result, Switzerland is considered as one of the most performing countries of Europe to	As a result, Switzerland is considered as one of the <b>best</b> performing countries of Europe to
Dr. Amanullah Khan (ITPS)	Chapter 2	19	734	19	734	last name of single author followed by et al., 2012	Comment about format, language or spelling - fixed
German government	Chapter 2	19	735			Why should the economic value rely on ecological criteria? History of land valuation appreciates other factors, like location, access to infrastructure. Ecological concerns are added up later. Please expand your discussions on this issue.	We are not saying it should we just make a statement that it is not.
Hamid Custovic (SPI)	Chapter 2	19	737			Which jurisdiction is referred to here?	Specified
Royal C. Gardner	Chapter 2	19	740	19	741	The constitutional distinction made is not clear. In some jurisdictions land (as private property) is constitutionally protected.	Specified
German government	Chapter 2	19	740			The line of argumentation is permanently jumping back and forth, first land rights, then suddenly water rights are added without considering the different genesis of embedding these rights into legal frameworks.	Clarified

German government	Chapter 2	19	740			The whole para squeezes too many different aspects into ten lines: development of legal national bodies, different kinds of rights, international regimes and their modification; more detailed explanation and guidance for the reader is required here.	Lenght issue. Was streamlined in the final draft.
Peter Onorato	Chapter 2	19	740	19	740	While right to water has been assigned a constitutional level of protection	Does not mention in which country water is assigned a constitutional level of protection
Peter Onorato	Chapter 2	19	741	19	742	However, international community is starting to recognize that land degradation is a security issue,	However, <b>the</b> international community is starting to recognize that land degradation is a security issue,
Dr. Amanullah Khan (ITPS)	Chapter 2	19	743	19	743	Brauch & Spring, 2009	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	19	749	19	749	Remove abbreviation of authors names in whole text	Comment about format, language or spelling - fixed
Victor M. Castillo (UNCCD)	Chapter 2	19	750	20	762	Over the past decades, soil scientists have repeatedly call for a legally-binding, international policy framework to protect land and soil. However, over 200 multilateral environmental agreements are already in force, so whether another is necessary remains debatable and politically sensitive, particularly when the reinforcement and adaptation of existing agreements could have the same effects Of all conventions, the UNCCD currently addresses soil issues most directly. It already encompasses soil through its definition of land as "the terrestrial bio-productive system that comprises soil, vegetation, other biota, and the ecological and hydrological processes that operate within the system" (art 1. E). The UNCCD is also the world's only truly integrated environmental and sustainable development> In order to meet United Nations MDGs and SDGs it is imperative that any global soil-protection strategy should contain both environmental land developmental elements.	Yes, I agree, but only for countries threatened by desertification right? Isn't it the purpose of the convention?
German government	Chapter 2	19	750			Does literature really agree that land and water should be dealt with separately, there are many arguments for the opposite: an integrated approach.	There is indeed literature that discusses this separation and we mention it, especially with the concept of ecological solidarity and environmental governance. However, the law mostly separates those two elements.
German government	Chapter 2	19	750	20	762	In the UNCCD, " <i>land comprises a multifunctional ecological system, whose natural capital, soil and biodiversity, interacting with water and atmosphere, generate the flow of ecosystem services that support human wellbeing by securing the life and livelihood of individuals and communities</i> " (see: ICCD/COP(12)/CST/6). In this context soil is regarded an essential natural capital of land. The relationship between "land" and "soil" therefore appears to be quite clear. This perspective should be included in the discussions to ensure that the diverse perceptions of and interrelationship between 'land' and 'soil' are considered in this chapter.	Good idea, thank you. We include the discussion around how and and soil are often mixed in law.
Dr. Amanullah Khan (ITPS)	Chapter 2	19	754	19	754	Kohler & Kotiaho, 2016; remove comma before &	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	20	762	20	762	'soil' structure also occurs across multiple spatial dimensions. This is not in my speciality, but Dexter 1988; Beare, et al., 1995 may help as references.	The reference has been noted
German government	Chapter 2	20	762			The view to see land in the EU context is rather narrow when adding the spatial and territorial dimension; even in EU context, cultural and social dimensions should be added: land as home, heritage, ...	These are relevant perceptions. These aspects are dealt with under spiritual aspects of land under 2.2.1.
John (Ebo) David	Chapter 2	20	764	20	769	The structure of the sentence is not entirely clear. It appears initially that they are making a distinction (by saying 'even if') but they do not later draw any distinction. Maybe they mean something like "Anthropocentric standards of environmental quality based on Human wellbeing exist (Smith, 1974; Steichen, 2000) and have become a constitutional goal for most governments."	Corrected.
Hamid Custovic (SPI)	Chapter 2	20	764		766	Point not clear - reword.	Reworded
John (Ebo) David	Chapter 2	20	770	20	770	"...discussed at international level" => "...discussed at the international level" add the word 'the'	Noted
Dr. Amanullah Khan (ITPS)	Chapter 2	20	778	20	778	Remove Amartya Sen and write just (Sen, 2001) proposes	Comment about format, language or spelling - fixed

Ashish Upadhyay	Chapter 2	20	780			The decline in land quality caused by human activities has been a major global issue since the 20th century and will remain high on the international agenda in the 21st century (Eswaran et al., 2001). The immediate causes of land degradation are inappropriate land use that lead to degradation of soil, water and vegetative cover and loss of both soil and vegetative biological diversity, affecting ecosystem structure and functions (Snel and Bot, 2003). Degraded lands are more susceptible to the adverse effects of climatic change such as increased temperature and more severe droughts.	There is no comment but just some text here? What are we supposed to do with this remains ambiguous.
German government	Chapter 2	20	780	25		The whole part on instruments is very clear and well structured (page 22, , 855 ff). However, in addition to financial incentives section 2.2.1.7 should also address planning instruments such as <i>strategic environmental assessment</i> (SEA) and <i>environmental impact assessment</i> (EIA). These are internationally known instruments and established principles. The chapter should also address the potential of spatial planning at different levels and scales. Different countries also apply the <i>mitigation hierarchy</i> (compensation measures for biodiversity damages). These arguments should be included in the discussions of this chapter.	These issues are being included to the chapter. However, let's remember that "instruments" should go to chapter 6.
Sally Valdes	Chapter 2	20	785	20	785	Perhaps give credit to Hardin here where the concept is first introduced? I did see that he was referenced later.	ok
Kun Tian	Chapter 2	20	786	20	787	refer to situations in which the individual pursuit of short-term returns by a group of people results 786 in the long-term depletion of natural resources and a decrease in returns for all, grammar mistakes	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	20	787	20	787	need citation for the original 'tragedy of the commons' paper (note: already in bib reference below, just need the cite here (Hardin, 1968)	ok
German government	Chapter 2	20	789			If one uses the term 'common-pool good' one should also use in this context (of externalities) the term 'public good' as the two conditions, non-rivalry and non-excludability apply.	ok
Kun Tian	Chapter 2	20	794	20	794	Especially externalities tend to affect	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	20	796	20	796	another prominent example is groundwater pumping.	ok, but there are also others
Marina Rosales Benites de Franco	Chapter 2	803	805	20	20	Eco-social dilemmas and environmental externalities tend to be pervasive in modern societies characterised by high rates of demographic <del>and</del> consumption growth <b>and pollution</b> , technological change, and interconnectedness.	Comment about format, language or spelling - fixed
German government	Chapter 2	20	806			If government interventions and community based-approaches are mentioned, one has at least to discuss briefly the market-solution, based on <i>Coase theorem</i> .	This section has been edited
Kun Tian	Chapter 2	21	808	21	811	the sentence is too long, please restructure	Comment about format, language or spelling - fixed
German government	Chapter 2	21	822			what about private conservancies, e.g. in Namibia: there a private solution is chosen as well; what about private schemes for payment of ESS? Please expand your discussions to include these issues.	this section has been edited and PES is mentioned in the text
Dr. Amanullah Khan (ITPS)	Chapter 2	21	826	21	830	emove brackets and separate by ; in citation	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	21	834	21	835	Many economists do not consider offsets to be a form of cap and trade, as there is no cap.	Noted
Royal C. Gardner	Chapter 2	21	842	21	842	The EU ETS is now referred to as a "System" rather than a "Scheme."	Noted
Kun Tian	Chapter 2	21	844	21	844	In biodiversity and landscape offsetting schemes a conservation target, a grammar mistake	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	21	848	21	849	Madsen et al., 2010	Comment about format, language or spelling - fixed
Peter Onorato	Chapter 2	21	852	21	854	Biodiversity offsetting is a rather new strategy, with pioneering programs like the 852 US Compensatory Wetland Mitigation and Australia's BioBanking (Bbop, 2012), and only few 853 examples in developing countries (Vatn, 2015).	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	22	857	22	857	Muradian et al., 2010	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	22	861	22	861	remove comma before & in both refernces	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	22	866	22	872	USDA Pollinators program, Maryland Ag tax (which provides strong incentives to keep agriculture land as agriculture). I am sure that there are others, but I am only aware of these because I am trying to purchase such a property.	we mention that these are examples and do not claim that the lists as exhaustive
Dr. Amanullah Khan (ITPS)	Chapter 2	22	872	22	872	Lin et al., 2012	Comment about format, language or spelling - fixed

