External review of the first order draft of the land degradation and restoration assessment
30 May - 11 July 2016
Chapter 8

Reviewer Name	Chapter	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	Response (from Chapter 8)
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.
LI Qingfeng	0	0	general comment on FOD LDRA			2, An Executive Summary and a List of Acronymns and Abbreviations are necessary.	An executive summary and a list of Acronymns and Abbreviations has been added to the document
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 achievenment. This is a *first order draft* however, and, therefore, we hope that our comments will be useful for the further development and maturing of this assessment so that in the *second order draft* scientifically strong and comprehensive key messages can emerge. We very much look forward to the *second order draft* 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			**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 <u>all</u> 8 chapters.** 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.	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
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.	Cross-chapter references are included in chapter 8. Broader set of decision support tools are included and policy instruments synthesized. We have read the FOD of the Regional assessments.
German government	0	0	general comment on FOD LDRA			A major cross-cutting issue throughout the document is that **land degradation and restoration are being "lumped" too much together**, 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.	We have introduced and clarified the difference and changed the text where appropriate (eg not avoiding LDR, but avoiding LD and stimulating R)
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 used mutiple sources but looked speficically for data/evidence-based references, not for opinions or perspectives.

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.	OK. An executive summary where the key messages are highlighted and the degree of confidence indicated has been included.
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.	We have added a list of abbreviations and glossary items. Key terms used by many chapters were also defined in Chapter 1
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.	We have added a list of abbreviations and glossary items
German government	0	0	general comment on FOD LDRA	Ensure that perscriptive 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)"; "indigeneous 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 made.
German government	0	0	general 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).	The Aichi targets and the SDG were addressed in synthesis tables in chapter 8, Section 8.4
German government	0	0	general 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).	No specific action taken in the chapter text. Chapter 1 deals with overarching issues, such as this one.
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 accordiningly throughout the assessment report (all 8 chapters).	Included and used as defined in the glossary
German government	0	0	general 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.	This has been addressed in the Glossay and used as such
German government	0	0	general comment on FOD LDRA	Regarding figures, tables, photos/images: Ensure in the *second order draft* and the associated SPM that the **quality of all visual materials should be high.**	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 targetting 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 refering to different statistical sources. We strongly encourage you to develop **comprehensive chapters-spanning tables and figures on similar issues** in order to align information throughout the 8 chapters so that strong key messages can emerge.	A set of cross chapter drivers, trends is used, including policy instruments.
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.	References have been provided.
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 referece 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.	OK. Text will be editted in a later stage

Hamid Custovic (SPI)	0	0	general 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.	Although text will be edited is a later stage, initial editing has been carried out by the coordinating lead authors to ensure readability of the chapter
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 approved Scoping Document approved for the assessment (please see annex VIII to Decision IPBES-3/1)
Hamid Custovic (SPI)	0	0	general comment on FOD LDRA	We encourage the authors to elaborate on how land degradation/restoration can seamlessly integrate agriculture, ecosystems services and biodiversity.	This is addressed in section 8.4.1. Chapter 8 also addresses sevaral cases in which agriculture is a driver of degradation and restoration.
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	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: – Executive Summary 1. Key Findings 2. Critical Implications 3. Gaps in Knowledge and Data 4. Recommendations 5. FAQ	All chapters have an executive summary. The SPM will address all other items
Peter Onorato	0	0	general comment on FOD LDRA	A clear and consistent structure, along with key findings and recommendations, could be of great benefit to policy makers.	
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	Our assessment will highlight contested ideas/findings, and report those using the IPBES Confidence terms. The arguments presented in this draft were significantly reviewed, edited and reduced in the subsquent versions of the report

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.	Relevant SDGs have been addressed in a synthesis table Section 8.4.
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.	This was addressed at the Second Author meeting; portions off text were excanged or deleted to eliminate unnecessary overlap. Section titles were also edited to reduce length.
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 full assessment has gone through multiple revision rounds and streamlining across chapters. Better linkeages between chapters have been developed in the final draft.
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".	The full assessment has gone through multiple rounds of revisions by authors and co-chairs. Please see the final draft of the assessment.
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.	Land restoration decision making opportunities and limits and instruments are hightlighed/sythesized in section 8.2 and 8.3
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.	We have discussed the relevant decision making strategies for as many landuse categories as we can including Rangeland, cropland, forest, wetland and built-up areas

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. 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.	Thank you for this comment. You present a valid point, but it is not relevant for Chapter 8, under the agreed upon scoping.
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 scientiific 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 inapproriate overlap (policy tools were moved to Chapter 8.2, instruments stayed in 8.3)

Meredith Root-Bernstein	Chapter 8	0	0		General : This chapter is fine, my only comment is that although there is discussion about integrating ILK into decision making processes, I think there could be a deaper discussion about how knowledge coming from other worldviews (as considered in previous chapters, especially Chapter 2) can be integrated with scientific knowledge for decision making. For example, one approach is to extract a few "facts" from ILK, assess how much they agree with scientific knowledge, and then consider that ILK has been validated and consulted or something like that. Alternatively, one might observe local or indigenous management systems , assisting local people in validating or updating their practices with reference to national or international programs, through setting up monitoring programs. And so on. Given that worldviews of local people may be such that the incentives for practice and understandings of how things work are not entirely compatible with scientific practice and technical approaches to management, how does one incorporate ILK into technical decision making? ILK is not just a collection of facts ready to be incorporated into decision making processes, and I think this requires more discussion.	We explored options to incorporate ILK into decision making. Addressed in 8.2, 8.3 all and in 8.4.3
Ashish Upadhyay	Chapter 8	0	0		General: Tools of GIS, Remote Sensing, GPS and Ground Truthig study through we can analyse the details level and accurate land degradation and restoration for decision making	Spatial approaches are discussed in section 8.2
Hamid Custovic (SPI)	Chapter 8	0	0		General: This chapter presents different approaches. But it does not assess their ability to reach the objectives for which they have been developed. A more detailed discussion on pros and cons of decision support tools is need here.	We have drafted a synthesis table, aligning decisionmaking objectives and tools and instruments based on evicence, where possible
Hamid Custovic (SPI)	Chapter 8	0	0		General: This chapter should further explore and discuss state-of-the-art of decision support literature, and also refer to previous chapters, which provide material on land-use practices and avoid redundant information in the assessment.	This has been done.
German government	Chapter 8	0	0		General: In section 1.1.2 (page 3) the terms "restoration" and "rehabiliation" have been introduced/defined. In the same chapter, in Figure 1.1 (page 4), both terms are used. It is therefore important to continue using both terms - and not only the term "restoration". Reason: "restoration" and "rehabilitation" will require different intervention measures that need to be taken into account in LDR decision-making.	Restoration is used in as an umbrella term, including rehabilitation. Is now addressed and introduced in Chapter 1
German government	Chapter 8	0	0		General: Discussions in Chapter 8 are very much focused on "soil" and "soil examples" to explain decision support to address land degradation and support restoration. Focus more on biodiversity and ecosystem-related issues from the "land" perspective (see comment provided for chapter 2, page 19, lines 750-762).	Agreed. Focus of the chapter has been directed to biodiversity other than soil Section 8.2 should and 8.4 should make sure all land degradation aspects are addressed (see chapter 4)
German government	Chapter 8	0	0		General: The discussions in chapter 8 provide interesting insight into activities of the EU, especially in the soil sector. As the thematic assessment on land degradation and restoration should provide a solid contribution to the IPBES global assessment of biodiversity and ecosystem services (deliverable 2c), it is necessary to include examples from other regions as well. It may also be useful to check the regional assessments "Africa"; "the Americas" and "Asia&Pacific" in order to ensure a more balanced regional approach in chapter 8.	Agreed. LDR information from other regions has now been included.
German government	Chapter 8	0	0		General: Regarding Boxes: It is appreciated to underline issues with boxes (such as on ILK). We strongly encourage the authores to add boxes on applications of the different decision support tools!	We added boxes of decision support tool uses from different categories (GIS, guideline, C-B, etc), section 8.2