Dr. Amanullah Khan (ITPS)	Chapter 2	22	883	22	883	remove (Wegner et al. in progress).	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	22	891	22	892	Wegner, 2016). Remove abbreviations for this author	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	22	895	22	895	and powerful industrial, farmers have been able to directly state policies	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	22	898	22	899	Again, too much advocacy: "It is difficult to justify ..."	section has been edited
Royal C. Gardner	Chapter 2	22	903	23	908	This is unclear. Taxes are not a form of cap and trade. Under the former, the cost is fixed, but the environmental benefit varies. Under the latter, the cost is variable, but the environmental benefit is fixed.	section has been edited
Kun Tian	Chapter 2	23	908	23	908	In subsidies, PES, and certification schemes the liability,a grammar mistake	Comment about format, language or spelling - fixed
Peter Onorato	Chapter 2	23	915	23	915	taxes and trade-based schemes producers are legally required to abide to environmental targets	taxes and trade-based schemes producers are legally required to abide by environmental targets / editorial
Dr. Amanullah Khan (ITPS)	Chapter 2	23	917	23	918	Corbera et al.	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	23	921	23	921	use comma before 2009	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	23	925	23	925	add & between two authors	Comment about format, language or spelling - fixed
Meredith Root-Bernstein	Chapter 2	23	927			The Wegner in progress citation has been used a lot. While this definitely sounds like an interesting work, it seems odd to base so many points in a policy document on a work that no one can read because it isn't even finished.	this section has been edited and more references have been added.
Dr. Amanullah Khan (ITPS)	Chapter 2	23	927	23	927	remove in progress and add published work only	Noted
Dr. Amanullah Khan (ITPS)	Chapter 2	23	929	23	929	add & between two authors	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	23	934	23	935	wrong format of citation	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	23	936	23	937	and they may more than offset firms' cost efficiency gains (Vatn, 2015).a grammar mistake	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	23	941	23	941	remove comma before &	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	23	944	23	947	remove abbreviation for authors here	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	23	949	23	949	Yin et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	23	951	23	952	use correct format for citation	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	24	956	24	993	remove abbreviation for authors here	Comment about format, language or spelling - fixed
German government	Chapter 2	24	956			The part on equality and problems of access for the poor is very helpful!	Thank you.
Diane L. Douglas	Chapter 2	24	983	24	993	Consideration of the impact of PES in lieu of providing meaningful alternative forms of income should be discussed -- in instances when PES replaces traditional use of natural resources people can lose their sense of cultural / social identity resulting in social-psychological stress, which can contribute to alcoholism, drug addiction, domestic violence, etc. I think we need to be careful to ensure that PES does not replace a persons ability to contribute to their household through meaningful work, which proponents of PES need to help identify and create.	point taken into consideration
Meredith Root-Bernstein	Chapter 2	24	983		985	This statement is very bold and needs more support than a single citation. I do not believe that any such generality has been established or can be claimed.	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	24	984	24	985	Marin et al., 2014	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	24	994	24	996	This is factually incorrect, at least applied to the US, where wetland mitigation providers indeed have a specific interest in whether the mitigation (offset) is delivered. If it is not, the regulatory agency will take enforcement action or they are prohibited from selling additional credits.	This section was edited

Diane L. Douglas	Chapter 2	24	994	24	1003	Parties that I have spoken with regarding carbon trading have identified two additional problem areas ; 1) due to lins to international market trends, the value of carbon credit at time falls below the agreed upon payment during the term of the agreement, resulting in a payment default which can have an adverse effect on the communities relying on the payments; 2) due to corruption in the receiving countries, payments do not get transferred to the intended recipients	The economic section was edited and shortened paying attention to the comments.
Kun Tian	Chapter 2	24	994	24	996	Carbon trading and biodiversity/landscape offsetting systems also differ from ordinary commodity 994 markets in the fact that the parties to the trade have no specific interest in whether what is traded is 995 actually delivered. restructure	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	24	999	24	1001	Coggan et al. (2013) discusses the role of intermediaries in offsetting transactions and does not appear to support the statement. In addition in the discussion of offsets, it would be helpful to distinguish between permittee-responsible offsets and third-party offsets (e.g., habitat banking).	The economic section was edited and shortened paying attention to the comments.
JOEL HOUDET	Chapter 2	24	1000	24	1001	Very narrow analysis of the problems with offsetting schemes. Other points worth mentioning include: no-net-loss definitions, values and equivalency principles, and also the problem with stacking different forms of payments (e.g. Cooley & Olander, 2011. stacking ecosystem servcies payments. Working Paper. Nicholas Institute)	The economic section was edited and shortened paying attention to the comments.
JOEL HOUDET	Chapter 2	25	1008	28	1194	Cost-effectiveness analysis should be discussed as well. The focus here is on opportunity cost based approaches to valuation. But it is not the only one. See Levrel, H., Hay, J., Bas, A., Gastineau, P., & Pioch, S., 2012. Coût d'opportunité versus coût du maintien des potentialités écologiques: deux indicateurs économiques pour mesurer les coûts de l'érosion de la biodiversité. Natures Sciences Sociétés, 20: 16–29.	The economic section was edited and shortened paying attention to the comments.
Victor M. Castillo (UNCCD)	Chapter 2	25	1008	28	1195	This section would benefit significantly from also taking into account the approach and findings from the "Economics of Land Degradation" (ELD) programme	The economic section was edited and shortened paying attention to the comments.
Dr. Amanullah Khan (ITPS)	Chapter 2	25	1013	25	1047	use comma before year eg et al., year and also for two authros eg A & B, year please use this in whole chapter and book	Comment about format, language or spelling - fixed
German government	Chapter 2	25	1035	25	1038	Please also refer to the outcomes of the IPBES Deliverable on the methodological assessment of scenarios and models of biodiversity and ecosystem services (IPBES/4/19).	Thank you, we refer to these outcomes as relevant
Kun Tian	Chapter 2	25	1045	25	1047	<a href="http://www.global-mechanism.org/content/supporting-countries-set-land-degradation-neutrality-targets">http://www.global-mechanism.org/content/supporting-countries-set-land-degradation-neutrality-targets</a>	Comment about format, language or spelling - fixed
German government	Chapter 2	26	1054			Although a critical view on monetary vaualtion methods is highly appreciated and important to embedd this approach in a broader context, some more explanation seems to be necessary to highlight potential concerns and trade-offs with regard to the pluralist character of human well-being in this introductory para (the following examples are excellent!)	The economic section was edited and shortened paying attention to the comments.
Kun Tian	Chapter 2	26	1056	26	1058	which stem from them being informed by a utilitarian notion 1056 of value according to which the social value of an object is determined by its capacity to satisfy 1057 people's individual preferences for good and services. restructure	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	26	1058	26	1058	"... good and services." => "goods and services." Good are plural	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	26	1060	26	1100	use comma before year eg et al., year and also for two authros eg A & B, year please use this in whole chapter and book	Comment about format, language or spelling - fixed
Cornelia Andersohn	Chapter 2	26	1071	26	1086	I doubt that no monetary valuation is possible for damage caused by storm events, as these costs have to be dealt with by insurances. Also human health can be accounted for, if one would compare people with and without access green open space in cities and comparing their health constitution. May be those data already exist.	The economic section was edited and shortened paying attention to the comments.
Sally Valdes	Chapter 2	26	1077	26	1090	Here are some additional references on benefits to human well-being Alcock et al 2014. Longitudinal effects on mental health of moving to greener and less green urban areas, Environ Sc; Ryan et al 2010. Technolo 48(2):1247-1255; Brown et al 2013. Viewing nature scenes positively affects recovery of autonomic function following acute mental stress. Environ Sci Technol 47(11): 5562-5569; Ryan et al. 2010. Vitalizing effects of being outdoors and in nature. Journal of Experimental Psychology 30:159-168.	Thank you for these references! Very helpful

Ian Dickie	Chapter 2	26	1080		1084	List of intangible values, most of them can actually be measured and at least partially valued. Its arguably only spiritual enrichment that isn't, and what that is beyond an improved combination of psychological health and socio-cultural enrichment is not clear to me. Monetary valuation has problems due to threshold effects and irreversibilities, and values can be skewed by a lack of trust in the system managing the environment (e.g. government). I don't think these further 'intangible' critiques add much.	The economic section was edited and shortened paying attention to the comments.
Meredith Root-Bernstein	Chapter 2	26	1086			I understand what you are getting at, but an economist would argue that this is not true at all: there are opportunity costs associated with any of these intrinsic benefits.	The economic section was edited and shortened paying attention to the comments.
Kun Tian	Chapter 2	26	1098	26	1098	a person's identity tied with	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	27	1102	27	1150	use comma before year eg et al., year and also for two authros eg A & B, year please use this in whole chapter and book	Comment about format, language or spelling - fixed
Ian Dickie	Chapter 2	27	1109			The fact that services are valued different in different contexts shows the strength of valuation – we wouldn't expect any good or service to have the same value in all contexts. This paragraph suggests a fundamental misunderstanding of valuation and risks undermining good material on restoration elsewhere – why does a chapter on restoration need to critique valuation in this way?	The economic section was edited and shortened paying attention to the comments.
German government	Chapter 2	28	1151			It is very good to react on criticism on monetary valuation with a rather detailed description of wider approaches.	The economic section was edited and shortened paying attention to the comments.
Dr. Amanullah Khan (ITPS)	Chapter 2	28	1152	28	1194	use comma before year eg et al., year and also for two authros eg A & B, year please use this in whole chapter and book	Comment about format, language or spelling - fixed
Cornelia Andersohn	Chapter 2	28	1157	28	1157	able for accounting for the a range ...	Comment about format, language or spelling - fixed
Josu G Alday	Chapter 2	28	1164	28	1164	Ecological resilience, but resilience to what? I guess you mean resilience to degradation.	yes
Kun Tian	Chapter 2	28	1186	28	1189	Multi-criteria assessment and deliberative 1186 approaches in turn go beyond the exclusive focus of EIA on ecological structure and processes to 1187 consider the context-specific and often conflicting values held by human communities towards these 1188 processes, restrcture	Comment about format, language or spelling - fixed
German government	Chapter 2	28 ff	1197			In the introductory para 4 concepts are mentioned but only three are explicitly referred to in the headings of the following sections. Shouldn't 'tipping points' be added into the second (bold) heading?	You are right, there is a mismatch between the list of concepts in the introductory paragraphs and the heading. However, it would be more appropriate to add "irreversibility" to the introduction than adding "tipping points" to the heading. Indeed, we believe that "tipping points" and "regime shifts" are rather strongly linked, since the first leads to the second and both don't need to be explicitly listed in the heading. The pagraph has been further reviewed to explain that a regime shift can also happen without crossing a tipping point. The text now says that shifts can be either gradual and smooth, or rapid and abrupt, as is the case when a tipping point is crossed.
Victor M. Castillo (UNCCD)	Chapter 2	29	1203	29	1232	This section focuses exclusively on biodiversity. Challenges related to time lags between land/soil degradation and land restoration/rehabilitation should also be addressed (or at least reference to section 2.3.1 should be made): while degradation can be a fast process, land restoration/rehabilitation activities may take many years to achieve impacts and sustainability.	We have shifted the place of the section in the document and will edit it so that it is clear that the time lag is also concerning the discrepancy between fast degradation and slow recovery.
Dr. Amanullah Khan (ITPS)	Chapter 2	29	1208	29	1208	use comma before year eg et al., year and also for two authros eg A & B, year please use this in whole chapter and book	Comment about format, language or spelling - fixed
Sally Valdes	Chapter 2	29	1209	29	1211	Example: box turtles are long-lived species that may still be present but not be able to adequately reproduce. Need to look at changes to population structure, not just presence or absence. Might help to include an example to clarify the concept.	This has been considered but we do not want to overpopulate the conceptual text too much with examples as they undoubtedly nearly always narrow the focus
Dr. Amanullah Khan (ITPS)	Chapter 2	29	1212	29	1212	found no refence at the end for Kuussaari et al. 2009;	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	29	1213	29	1232	use comma before year eg et al., year and also for two authros eg A & B, year please use this in whole chapter and book	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	29	1216	29	1219	The 10-year statute of limitations is not universal. Look at CERCLA or Superfund liability in the US.	Thank you. This has been taken into account under 818-821 in SOD.
Hamid Custovic (SPI)	Chapter 2	29	1217		1219	In which jurisdiction does this apply?	Clarified
Hamid Custovic (SPI)	Chapter 2	29	1219		1223	Point not clear - reword.	Clarified

John (Ebo) David	Chapter 2	29	1228	29	1228	roughly how long ago did the abandonment of remote and marginal agricultural areas happen? For Europe, I am aware of such around WWII, and in the US WWII and again in the 1980's.	Noted
Josu G Alday	Chapter 2	29	1233	29	1233	I miss the term resistance. I think it should be included in this subheading.	We kindly disagree with the reviewer. Though the terms resistance and resilience are often discussed together, in this particular section it is not the case. This section is about concepts that are relevant to an assessment of land degradation (and restoration) but are difficult to perceive and as a result are often not considered. Here resistance would refer to the ability of a system to resist degradation, which is not a concept difficult to perceive, or limiting our understanding/ability to assess degradation.
German government	Chapter 2	29	1233			Does the literature given on resilience also apply to social resilience or are additional sources needed?	We edited this section and added social science citation under 826-828 in SOD
Dr. Amanullah Khan (ITPS)	Chapter 2	29	1236	29	1236	Carpenter et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	29	1237	29	1237	Scheffer et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	30	1245	30	1245	Mumby et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	30	1246	30	1246	Smith et al., 2014	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	30	1254	30	1254	and thus underestimating the potential successes of a restoration action.	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	30	1258	30	1258	Adams et al.,	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	30	1261	30	1263	The meaning of the sentence -- "This is why Diamond's (2005) proposition to unify ecosystem and civilization collapses in the same conceptual framework is an interesting way of considering, not only the cultural, but also the natural history of humanity." is not clear to me. Did Diamond's proposition collapse, or did something else? Did they mean that unifying the human and natural sciences's definition of resilience within a single conceptual framework actually work?	True. We reformulated.
Aleksei Kotko	Chapter 2	30	1267	30	1269	It should be noted that with the progress of global warming, the melting of permafrost will not only increase the amount of land available for grazing and crop production, but also significantly increase the amount of methane released during this and emitted into the atmosphere (positive feedback to global warming and the negative externality for the rest part of the international community with the exception of Russia, Canada and Greenland). Another important source of potential rise of atmospheric methane amount is the release of it from the clathrate hydrate at the bottom of the Arctic seas due to rising of bottom temperatures. Herewith the methane as gas have 21 times more expressed greenhouse effect than carbon dioxide. Therefore, the capture of methane released during thawing of permafrost, as well as production of gas from clathrate hydrate, followed by using it even as a simple fuel could potentially lead to a reduction of the greenhouse effect rising rate (possibly, some caution here is required with calculations on the influence of water, initially released in the form of water vapor). In this connection there is a need for schemes to encourage such capture and extraction of methane in contrast to the extraction of it from ordinary gas fields that leads by the causal chain to the increase of rate of global warming.	This discussion on permafrost melting is dealt with in Ch4 where it belongs more appropriately. We of course agree with the point made in the reviewer's comment. Thank you.
Dr. Amanullah Khan (ITPS)	Chapter 2	30	1269	30	1276	remove abbreviation for authors here	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	30	1280	30	1280	Examples of regime shifts are soil salinization, the transition from	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	30	1282	30	1282	Rocha et al.,	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	31	1298	31	1298	experimentation but remains complex to assess	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	31	1312	31	1312	"Regime shifts are typically caused by climate change and other anthropogenic drivers..." can we really say typically? I agree that "Many regime shifts are caused by climate change and anthropogenic drivers..." but there there natural systems which oscillate between regimes, or multiple basins of attraction.	You are right, thank you for pointing this out. This sentence was corrected accordingly and reads now: "Many regime shifts are caused by [...] and have hence been extensively studied within socio-ecological systems".

Dr. Amanullah Khan (ITPS)	Chapter 2	31	1324	31	1330	use comma before year eg et al., year and also for two authros eg A & B, year please use this in whole chapter and book	Comment about format, language or spelling - will be fixed
German government	Chapter 2	31	1330	31	1333	Please also refer to the outcomes of the IPBES Deliverable on the methodological assessment of scenarios and models of biodiversity and ecosystem services, for instance: " <i>Scenarios are representations of possible futures for one or more components of a system, ...</i> " (IPBES/4/19).	Decision support is relevant to Ch8 and has been covered there, no relevance to Ch2 according to its scope.
Royal C. Gardner	Chapter 2	31	1334	32	1345	Some countries (e.g., the US) do allow for the recovery for natural resource damages.	Thank you. Noted.
Hamid Custovic (SPI)	Chapter 2	31	1334		1341	you could also comment on the difficulty in devising legislative approach that can cope with non-linearity of ecosystem responses.	This has been done and the paragraph has been edited to add that sentence.
Kun Tian	Chapter 2	31	1336	31	1336	though pollutants are known as a driver of regime shifts	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	31	1339	31	1339	while pollution may be an anthropocentric legal concept. Isn't there a equivalent biophysical one (poison)? Is it possible from that basis that one could develop a legal basis for non-human impacts?	it could be possible. Some say it's deep ecology!
Dr. Amanullah Khan (ITPS)	Chapter 2	32	1345	31	1345	Lecuq et al., remove O	Comment about format, language or spelling - fixed
JOEL HOUDET	Chapter 2	32	1346	33	1418	I am not an anthropologist but I believe this section could be better argued by drawing from the works of P. Descola "par dela nature et culture". He has described 4 ontologies: Analogism, Naturalism, totemism, animism.	Done
Ashish Upadhyay	Chapter 2	32	1346			main land degradation problems and the affected agro-ecosystems were indentified through a combination of key informant interviews, focus groups and questionnaires. Identified potential indicators were obtained both from the scientific literature and local stakeholders. These were evaluated and integrated in follow-up semi-structured interviews and focus groups (Reed and Stringer, 2006).	I don't understand this comment.
John Parrotta	Chapter 2	32	1346	36	1543	Section 2.2.2 could benefit from a more inclusive evaluation of the literature on these topics. I would recommend: Parrotta, J.A. & Trosper, R.L. (Eds.) 2012. Traditional Forest-Related Knowledge: Sustaining Communities, Ecosystems and Biocultural Diversity. World Forest Series vol. 12. Dordrecht: Springer, 621 p. The Introduction (Ch. 1) and Conclusions (Ch. 12) of this book are particularly relevant to this discussion. These may be downloaded at: <a href="http://www.treeseearch.fs.fed.us/pubs/47879">http://www.treeseearch.fs.fed.us/pubs/47879</a> and <a href="http://www.treeseearch.fs.fed.us/pubs/47880">http://www.treeseearch.fs.fed.us/pubs/47880</a> , respectively.	Thank you. We added this reference.
Pedro Jaureguiberry	Chapter 2	32	1346	32	1346	Line 1346: Why "Human Sciences" here? Is this concept developed elsewhere?	Now the section is simply entitled "Indigenous and local knowledge"
Dr. Amanullah Khan (ITPS)	Chapter 2	32	1374	32	1374	remove ..... in many places too	This part has been heavily edited and the definitions are now in the Glossary
Meredith Root-Bernstein	Chapter 2	32	1375	32	1379	I agree with you that the definition of traditional could risk forcing peoples to maintain specific practices (I presume this is what is meant by "substantive characters" in the line before, although this is not totally clear), but I would also point you towards discussions about what "traditional" means in researchon indigenous hunting practices and rights. In such contexts, most authors argue that there is a traditional ethos or ethics, set of values, and/or way of life (see Ingold's concept of dwelling, or Bourdieu's concept of habitus, for example) into which new technologies and practices are incorporated. Peoples can self-identify and self-define a traditional way of life while still embracing modernity. I would argue that you are conflating tradition with poverty in your definition, and problematizing something that does not have to be a problem, if defined following these suggestions.	This part has been rewritten and ref to Ingold and Bourdieu added.
Meredith Root-Bernstein	Chapter 2	32	1382			I thought everyone depended on ecosystem services and biodiversity. Isn't that one of the points of the IPBES?	True. We reformulate into LOCAL biodiversity and ES
Kun Tian	Chapter 2	33	1393	33	1393	are as numerous as ethnic and local groups are,	Comment about format, language or spelling - fixed
Meredith Root-Bernstein	Chapter 2	33	1400			How does "Mother Earth" stand in for what you just established as the great multiplicity of indigenous worldviews? You can't argue for attending to context and culture and then do the opposite without even giving one sentence of justification.	Checked. It was unclear.
John (Ebo) David	Chapter 2	33	1407	33	1407	The sentence is complicated enough, that at least the last clause should be broken into its own sentence with something like "These societies also embrace spiritual and symbolic values..." It may be helpful to break the proceeding part of the sentence even further.	Done.