German government	Chapter 8	3	4	3	4	The executive summary of chapter 8 should show in the *second order draft* of this assessment, how key findings can feed into decision making mechanisms targetting the Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets and contribute to the IPBES global assessment (D2c).	An executive summary has been added. In section 8.4 of the final chapter, progress regarding the Aichi targets is added.
Rob J.J. Hendriks	Chapter 8	3	31	3	35	In order to better serve the interests of policy makers as target audience it might be considered to reverse the order of paragraphs 8.2, 8.3 and 8.4 so it would better match the policy cycle.	Overall structure will be kept, in line with the scoping document, content of sections is revised and moved where neccessry
M. Y. Yazdandoost	Chapter 8	4	56	21	575	Regarding decision making, the bridging gaps like: policy, legislation, institutional behavior, individual ethics and social responsibility may come somewhere in the text.	These issues are included in section 8.3
M. Y. Yazdandoost	Chapter 8	5	57	43	1425	Moreover, discussion of the following points will give better shape to the chapter: (1)• Interdisciplinary platform of sharing on climate risk to further land degradation and social security; (2) • Scientific advances and policy tools to address the biocomplexity ;aspects of land degradation and restoration; (3) • Policy dialogues and strategies for adaptation, mitigation, and sustainable growth.	1) data sharing need in section 8.2.3, 2)scientific advanges are addressed in earliers chapters 3,4,6 complecity and policy tool in 8.2.3, 3) included in 8.4
Ashish Upadhyay	Chapter 8	5	65			Maps of the wilderness continuum were drawn up using a Geographic Information System (GIS)-based methodology and the latest and most detailed data available for Europe (EU member states plus Norway, Switzerland and the Balkans). This incorporated information on population density, land cover/use, transport and accessibility, and topography.	We had looked into the social aspect of it in the document which indirectly addressed the points raised. However, with the concern to control the size of the chapter with its sub-headings being explicit in these variables is difficult.
Ashish Upadhyay	Chapter 8	5	65			APPendix 1: Summary of land degradation assessment approaches reviewed http://www.unulrt.is/static/fellows/document/taimi.pdf	Different methods are included our land degradation assessment
Ashish Upadhyay	Chapter 8	5	65			APPendix 2: Land degradation assessment (criteria and methods) http://www.unulrt.is/static/fellows/document/taimi.pdf	We have looked at the criteria
Ashish Upadhyay	Chapter 8	5	65			A comprehensive analysis of the typical spectral characteristics of various types of land degradation can be conducted on the basis of previous studies, Field investigations, and remote sensing data of a variety of spatial and temporal resolutions in combination with the application of the RS and GIS techniques.	Agreed. Section 8.2.2 hightlights the importance of RS and GIS in LD identification
Ashish Upadhyay	Chapter 8	5	65			There have been many studies to identify and assess grassland degradation in China. With assistance of RS and GIS, the vegetation pattern is regarded as a Good indicator to monitor vegetation dynamics and assess grassland Degradation (Li et al. 2012).	Thank you. We only included new references in order to included new findings in the assessment (RS is well established)
Ashish Upadhyay	Chapter 8	5	65			The use of satellite – based imagery and remote sensing techniques to identify the magnitude and processes of land degradation at different levels has increased recently. This involves the use of Normalized Difference Vegetation Index (NDVI) derived from Advanced Very High-Resolution Radiometer (AVHRR) data. This	Thank you. We only included new references in order to included new findings in the assessment (RS is well established)
Ashish Upadhyay	Chapter 8	5	65			Groundtruthing was done by comparing the Le et al. (2014), Landsat and MODIS data with FGD perception about trend of land cover change. FGD results in villages which experienced land degradation showed high degree of agreement with Landsat and MODIS data results. Bantanto, Gomone, and Niassene communities 'assessment of land degradation was consistent with all three satellite data while only one community which remote sensing data showed improvement (Diakha Madina) was perceived by FGD participants to have improved	Thank you. We only included new referencesin order to included new findings in the assessment (RS is well established)
Ashish Upadhyay	Chapter 8	5	65			The earliest assessment of land degradation was biophysical and focused at the farm level, resulting in the formulation of the Universal Soil Loss Equation (USLE) (Wischmeier, 1976). Early attempts to assess land degradation at larger scales, such as at river basin and bio-regional scales, and with a combination of remote sensing and ground-based techniques, have encountered difficulties mainly due to the lack of financial resources and the limits of those technologies.	We have added this reference.