Meredith Root-Bernstein	Chapter 2	33	1408	33	1409	I have never seen a definition of "socio-ecological system" that depended on the society in question belonging to a particular one of Descola's classes. People use this concept to recognise that whatever the worldview, including modern Western ones, societies have many kinds of links and connections to ecologies. So I don't think you can say "in most cases" we should talk about socio-ecological systems, but that this applies in all cases, regardless of the way in which those links are conceptualized by the society in question. To define it otherwise undermines the concept of ecosystem services, which for better or worse you are stuck with.	We deleted this sentence.
Dr. Amanullah Khan (ITPS)	Chapter 2	33	1408	33	1408	Brondizio et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	34	1441	34	1442	remove ..... in many places too	Comment about format, language or spelling - fixed
Douglas Nakashima	Chapter 2	34	1445			2.2.2.1 Spiritual knowledge ADD information about the role of sacred sites in biodiversity conservation Sezdbek and Aibek 2016 (Kyrgyzstan): "Traditional practitioners and local people in Kyrgyzstan may not implicitly declare biodiversity conservation as their primary goal in protecting sacred sites. However, the rules of behavior on sacred sites, traditional knowledge and belief system leads to preservation of biota located on sacred sites. Thus, sacred sites serve as an example how a cultural phenomenon such as a tradition of visiting sacred sites can have a positive impact on biodiversity conservation."(Kalkanbekov Sezdbek and Aibek Samakov (2016). Sacred sites and biocultural diversity conservation in Kyrgyzstan: co-production of knowledge between traditional practitioners and scholars. In: Marie Roué and Zsolt Molnár (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Europe and Central Asia: Contributions to an IPBES regional assessment. UNESCO: Paris.)	We added this reference. However we couldn't find the pages of the chapter.
German government	Chapter 2	34	1445			The part on spiritual knowledge is insightful and addresses key features.	Thank you.
Kun Tian	Chapter 2	34	1446	34	1446	As discussed above, Indigenous and local knowledge is not only about ecosystem management, but also about	we do not understand this
Kun Tian	Chapter 2	34	1450	34	1451	which is a National Park (1950) at first and then a part of UNESCO cultural heritage (1995),	Comment about format, language or spelling - fixed
German government	Chapter 2	34	1450			Ayers rock' is mentioned in the context ILK. Therefore, shouldn't one use the indigenous name 'Uluru' as well?	Done
Peter Onorato	Chapter 2	34	1450	34	1450	The example of Ayers Rock, in Australia,	The example of <del>Ayers-Reek</del> , Uluru in Australia, CHECKED
Hamid Custovic (SPI)	Chapter 2	34	1465		1466	Biodynamics, developed by Rudolph Steiner who died in 1925, is not new!!	Biodynamics and agroecology are now dealt with in another subsection part 3.
Hamid Custovic (SPI)	Chapter 2	34	1466			Clarify what is meant by "agroecology" as an agricultural practice .	Biodynamics and agroecology are now dealt with in another subsection part 3.
Dr. Amanullah Khan (ITPS)	Chapter 2	34	1470	34	1470	Wild et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	34	1476	34	1476	add comma before year and after et al.	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	35	1481	35	1482	Studies have shown that indigenous and local people's soil classification systems which are based on their in-depth knowledge of soils and often complement scientific assessments	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	35	1484	35	1490	add full stop before comma et al.,	Comment about format, language or spelling - fixed

Douglas Nakashima	Chapter 2	35	1486			<p>2.2.2.2 Practical knowledge ADD examples of knowledge coproduction:</p> <ul style="list-style-type: none"> <li>- Sezdbek and Aibek 2016 (Kyrgyzstan): Case study of cooperation of Aigine CRC with sacred site guardians and traditional practitioners in co-production of knowledge. (Kalkanbekov Sezdbek and Aibek Samakov (2016). Sacred sites and biocultural diversity conservation in Kyrgyzstan: co-production of knowledge between traditional practitioners and scholars.)</li> <li>- Molnár et al 2016 (Hungary): " Co-production of knowledge by ILK holder herders and scientists produces new knowledge that neither of them would otherwise have". (Zsolt Molnár, L. Sáfián, J. Máté, S. Barta, D.P. Sütő, Á. Molnár and A. Varga (2016). "It Does Matter Who Leans on the Stick": Hungarian herders' perspectives on biodiversity, ecosystem services and their drivers. )</li> <li>- Varga et al 2016 (Hungary): "The gap between traditional local communities and government conservation approaches could be bridged and conservation management and decision making could become more efficient if rangers have possibility to learn, adapt and use TEK during their work. Besides TEK holder rangers could have a consultant role between local people and conservation officers and enrich the adaptive capacity of the traditional ecological knowledge."( Anna Varga, Anita Heim, László Demeter and Zsolt Molnár (2016). Rangers bridge the gap: integration of traditional ecological knowledge related to wood pastures into nature conservation.</li> <li>- Roturier et al 2016 (Sweden): "One option for the future is a better governance, which would to increase the possibility for forest co-management. Some procedures already exist to increase dialogue between forestry and reindeer husbandry but still remain unsatisfactory from Sami herders' point of view because they do not allow alternative forms of forest management. " (Samuel Roturier, J. Nygård, L.E. Nutti, M.P. Åstot and M. Roué (2016). Reindeer husbandry in the boreal forest: Sami ecological knowledge or the science of "working with nature".)</li> <li>- Lavrillier et al 2016 (Siberia): "Even if it is complicated to bridge both scientific and traditional knowledge paradigms, both types of observation and knowledge complement each other and improve the understanding of complex environmental systems." (A. Lavrillier, S. Gabyshev and</li> </ul>	We added some of these references in different parts of the section.
German government	Chapter 2	35	1492			<p>Prior to Box 2.5, it would be very useful to have information on the different features of local, traditional and indigenous knowledge. Reason: these different features may have an affect on combining different knowledge systems. If such are already available under the IPBES's work on "indigenous and local knowledge systems" (D1c), then provide a link/reference to this work.</p>	Checked. We refered to IPBES' definitions (after IPCC)
Kun Tian	Chapter 2	36	1537	36	1537	is largely accepted today	Comment about format, language or spelling - fixed
Marina Rosales Benites de Franco	Chapter 2	1543	1543	36	36	The level of environmental knowledge of local and indigenous populations is accepted; however, in this context it should consider sharing benefits with them.	We added this important idea, but cannot develop it.

						2.2.2.3 Social inequities vs. "the tragedy of the commons" ADD information on impact of conflicts between government policies and ILK protecting biodiversity, e.g. - Ivaşcu and Rakosv 2016 (Romania): "CAP payments are crucial for the existence of HNV farming and European cultural landscapes, but a growing body of literature is arguing for the improvement of the eligibility criteria, since many important HNV holdings fell outside this framework and many national and EU requirements are contradicting local knowledge and land use patterns that have created HNV landscapes." (Cosmin Ivaşcu and Laszlo Rakosy (2016). Biocultural adaptations and traditional ecological knowledge in a historical village from Maramureş Land, Romania. in: Marie Roué and Zsolt Molnár (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Europe and Central Asia: Contributions to an IPBES regional assessment. UNESCO: Paris) - Babai 2016 (Romania): "Reconsidering the allocation of the agro-environmental subsidy and implementing a more effective supporting system would help the small-scale, thus less viable farms, which nevertheless are biodiversity hot spots.... it is essential to support methods that are proven to increase biodiversity, such as the application of hayseed, grazing of hay meadows (aftermath) in autumn, parcel rotation (to ensure seed ripening)... According to farmers it would be necessary to also reconsider those rules and procedures which are often contradictory and make farming harder or even impossible (e.g. fresh milk must be cooled to 4°C in one hour, to avoid the maximum germ count 100,000/ml milk, somatic cell count 400,000/ml at 30°C – these rules are impossible to carry out in a mountainous cultural landscape, like Gyimes in Eastern Carpathians and as a result milk has become unsellable)". (Dániel Babai (2016). High nature value seminatural grasslands – European hotspots of biocultural diversity. in: Marie Roué and Zsolt Molnár (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Europe and Central Asia: Contributions to an IPBES regional assessment. UNESCO: Paris) - Oguge 2016 (Kenya): Replacement of ILK with other governance systems is negatively impacting the landscape in Kenya. The Samburus report that "The course of landscape change is primarily	
Douglas Nakashima	Chapter 2	36	1544				We included two references out of three.
Dr. Amanullah Khan (ITPS)	Chapter 2	36	1547	36	1547	remove K before Brandon, 1998;	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	36	1551	36	1554	add full stop before comma et al.,	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	36	1558	36	1558	I am not sure about the grammar rule here, but I am accustomed to hearing/reading the word order swapped "... consider sometimes..." => "... sometimes consider..."	Comment about format, language or spelling - fixed
Meredith Root-Bernstein	Chapter 2	36	1563	36	1564	I am confused by this assertion that "social scientists" oppose cultural diversity in conservation. All the anthropologists I know consider conservationists to be idiot Weserners ignoring cultural diversity and attempting to force a western worldview onto other peoples. In other words, they strongly support the inclusion of cultural diversity into environmental programs. The Chapin reference is not helpful to clarify what you mean, as the reference is incomplete in the reference section. Are you talking about development economists or something?	This was unclear. We deleted the sentence and keep Chapin for the NGO subsection.
Dr. Amanullah Khan (ITPS)	Chapter 2	37	1565	37	1566	Brockington et al., and also for West et al.,	Comment about format, language or spelling - fixed
German government	Chapter 2	37	1567			Land grabbing is not necessarily only about export but more on cash crops in general; often it is domestic investors producing for the domestic market.	Could you please be more specific? We would need some references about land grabbing for internal market.
Dr. Amanullah Khan (ITPS)	Chapter 2	37	1571	37	1571	Remove S after 2012;	Comment about format, language or spelling - fixed
German government	Chapter 2	37	1583			The way it is written here gives the impression that Hardin focused on private property rights. Property rights are regarded to be private as well with the state being the owner. This is fine, but the intention of the authors may be a different one. The political message of the Tragedy is: control and command by the state, less privatization of property rights. Therefore, please expand your discussions thereby considering above thoughts.	True. We unitentionally misrepresented Hardin and have expanded on this section
Kun Tian	Chapter 2	37	1584	37	1584	important debate about the capacity of human communities to collectively manage their	Comment about format, language or spelling - fixed
German government	Chapter 2	37	1585			The whole story of the 'tragedy of the commons' in this context needs a more facetted line of argumentation and a bit more differentiation.	True. We unitentionally misrepresented Hardin and have expanded on this section
German government	Chapter 2	37	1587			Again this focuses on private rights; at latest here it should be clearly stated that Hardin mixed up a regulated common property regime with open access <del>=res nullius</del> .	True. We unitentionally misrepresented Hardin and have expanded on this section