Ashish Upadhyay	Chapter 8	5	65			Analysis of low and high-resolution satellite data and airborne imagery (e.g. analysis of composite indices such as the Normalised Difference Vegetation Index (NDVI)). Remote sensing always includes linkages with ground observations. The basis of this method is comparison of remotely sensed imagery of different dates, for regional coverage mainly low-resolution imagery; and specifically, comparison of the Normalised Difference Vegetation Index (NDVI, of NOAA and more detailed imagery). This method was tested in Saudi Arabia and shows areas where vegetation response to rainfall is decreasing (degradation of resources) or increasing (rehabilitation of resources). It has been particularly applied to early warning systems. For longer-term comparisons, some form of calibration for preceding rainfall is needed. Costs are relatively low. It is recognised that remote sensing cannot be used alone. - LADA Method	Vegetation indices as indicator of degradation status has now peaked up as it is easy to make the anlysis at a larger scale. In the advent of hyperspectral data, space borne information could be used as a transfer function (with adequate groundtruthing) to extend the capabilities to a larger scale. Despite the many methods and techniques, we used only relevant information to cut short the length of the chapter. However, we have incorporated the references on hyperspectral data techniques to populate the spatial extent of degradation based on a transfer function.)
Gengxing Zhao	Chapter 8	5	67	6	112	There should be identify the information, knowledge and decision support tool of land degradation specifically.	Clarified in 8.2
Victor M. Castillo (UNCCD)	Chapter 8	5	79	5	80	A comprehensive analysis of the scientific basis for an integrated analysis of land degradation processes is including in Reynolds et at. 2011Land degradation and development 22: 166-183. See more comments that could of interest for this matter on page 6	Reference added
Victor M. Castillo (UNCCD)	Chapter 8	5	84	5	86	In order to properly design land restoration intervention and identify targeted areas the land degradation assessment need to be complemented with a land potential assessment (see for the UNEP- IRP Panel publications on *Unlocking the Sustainable Potential of Land Resources: Evaluation Systems, Strategies and Tools*)	Land potential assesment has been included in Chapter 8
German government	Chapter 8	6	118	6	122	Also take into account satellite based information.	Added
Ashish Upadhyay	Chapter 8	6	124			The purpose of GLASOD was to provide factual information, to replace sweeping statements about soil and land degradation, and to raise awareness of policy makers and governments for the continuing need for soil conservation (Bridges and Oldeman, 1999). GLASOD is the only approach that has been applied on a worldwide scale. It is based on responses to a questionnaire which was sent to recognized experts in countries around the world.	Statement added.
Ashish Upadhyay	Chapter 8	6	124			The ASSOD is a follow-up activity of GLASOD in South and South-East Asia (ISRIC, undated). The same methodology, slightly refined, was used on a more detailed scale (1:5M). The study provides data for 17 countries and includes data on several degradation types including water and wind erosion and their subtypes (e.g. loss of topsoil and terrain deformation, in millions of hectares) and the dominant subtypes of chemical deterioration (including salinization).	Added
Ashish Upadhyay	Chapter 8	6	124			In the ASSOD study, the degree of soil degradation is expressed by degradation subtypes using qualitative terms such as impact on productivity (negligible, light, moderate, strong, or extreme impact). Classification is based on estimation of the changes in productivity and also takes the level of management into consideration. Changes in productivity are expressed in relative terms, i.e. the current average productivity compared to the average productivity in the non-degraded situation (or non-improved, where applicable) and in relation to inputs (ISRIC, undated). Compared to GLASOD, the ASSOD study is more detailed and thus also more accurate. A comparison of the studies was presented by van Lynden and Oldeman (1997).	Thank you. ASOD is added to the revised chapter

Victor M. Castillo (UNCCD)	Chapter 8	6	124	6	160	Key references to the most recent development in integrated land degradation assessments are missing. See for example: Hill et al 2008 Global and Planetary Change 64:146-157, Hellden 2008 Global and Planetary Change 64:158-168, Zucca et al 2012 Ecological Indicators15:157-170, , Ibanez, J. et al 2008 Ecol. Model 213:180-193 del barrio et al, 2010 Remote Sens. Environ. 114, 1817-1832Martinez-Valderrama et al 2016, Science of Total Environment 563-564:169-178. These approaches overcome some of the limitations showed by former assessment methods by focusing on driving factors and system dynamic more than on empirical, most often a final stage, symptoms of land degradation (Veron et al 2006 Journal of Arid Environment 66; 751-763). They integrates integrating the emerging concept coupling socio-economic and ecological aspects of land degradation, the non-linearity behaviors of dryland systems, identifying g slow and fast variables and so on. Against this background it therefore cannot be said that assessment made by using these new approaches lack of a scientific rigor	Some reference added, thank you.
German government	Chapter 8	6	124	7	160	Shouldn't one put this long list of tools into a box and report in the main text corpus only in a summarizing way? There are too many details given in this section without a red line to follow. Table 1 later on fulfils this task, so less details in the main text would be appreciated.	We revised the table to not replicate table content in body text.
Victor M. Castillo (UNCCD)	Chapter 8	6	145	6	145	CORINE is not a modelling technique but a programme run by European Environmental Agency for coordinating environmental information	Agree. Corrected
Rob J.J. Hendriks	Chapter 8	7	168	7	170	Language not clear.	Rephrased
Royal C. Gardner	Chapter 8	8	180	9	181	Given the emphasis throughout the assessment about wetlands, wetlands should be included in the table. As noted in comments on chapter 3, see the discussion on pages 13-14 of http://www.ramsar.org/sites/default/files/documents/library/cop12_doc23_bn7_sowws_e_0.pdf about JAXA's Global Mangrove Watch and the ESA's GlobWetland Africa projects with Ramsar. For national level assessments, examples include the US Fish and Wildlife Service's Wetland Status and Trends reports at https://www.fws.gov/wetlands/Status-and-Trends/index.html. Note as well the recent US EPA national assessment on wetland condition: https://www.epa.gov/national-aquatic-resource-surveys/nwca.	We updated the table with references mentioned for wetlands
Victor M. Castillo (UNCCD)	Chapter 8	8	180	9	182	Information provided by the Table 1 may be completed with most recent development in land degradation and assessment methods and approaches. Some references have been given in previous comments. Other can be found on the special issue of Land Degradation and Development 2011 vol 22 on Understanding Dryland Degradation Trends	We revised the table based on new criteria (DST category, system addressed).
Fujiang Hou	Chapter 8	8	181	8	Table(c)	What 's mean "Rangelands systems"?	Explained
Fujiang Hou	Chapter 8	8	181	8	Table(b)	Here, several terms"Drylands, rangelands, grasslands and deserts" make confusion.	Added to glossary
Fujiang Hou	Chapter 8	8	181	8	Table(c)	Grasslands, which oftern are grazed by livestock, belong to agricultural lands. Some of forests as well.	True. Specified in glossary
Fujiang Hou	Chapter 8	9	181	9	Table(d)	The concepts of cropland and grassland overlap each other because sown pasture belongs both to cropland and grassland. Grassland and desert as well.	True. Specified in glossary
German government	Chapter 8	9	184	9	185	Regarding the statement *"Scenarios can be used to assess the dimensions of future land degradation"* : Also refer to the summary for policymakers of the assessment on the methodological assessment of scenarios and models of biodiversity and ecosystem services (IPBES/4/19).	We have cross- referenced to Chapter 7