Hamid Custovic (SPI)	Chapter 2	37	1591		1592	Provide reference to support the statement that environmental degradation is provoked by development projects.	This is a key issue. It is also in the conclusions of chapter 3. We inserted a figure about the coincidence of development projects in the Amazon basin and the highest rates of direct or collateral deforestation. Finally, we cite two references exposing the impacts of dams on the environment and local populations.
Mark Schauer	Chapter 2	37	1602			add New Zealand ad example for a country where indigenous rights in the context of land rights are recognized	We did, "spiritual knowledge" subsection.
German government	Chapter 2	37	1602			Add New Zealand as an example of a country where indigenous rights in the context of land rights are recognized.	We did.
Dr. Amanullah Khan (ITPS)	Chapter 2	37	1606	37	1606	Locher, 20112 remove first name	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	37	1606	37	1607	Borras & Francott, 2010	Comment about format, language or spelling - fixed
JOEL HOUDET	Chapter 2	38	1620	38	1634	"the tragedy of the commons" is well criticised but one could clearly explain that the "tragedy of free access" is the key problem when informal sets of norms and rules do not work anymore (for many reasons such as insecurity / war / external rpressures / social breakdown / change in policy & law)	True. We unitentionally misrepresented Hardin and have expanded on this section
German government	Chapter 2	38	1620			The Ostrom approach can possibly not be tagged with the rather general term "institutional analysis". The approach is more about "governing the commons" with institutional analysis being only one element. Please expand your discussions by considering its further development via the <i>Institutional Analysis and Development approach (IAD</i> = a broad ranged, dynamic, thus complex approach) and the SES.	We developed and addressed the issue of Institutional Analysis and Development in the final draft.
German government	Chapter 2	38	1628			The term "human capital" seems too losely defined. Originally, it defined individual knowledge and training (Theodor Schultz, Gary Becker) which can be transposed to a community level, but this is a special application. Please cross-check.	Addressed
Victor M. Castillo (UNCCD)	Chapter 2	38	1635	42	1812	Section 2.2.3 does not seem to contribute to the purpose of chapter 2. Instead of explaining how land degradation is framed and approached by "decision makers" in international (and national?) institutions and authorities, the text refers to various environmental governance processes in an unstructred manner and concludes with a general development critique. We recommend that this chapter engages with the concepts and approaches to land degradation as they prevail in institutions and authorities in a more substantial way. For example by showing how different organizations define land degradation, how priorities differ (biodiversity vs productivity focus), what are the trade-offs etc. etc. It will be key to take into due account the respective processes under the UNCCD as it is the main international forum for approaching land degradation	We have tried to address this
Hamid Custovic (SPI)	Chapter 2	38	1635		1812	This section (2.2.3) is largely peripheral to the topic. It should be condensed, and reworded in objective language.	We agree with this comment. The section has been condensed and edited.
Peter Onorato	Chapter 2	38	1647	38	1648	(e.g. in Climate Change negotiations, 28 years (since 1988) were necessary to take strongest, but not coercive, resolutions for its mitigation).	(e.g. in Climate Change negotiations, 28 years (since 1988) were necessary to take strongest, <del>but not coercive</del> , resolutions for its mitigation). ADDRESSED
Hamid Custovic (SPI)	Chapter 2	38	1648		1651	This statement is based on an inaccurate understanding of AGRA.	We cannot accept this comment without any other explanation. Please give us arguments or references.
Dr. Amanullah Khan (ITPS)	Chapter 2	39	1657	39	1657	add full stop before comma et al.,	Comment about format, language or spelling - fixed
Mark Schauer	Chapter 2	39	1660	39	1665	remove citation, the argumenttaion of this chapter should not be build around this one opnion-based citation	We chose this citation because it summarize many other opinions about the Stockholm outcomes. We will add all these references.
German government	Chapter 2	39	1660	39	1665	Critically cross-check and ensure that that this section of the chapter is not overemphasizing certain opinions, thereby paying less attention to other perspectives. It must be ensured that a balanced view is provided in this assessment. Therefore, the arguments in this chapter should not be build around this one opnion-based citation. Either, this citation is removed, or it is complemented by other opinions in order to ensure a balanced assessment/balanced perspectives.	We chose this citation because it summarize many other opinions about the Stockholm outcomes. We will add all these references.

John (Ebo) David	Chapter 2	39	1666	39	1673	I have had conversations with Native Elders which have pointed out that the land, rivers, lakes, and forests have no legal standing or 'voice' in courts of law. Has there ever been such a precedence? I do realize that it is the traditional water rights of the Bedouin which gave rise to the Moorish laws and tortuours legal presidence to our current basis of 'first in line first in right' law. Is there something similar which ties any 'rights' of the land itself back to the "global commons"?	Thank you for the suggestion. We checked and there is actually an example in New Zealand, that we mention in subsection "spiritual knowledge".
John (Ebo) David	Chapter 2	39	1671	39	1671	while the phrase "submitted to Sovereignty issues" is correct, "subservient to Sovereignty issues" may be clearer. Colloquial use of submitted is when something is given (eg submit payment for a bill) and does not describe a hierarchical relationship.	True. It has been removed.
Mark Schauer	Chapter 2	39	1678	39	1679	suggest to amend to: "...end of the Cold War, was the establishment of the three Rio Conventions, notably in the context of land degradation the United Nations Convention to Combat Desertification (UNCCD, 1994) and the Convention on Biological Diversity (CBD, 1992).	Done
German government	Chapter 2	39	1678	39	1679	Suggestion to amend the sentence to: "...end of the Cold War, were the establishment of the three Rio Conventions (UNFCCC, CBD and UNCCD), notably in the context of land degradation the United Nations Convention to Combat Desertification (UNCCD, 1994) and the Convention on Biological Diversity (CBD, 1992)".	Done
Penny van Oosterzee	Chapter 2	39	1680			retribution? Redistribution	It is actually retribution.
Royal C. Gardner	Chapter 2	39	1691	39	1693	Regarding the statement about the US: it did participate (although with a much smaller delegation than typical) as reported in UN document A/CONF.199/20.	Corrected.
Lim Li Ching	Chapter 2	40	1722	41	1779	While I agree with the content of the narrative in this box, I doubt that the AGRA example questions the utility of international assessments such as the IAASTD. The IAASTD remains a useful assessment that needs to be implemented. What AGRA shows however is that there are competing worldviews on agriculture, and in this case, one that is 'locked-in' by powerful actors and funding. See report by the International Panel of Experts on Sustainable Food Systems (IPES-Food) (2016) From Uniformity to Diversity: A paradigm shift from industrial agriculture to diversified agroecological systems.	Thank you for the suggestion. We mentioned it.
German government	Chapter 2	40	1722			Box: 2.6. This box should be shortened.	Done.
Dr. Amanullah Khan (ITPS)	Chapter 2	40	1732	40	1732	Toenniessen et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	40	1737	40	1737	add full stop before comma et al.,	Comment about format, language or spelling - fixed
Hamid Custovic (SPI)	Chapter 2	40	Box 2.6			It is not clear how this example relates to utility of international assessments. The information presented is an inaccurate description of AGRA's approach and activities so needs to be substantially revised.	Do you have any suggestions? We read thoroughly AGRA's website, and don't feel we misunderstood it.
Kun Tian	Chapter 2	41	1748	41	1748	and also ignoring the international combined effort	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	41	1752	41	1752	thus investment in environmental degradation and	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	41	1753	41	1753	Allard et al.,	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	41	1755	41	1756	On the other side, the promotors of the program argue that a Green Revolution would increase productivity thanks to chemical inputs, a grammar mistake	Comment about format, language or spelling - fixed
Sally Valdes	Chapter 2	41	1759	41	1759	"The cost of externalities provoked by pesticides is superior." This is unclear as written. Should superior be greater?	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	41	1766	41	1767	Matondi et al.,	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	41	1768	41	1768	"... lack of perspectives except than exile". I think the word 'than' can be removed here, otherwise something should be done as the sentence ending is not clear.	Removed
Kun Tian	Chapter 2	41	1771	41	1771	Finally, the AGRA programs underlines that one of the major problem of African agriculture is crop	Not a clear, actionable comment
Dr. Amanullah Khan (ITPS)	Chapter 2	41	1772	41	1772	(FAO, 2013)	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	41	1778	41	1779	This seems like a strange statement ("their efforts will not have been in vain").	Deleted.
Penny van Oosterzee	Chapter 2	41	1778			Whose efforts? The international assessments or the IPBES assessments?	Deleted.

Royal C. Gardner	Chapter 2	41	1780	41	1794	The authors seems to be inserting their own opinions rather than reporting on others' concepts and perceptions. They also seem to criticize the concept of common but differentiated responsibilities, one of the key components for the Montreal Protocol for ODS, which is typically considered one of the most successful MEAs.	There is certainly a need for a thorough assessment on the principle of differentiated responsibility. We suggest, at least, that it delayed many important resolutions.
John (Ebo) David	Chapter 2	41	1780	41	1780	"Earth Summit after Earth Summit, the negotiators privileged geopolitical approach of a planetary crisis." I am not sure how to interpret this sentence. The negotiators are or did what?	This part has been heavily edited.
John (Ebo) David	Chapter 2	42	1791	42	1791	Conventional use would have 'The' before 'International Community considers...'	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	42	1796	42	1797	Solutions are suggested, dangerous orientations are signalled. I do not understand	Deleted.
Dr. Amanullah Khan (ITPS)	Chapter 2	42	1796	42	1796	Koetz et al.,	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	42	1801	42	1802	Until now as we can see, the trend of international negotiations has been weaken or has refused 1801 policy instruments capable of overcoming national issues.	Edited
Peter Onorato	Chapter 2	42	1801	42	1808	As we can see, the trend of international negotiations has been, until now, to weaken or refuse policy instruments capable of overcoming national issues. The principle of ecological solidarity (Naim-gesbert, 2014; Thompson et al., 2011)(see also 2.3.2) would certainly be a better basis for international negotiations (Montesino Pouzols et al., 2014; Sarrazin & Lecomte, 2016). Creating a universal environmental chart that would impose on national legislations, on the model of the Declaration of Human Rights, would certainly be the path to overcome the "Rule by Law" regime and adopt the Rule of Law principle (Fukuyama, 2014) – a Law that serves as a pillar for all ulterior regulation, including international conventions. Comment - this section of text is unlikely to be endorsed by member states, as it recommends a course of action which could be perceived to infringe upon national sovereignty. Suggest either rewording the section or deleting entirely.	We have rephrased it.
Royal C. Gardner	Chapter 2	42	1802	42	1808	More advocacy (which should be revised or deleted).	We have rephrased it.
Dr. Amanullah Khan (ITPS)	Chapter 2	42	1803	42	1803	Naim-gesbert use last name here	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	42	1804	42	1804	Montesino Pouzols use last name here	Comment about format, language or spelling - fixed
Ashish Upadhyay	Chapter 2	42	1816			The guidelines for a methodological approach for assessing land degradation for the LADA project were developed by Koohafkan et al. (2003). They proposed that the causes, status and impact of land degradation and possible responses can be Determined and assessed at the same time. The proposed LADA methodology was based on the DPSIR framework where D indicates the driving forces, P the pressures, S the condition of land and its resilience, I the impacts of the increased or reduced pressures, and R the responses by the land users to release or reduce the pressures on The land.	good
Dr. Amanullah Khan (ITPS)	Chapter 2	43	1843	43	1843	remove G the abbreviation of first author	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	43	1845	43	1845	Chan et al.,	Comment about format, language or spelling - fixed
Meredith Root-Bernstein	Chapter 2	43	1847			Perhaps you can remind the reader here what the difference is between human development and fulfillment (which you criticize above) and human well-being.	We added that HWB had multiple dimensions. Otherwise the developments would be too long.
Douglas Nakashima	Chapter 2	43	1848			2.3.1 Timescales and the perception of land degradation and restoration ADD information about the ability of ILK to incorporate knowledge of changes across long timescales, e.g. - Molnar 2016 (Hungary): Traditional herders [possess] rich TEK mostly inherited from the family and previous generations, and tested and adapted during their personal life. (Zsolt Molnár, L. Sáfán, J. Máté, S. Barta, D.P. Sütő, Á. Molnár and A. Varga (2016). "It Does Matter Who Leans on the Stick": Hungarian herders' perspectives on biodiversity, ecosystem services and their drivers. In Marie Roué and Zsolt Molnár (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Europe and Central Asia: Contributions to an IPBES regional assessment. UNESCO: Paris)	We don't agree with having superficial references for the sheer pleasure or putting ILK everywhere. We address this comment by saying that this reference will be included into ILK section.

Meredith Root-Bernstein	Chapter 2	43	1856	43	1861	"altered and thus degraded"? I thought you suggested earlier in the chapter (although I think it was not totally clear) that not all human disturbances lead to degradation, because there could be alternative states (novel ecosystems or contemporary cultural landscapes for example) that provide ecosystem services and already correspond to a desired restoration state. You define degradation by stating "to assess whether the land has been degraded, one not only needs to know if there is decline or loss in biodiversity or ecosystem functions and services, but also i) whether the ecosystem can recover unaided, and ii) whether it can recover" at a decadal timescale. (page 11). Also, your long-term reference state is the late Holocene, not the Pleistocene. According to what you seem to be saying in this paragraph, all of your reference states are degraded, as is the entire world since it is no longer possible to revert to the Pleistocene at a decadal timescale-- for a lot of reasons. Is this really what you are saying? I am confused.	We have edited the sequence of the chapter and this section is now in the early part of the chapter with the definitions or the baselines that should be used. There are several points to address to respond to this comment: (1) The long term reference state might be the Holocene, but this should not prevent us from stating that humans have had an impact on ecosystem that started earlier than that. (2) It is true that the link between alteration of ecosystems and degradation could be made more explicit in this section. The working definition of the IPBES for land degradation is a "land in a state that results from persistent decline or loss of biodiversity, ecosystem function or services" which is why the alteration of a system by humans should be perceived/understood as degradation. (3) Concerning the alternative states, we do not consider in this chapter that they are restored ["However interventions that aim at replacement or novel ecosystems should not be regarded as restoration or rehabilitation sensu IPBES - p.14 1.541-542"]. In fact, we do not suggest that not all human disturbances lead to degradation, quite the contrary. (4) It might appear extreme to consider that all of the globe is degraded, but if you combine the IPBES definition of land degradation and some estimates of the terrestrial surface that are impacted by human activities (see figure 2.5), we are not far from it.
Dr. Amanullah Khan (ITPS)	Chapter 2	43	1856	43	1856	remove E.W.	Comment about format, language or spelling - will be fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	43	1860	43	1860	Halada et al.,	Comment about format, language or spelling - will be fixed
Feras Youssef	Chapter 2	43	1862	43	1869	I think, a nice example for the results of crossing tipping point in overgrazing and non-sustainable agriculture practices is the Dust Povel in the USA that affected a large area of lands in 1960s ()	Thank you for the suggestion. We will see if we can find a reference on this topic to include it in the section. Any suggestion would have been welcome.
Meredith Root-Bernstein	Chapter 2	43	1863			Yes some examples of cultural landscapes may represent a case of the shifting baseline, but it is also quite possible that the concept of "natural" in play in cultural landscapes is not actually "intended" to represent a Pleistocene forest or whatever, but does in fact correspond to a state in which people interact with non-humans to shape the landscape. The shifting baseline concept works well fo what it was orginally intended for, perceptions of population size or abundance. It is not clear to me that it represents ideas about human-non-human or human-landscape relationships. Please integrate this section better with the previous section on indigenous worldviews.	We respectfully disagree with the reviewer that the concept of "shifting baseline syndrome" (SBS) cannot be applied to the human-landscape relationship. Indeed most case studies presented refer to population sizes and abundances, but the concept itself requires as one of the condition of the SBS that "biological change is present in the system" (Papworth et al., 2009), which does not limit itself to population sizes/abundances. The disconnection of humans and nature and the resulting change in the perception of the later is also discussed by Miller (Miller, James R. "Biodiversity conservation and the extinction of experience." Trends in ecology & evolution 20.8 (2005): 430-434.). Frans Vera also discussed how the SBS "causes a continuous lowering of standards of nature and the acceptance of degraded natural ecosystems to be the normal state of nature" (Vera, Frans. "The shifting baseline syndrome in restoration ecology." Restoration and history: the search for a usable environmental past. Edited by M. Hall. Routledge, New York (2010): 98-110.). The description of the SBS will be expended (including by adding the abovementioned references) either in this section or at the beginning of the chapter when it is first mentioned. (Florent to Laetitia: I agree with your response.
Brajendra (ITPS)	Chapter 2	43	1867	43	last line	should be land degradation instead of soil degradation. Free grazing and in places hwere animals are strayed and not kept in the restricted pastures/livestocks heards are a mjaor source of soil erosion and land degradtaion	Corrected to "land degradation" instead of "soil degradation". Thank you for pointing this out.

Kun Tian	Chapter 2	44	1878	44	1878	and their impacts on human wellbeing can not immediately be felt,	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	44	1887	44	1887	is the timescale for restoration here assisted or unassisted restoration. I have heard restoration ecologists say that if the project is in an area that has 1600mm of annual precipitation, the system can restore itself by simply removing the stressor. I, on the other hand, grew up in a region with 250mm/yr precip, and have worked hard to restore ecosystem functions.	The recovery of ecosystems discussed in paper of Jones and Schmitz (2009) used here as a reference results from both active and passive recovery. The sentence was edited to clarify: Typically most: changed to Many; assisted/unassisted included
Dr. Amanullah Khan (ITPS)	Chapter 2	44	1893	44	1893	Brancaion et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	44	1895	44	1895	Cao et al., Feng et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	44	1905	44	1905	remove e.g.	Kotiahio 2015 discusses the implication of Aichi Target 15 in Finland, not a global scale, hence the use of "e.g.". The sentence will be edited to "[...]" which also ignores the practicality for countries to achieve such targets (e.g. Finland in Kotiahio, 2015).".
Kun Tian	Chapter 2	44	1908	44	1910	while 1908 disregarding the time needed to achieve restoration goals could lead to the premature perception of 1909 failure or non-achievability.a grammar mistake	Comment about format, language or spelling - fixed
Feras Youssef	Chapter 2	44	1910	44	1912	Grammer corrcion 'have' should be 'has': "Finally, <b>human action</b> targeted at specific species, ecosystems, or 1911 ecosystem services, including via degradation process or restoration and rehabilitation actions, <b>have</b> .....	Comment about format, language or spelling - fixed
Marina Rosales Benites de Franco	Chapter 2	1917	1917	44	44	.....where any consideration for the conservation of the nonhuman is ignored. <b>The restoration and rehabilitation are our commitments with the nature and future generations.</b>	This addition has been noted
Dr. Amanullah Khan (ITPS)	Chapter 2	45	1925	45	1925	Nepstad et al.,	Comment about format, language or spelling - fixed
Feras Youssef	Chapter 2	45	1933	45	1933	Grammer corrcion, "a <b>Directive</b> ...." should be "a <b>directive</b> ...."	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	45	1935	45	1935	remove D.,	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	45	1939	45	1939	including assessment of its impact on land-use change globally.	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	45	1941	45	1941	Meyfroidt et al.,	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	45	1947	45	1947	in order to compensate the local decrease in production	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	45	1947	45	1949	Meyfroidt et al., Latawiec et al.,	Comment about format, language or spelling - fixed
Sally Valdes	Chapter 2	45	1958	45	1960	Often the best way to attack the legal issue is to demonstrate how misuse of the land affects water quality since water is perceived as a shared resource.	Correct, which is why I've pointed out water rights above. Thanks
Victor M. Castillo (UNCCD)	Chapter 2	46	1967	46	1973	UNCCD is a legally binding international agreement, not only a facilitation instrument. dealing with land degradation. Parties signatories to the convention that is considered themselves as affected by land degradation/desertification have among other the following obligations (art 4 UNCCD) establish strategies and priorities within the framework of sustainable development plans and/or policies, to combat desertification and mitigate the effects of droughts and c) address the underlying causes of desertification and pay special attention to the socioeconomic factors contributing to desertification process In carrying their obligations affected country parties shall prepare, make public an implement national action programs. The content of the national action programme are regulated by article 10 of the Convention	Absolutely, but it deals with desertification. It doesn't protect the land generally.
John (Ebo) David	Chapter 2	46	1976	46	1976	the explanation of the term "ecological solidarity" here would possibly be better positioned at first substantial use (1802) to give the laymen an intuition of what it means.	We developed the principle of ecological solidarity, with reference to our key messages.
Kun Tian	Chapter 2	46	1976	46	1977	This concept comes from conservation policies and conveys the idea to increase the efficiency of conservation measures, and the surrounding landscape	Comment about format, language or spelling - fixed

Saija Kuusela	Chapter 2	45	1981	45	1981	I do not understand the use of the word "teleconnections" here.	The word teleconnections is not used on line 1981. If you refer to the title of the section (line 1918), teleconnection is a term used to describe correlations between meteorological or other environmental factors over long distances. In the case of this section, you are right that it might not be totally appropriate and we substituted it with "telescoping" as per Liu et al., (2015) or edit the meaning in other means.
Feras Youssef	Chapter 2	46	1982	46	1996	I think, by the end of this section, some recommendation can be given such as shaping an international protocol for soil smiler to Alpine Convention Protocols	Noted
German government	Chapter 2	46	1983	46	1996	What is the purpose of box 2.7? How is the content of the box linked to chapter 2.3.2? Further explanation is required.	It has to do with illustrating what can be done to tackle transboundary land degradation or restoration/rehabilitation
German government	Chapter 2	46	1985	46	1986	The Alpine Convention's protocols are not correctly cited, it should read "Nature protection and landscape conservation" (see <a href="http://www.alpconv.org/en/convention/protocols/default.html">http://www.alpconv.org/en/convention/protocols/default.html</a> for correct names)	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	46	1987	46	1987	correct it Jörg Balsiger, n.d.	Comment about format, language or spelling - fixed
German government	Chapter 2	46	1988	46	1988	It is not clear to which protocol the para is refering to (we assume that it is the soil conservation protocol). Please verify.	Clarified
German government	Chapter 2	46	1988	46	1990	It is not clear what is meant by "Countries share knowledge to elaborate the law." as the para does not elaborate on this. Further explanation is therefore required.	Clarified - but it means that they create working groups
John (Ebo) David	Chapter 2	47	2013	47	2013	"These dimensions were first time captured..." The word order is slightly awkward. I am accustomed to seeing the phrase written as either "... were first captured..." or "... captured for the first time..." This might be a cultural usage, and might be OK. I would consult a grammarian.	Comment about format, language or spelling - fixed
Hamid Custovic (SPI)	Chapter 2	47	2024		2028	This statement is an inaccurate description of land use impacts of sugar-based ethanol in Brazil and the actual drivers of deforestation in the Amazonas. See for example: Adami, M., et al. 2012. Remote sensing time series to evaluate direct land use change of recent expanded sugarcane crop in Brazil. Sustainability, 4(4), pp.574-585. Lapola, D.M., et al. 2014. Pervasive transition of the Brazilian land-use system. Nature climate change, 4(1), pp.27-35. Aguiar, A.P.D., et al., 2007. Spatial statistical analysis of land-use determinants in the Brazilian Amazonia: Exploring intra-regional heterogeneity. Ecological modelling, 209(2), pp.169-188. <a href="http://r4d.dfid.gov.uk/pdf/outputs/ELLA/130520_ENV_BraEthPro_BRIEF4.pdf">http://r4d.dfid.gov.uk/pdf/outputs/ELLA/130520_ENV_BraEthPro_BRIEF4.pdf</a> <a href="http://soylearningjourney.com.br/en/pdf/Whitepaper/Whitepaper.pdf">http://soylearningjourney.com.br/en/pdf/Whitepaper/Whitepaper.pdf</a>	Our assertion is correct. And Adami confirms what we are saying: "The results clearly show that the dLUC of recent sugarcane expansion has occurred on more than 99% of either pasture or agriculture land." In other terms, sugarcane expansion led to the displacement of pastures and soy. Sugarcane does not encroach on the forest, but pasture and soy do, exactly because of the sugarcane expansion.
John (Ebo) David	Chapter 2	47	2028	47	2028	"the same happened in South Africa or in Indonesia..." I expect that it happened in both places (so the use of 'and' would be more appropriate) instead of it happening in one of the two places (in which 'or' would be appropriate).	Checked
Hamid Custovic (SPI)	Chapter 2	48	2028			Where did they get this from? We have a modified version - the response hierarchy - but it is not yet published.	We do not understand this comment
Hamid Custovic (SPI)	Chapter 2	47	2030		2031	Statement fails to acknowledge that the climate change impacts of biofuels vary widely depending on the feedstock and how it is grown, and that there are many examples of biofuels that are beneficial for the climate. See for example Nassar A, I.C. Macedo IC, Cowie AL, Seabra J.E.A, Marelli L, Otto M, Wang M.Q., Tyner W.E. (2015) Greenhouse Gas Emissions from Bioenergy Ch 10 SCOPE Bioenergy & Sustainability: Bridging the Gaps. SCOPE Rapid Assessment Process. The Scientific Committee on Problems of the Environment.	We substantiated this statement with further references to make the point.
Marina Rosales Benites de Franco	Chapter 2	2030	2036	47	47	This leads to a wrong perception in public opinion: that biofuels are a good alternative to petroleum. Invoking sustainable development in this case and others (and this is the reason why this concept was a success in Rio 92) is the opposite of considering "the limits to growth": an unlimited development will affect sustainability in all cases. <b>These generate losing natural capital, increasing social conflicts, inequalities and others. The Planet and its ecosystems have ecological limits and planetary boundaries. (it is a thermodynamic rule).</b>	Good suggestion, thank you.

Victor M. Castillo (UNCCD)	Chapter 2	48	2050	48	2088	There should be more information on LDN. As LDN is not only a compensation approach but an target setting exercise in the context of the SDG (> 90 countries are in the process to define volunatry LDN targets) it should be considered to have a text box on LDN. More information on LDN can be found in the already cited references and <a href="http://www.global-mechanism.org/content/supporting-countries-set-land-degradation-neutrality-targets">http://www.global-mechanism.org/content/supporting-countries-set-land-degradation-neutrality-targets</a>	We agree
Royal C. Gardner	Chapter 2	48	2054	48	2058	In the mitigation hierarchy discussion, Ramsar Resolution XI.9 should be cited.	Reference to Ch6 will be made, where Ramsar is talked about more extensively
Dr. Amanullah Khan (ITPS)	Chapter 2	48	2058	48	2058	et al., always use full stop followed by comma after et al when inside brackets	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	48	2065	48	2068	Ramsar Resolution XI.9 emphasizes the need to avoid wetland impacts.	Comment about format, language or spelling - fixed
Sally Valdes	Chapter 2	48	2065	48	2065	"pharonic" is an example of a term that could be replaced with a simpler word to make the overall document easier to read.	Sentence deleted
Royal C. Gardner	Chapter 2	48	2069	48	2071	Again, Coggan et al. (2013) does not appear to support the assertion. Kihslinger (2008) does not appear in the references.	Comment about format, language or spelling - fixed
Mark Schauer	Chapter 2	48	2071			reference to Kihslinger is missing in the list of key references	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	48	2071	48	2071	put comma before 2008	Comment about format, language or spelling - fixed
German government	Chapter 2	48	2071			Reference to Kihslinger is missing in the list of key references.	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	48	2072	48	2072	national legislations have labelled as compensation the conservation of ecologically equivalent, a grammar mistake	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	48	2075	48	2084	An internationally shared definition of a mitigation hierarchy and compensation can be found in Ramsar Resolution XI.9. See also Ramsar Briefing Note 3 at <a href="http://www.ramsar.org/sites/default/files/documents/library/bn3.pdf">http://www.ramsar.org/sites/default/files/documents/library/bn3.pdf</a>	The definition of mitigation hierarchy included in the glossary.
Kun Tian	Chapter 2	48	2076	48	2076	Currently, efforts to render ecological compensation initiatives more effective are, a grammar mistake	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	48	2078	48	2089	for more than two auhtors use et al., with the last name of the first auhtor	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	48	2079	48	2081	a long sentence with grammar mistakes	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	48	2085	48	2086	For the proposition that not all impacts can be compensated for, see Ramsar Resolution XI.9 as well as the US National Research Council, Compensating for Wetland Impacts under the Clean Water Act (2001) at pages 24-27.	Noted
Kun Tian	Chapter 2	49	2096	49	2097	97% of climatologists agree that climate change 2096 is anthropogenic, while 3% who disagree are overrepresented in the media for the sake, a grammar mistake	Comment about format, language or spelling - fixed
Hamid Custovic (SPI)	Chapter 2	49	2106		2109	The precautionary principle has much broader relevance than the examples given here.	Noted, but the comment should be more specific to be actionable.
Dr. Amanullah Khan (ITPS)	Chapter 2	49	2109	49	2109	remove .....	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	49	2113	49	2113	remove S and also remove comma after the first author	Comment about format, language or spelling - fixed
Hamid Custovic (SPI)	Chapter 2	49	2117			What is the parallel here? What disinformation is spread about land degradation?	We included a narrative / illustration of how consumers are not informed of the impacts of their consumption pattern.
Kun Tian	Chapter 2	49	2122	49	2123	and massive IPCC scientific consensus about the causes of climate change 2122 struggles to counteract the large amount of attention the media gives to "sceptics", a grammar mistake	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	49	2124	49	2129	put comma after full stop eg et al.,	Comment about format, language or spelling - fixed
Lim Li Ching	Chapter 2	49	2133	51	2220	This section on agroecology as an alternative paradigm can be further strengthened with the following references: 1) IPES-Food (2016). From Uniformity to Diversity: A paradigm shift from industrial agriculture to diversified agroecological systems. 2) FAO (2015). FINAL REPORT for the International Symposium on Agroecology for Food Security and Nutrition, 18 and 19 September 2014, Rome, Italy. Food and Agriculture Organization of the United Nations, Rome. 3) FAO (2015). Agroecology for food security and nutrition. Proceedings of the FAO International Symposium, 18 and 19 September 2014, Rome, Italy. Food and Agriculture Organization of the United Nations, Rome.	Thank you, these references are really helpful. We inserted them.
Dr. Amanullah Khan (ITPS)	Chapter 2	49	2153	49	2153	Sutherland et al.,	Comment about format, language or spelling - fixed

Kun Tian	Chapter 2	50	2167	50	2167	The use and abuse of agrochemicals provoke persistent	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	50	2168	50	2168	Benton et al.,	Comment about format, language or spelling - fixed
Hamid Custovic (SPI)	Chapter 2	50	2169		2175	Inappropriately biased text that fails to acknowledge that there can be benefits to smallholders from mechanisation and access to international markets. See for example Gathorne-Hardy, A., 2016. The sustainability of changes in agricultural technology: The carbon, economic and labour implications of mechanisation and synthetic fertiliser use. <i>Ambio</i> , pp.1-10.	The paper cited mentions farmers' expectation, not environmental sustainability. The author specifically advises in the conclusion that his paper should NOT be used as an argument for intensification. ///Van Pham, L., & Smith, C. (2014). Drivers of agricultural sustainability in developing countries: a review. <i>Environment Systems and Decisions</i> , 34(2), 326-341. doi:10.1007/s10669-014-9494-5///Kriesemer, S. K., Virchow, D., & Weinberger, K. M. (2016). Assessing the Sustainability of Agricultural Technology Options for Poor Rural Farmers. In <i>Technological and Institutional Innovations for Marginalized Smallholders in Agricultural Development</i> (pp. 199-211). Springer International Publishing./// The main problem is actually food waste, we will deal with it.
Dr. Amanullah Khan (ITPS)	Chapter 2	50	2183	50	2183	remove A after Chamboredon	Comment about format, language or spelling - fixed
John (Ebo) David	Chapter 2	51	2188	51	2188	reordering "At global level, a new concept, 'environmentality'" to "A new concept at global level, 'environmentality'," may be clearer.	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	51	2188	51	2188	2005a&b	Comment about format, language or spelling - fixed
Hamid Custovic (SPI)	Chapter 2	51	2191		2197	This par ignores the research showing that "food miles" are a very small component of the carbon footprint of food eg Weber, C.L. and Matthews, H.S., 2008. Food-miles and the relative climate impacts of food choices in the United States. <i>Environmental science &amp; technology</i> , 42(10), pp.3508-3513. Van Passel, S., 2013. Food miles to assess sustainability: a revision. <i>Sustainable Development</i> , 21(1), pp.1-17.	Thank you for those references! We have incorporated them and added a sentence at the end of the paragraph to illustrate our point. However, we don't think 2 refs are enough to contradict our point. See the example of shrimps collected in North Sea, then transported to Morocco for conditioning, then coming back to Europe
Dr. Amanullah Khan (ITPS)	Chapter 2	51	2195	51	2195	Willer et al., last name of first author only	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	51	2207	51	2207	movement, is united in their claim for land and respect.	Comment about format, language or spelling - fixed
Kun Tian	Chapter 2	51	2212	51	2212	but the creation of a society which predominant value would be solidarity and, a grammar mistake	Comment about format, language or spelling - fixed
German government	Chapter 2	51	2221	53		Regarding section 2.4 "Conclusions": The instruments of the environmental assessment (SEA, EIA), which we have requested to be discussed in section 2.2.1.7, are also suitable for increasing the perception of the problem in political decision-making. Therefore, include these instruments in the conclusions.	Your suggestions have been taken on board.
Royal C. Gardner	Chapter 2	52	2231	52	2233	Rather than tax, do you mean subsidy? Governments often provided subsidies for wetland drainage.	Yes, you are correct. This has been corrected in the text.
Kun Tian	Chapter 2	52	2232	52	2233	a specific tax prescribed by the law encouraged for centuries the conversion of wetlands to agricultural lands, a grammar mistake	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	Chapter 2	52	2233	52	2233	remove H.H. no abbreviation here please	Comment about format, language or spelling - fixed
Royal C. Gardner	Chapter 2	52	2234	52	2236	To say that wetlands are now protected is a gross overstatement and does not reflect ongoing wetland losses noted previously.	We agree. We don't mean that all the wetlands are protected. We just point out that a hundred years ago governments gave subsidies to the owners to destroy wetlands and that since the 1970's, the worldview has changed. We will rephrase to clarify.
Marina Rosales Benites de Franco	Chapter 2	52	2254		2288	I suggest to consider incentives too in "Environmental policies". Also, in the education and ethics considering mechanism to teach that human is part of the ecosystems and the need to link human urban cities with nature.	We integrated the term "incentive" in the "environmental policies" section. Likewise, we addressed your comment on the Education and Ethics section.
John (Ebo) David	Chapter 2	52	2265	52	2275	another mechanism for that can address consumption patterns which is not addressed is that of reparability (possibly as a specialization of the Sustainable Consumption argument - #2). In the past things were made so that they can be repaired. Now things are often made in a way they cannot be (design obsolescence). This too will require a shift in perception that things are just thrown away. See <a href="https://www.ifixit.com/Manifesto">https://www.ifixit.com/Manifesto</a>	This is an interesting point, thank you. We have integrated some of the elements into the final text. If you only had references on how programmed obsolescence, and its perception (or not) can affect consumption, that would have been much appreciated.

Dr. Amanullah Khan (ITPS)	<b>Chapter 2</b>	52	2278	52	2278	Goldstein et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	<b>Chapter 2</b>	53	2279	53	2279	Schultz et al.,	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	<b>Chapter 2</b>	54	2302	54	2302	Refernces not key refernces	Comment about format, language or spelling - fixed
Dr. Amanullah Khan (ITPS)	<b>Chapter 2</b>	54	2303	74	3324	Check all references with text and use a single format in the whole chapter/book. There are many problems and variations in this section. In the first chapter of LDR i checked the style was different i.e. it was References not Key references. remove the word Key. All citation must be reported in references section. Remove those not reported in text and vice versa. Please arrange all refences alphabatically according to the last name of first author. Check the PDF file I have pointed out many corrections and suggestions.	Comment about format, language or spelling - fixed
John (Ebo) David	<b>Chapter 2</b>	74	3291	74	3291	The link: <a href="http://doi.org/http://dx.doi.org/10.1016/j.gloenvcha.2010.12.008">http://doi.org/http://dx.doi.org/10.1016/j.gloenvcha.2010.12.008</a> is mos formed. Shoule be <a href="http://dx.doi.org/10.1016/j.gloenvcha.2010.12.008">http://dx.doi.org/10.1016/j.gloenvcha.2010.12.008</a>	Comment about format, language or spelling - fixed