Fujiang Hou	Chapter 8	10	220	11	242	Expert system, ES, is a simple, comprehensive and accurate tool for decision makers.	Expert systems are mentioned now.
Rob J.J. Hendriks	Chapter 8	11	238	11	239	Language not clear.	Adjusted
Victor M. Castillo (UNCCD)	Chapter 8	11	245	11	258	Information and case studies provided are very much focused on contaminated soils. The text could greatly improve by referring to other tools linked to land degradation see for example: DESIRE project at http://www.desire-project.eu/. Reed et al 2011 Land Degradation and Development 22 261-271 Schwilch 2012 Applied Geography 34:86-98	Reference added
Markus Giger	Chapter 8	12	274			Reference needs to be made to the FAO/WOCAT decision support framwork. FAO and WOCAT network have proposed a framework for decision support for selecting SLM technologies, based on the DESIRE project experiences in 15 countries. This is of importance as WOCAT is the official UNCCD repository for SLM technologies and this methodology has already been tested and is practice-oriented. It would be worth to summarize the methodology proposed by this network, as much practical experience from many stakeholders have influenced this result. Ref: Schwilch, G., F. Bachmann, and J. De Graaff. "Decision support for selecting SLM technologies with stakeholders." *Applied Geography* 34 (2012): 86-98. (This paper reviews application of the DESIRE-DSS in a variety of biophysical and socio-economic contexts, finding it to be well structured, holistic, and relatively easy-to-apply. The built-in global database of SLM options provides knowledge from various environments, while the use of simple software enables easy calculation and visualisation of results. The scoring and negotiation of each option's sustainability forces stakeholders to consider and acknowledge each other's positions and opinions, ensuring that the final choice is well-accepted. The methodology includes seeking commitments from stakeholders to implement the selected option(s). See also: Schwilch, G., Bachmann, F., Liniger, H.P. Appraising and selecting conservation measures to mitigate desertification and land degradation based on stakeholder participation and global best practices (2009) Land Degradation and Development, 20 (3), pp. 308-326 Also: https://www.wocat.net/en/methods/decision-support.html	Thank you. References were added
German government	Chapter 8	12	306			After having presented all the different approaches one would expect at least some judgement or evaluation by the authors on the pros and cons of each methods regarding the objectives it is targetting.	True, synthesis was lacking. We added"purpose/requirements" column.
Hamid Custovic (SPI)	Chapter 8	13	314		Table 2	in restoration solutions. Each tool needs to be discussed regarding its useability to	column. Specify in this eg level of data needs, skill needs, level of
Hamid Custovic (SPI)	Chapter 8	13	314		Table 2	Include in Table 2 the Resilience Adaptation Pathways and Transformation Assessment Framework (RAPTA), which is a multistakeholder approach to management of complex social-ecological systems, that assists ladn managers to devise and implement intervention strategies. RAPTA was acknowledged in UNCCD Decision 21/COP.12. (Report of the 12th session of the COP, ICCD/COP(12)/20/Add.1UNCCD COP12) RAPTA is available at http://www.stapgef.org/the-resilience-adaptation-and-transformation-assessment-framework/	Thank you. The table does not show an exhaustive list of tool, only examples of some commonly used tools. We suggest the reviewer to added this tool to the online list found at https://www.ipbes.net/policy-support
German government	Chapter 8	14	324	14	325	Regarding the statement that *"... scenarios are not predictions of the future; they merely highligh possible plausible futures"* : Please refer to the summary for policymakers of the assessment on the methodological assessment of scenarios and models of biodiversity and ecosystem services (IPBES/4/19).	Reference is added.

Lim Li Ching	Chapter 8	15	352	15	387	A very nice example of how ILK can contribute to mitigating land degradation. Such agroecological practices are the basis of farmers' knowledge and indigenous agricultural systems. There is a need to re-evaluate indigenous knolwedge as a key source of information and this becomes even more pressing in the face of climate change. A useful reference is Altieri & Koohafkan (2008). Enduring farms: climate change, smallholders and traditional farming communities. Third World Network Environment and Development Series 6.	Thank you.
Rob J.J. Hendriks	Chapter 8	18	472	18	473	Probably an important sentence, but point not very clearly formulated.	Rephrased
German government	Chapter 8	18	477			Figure 3: Visually improve the links between the terms "Agenda setting"; "Planning & Design" and "Implementationn & Managment" with the comment boxes (maybe by using different colours?). Currently the 3 terms are somewhat hovering around the circle diagram.	Done
Victor M. Castillo (UNCCD)	Chapter 8	18	487	18	489	On selection of indicators for land degradation assessment, references should be made to recent work developed by the UNCCD to establish a monitoring and evaluation framework for the 10-years Strategic Plan In doing this work the UNCCD was guided by the recommendations made by a Group of Technical Experts (UNCCD 2013 http://www.unccd.int/Lists/OfficialDocuments/cop11/cst2eng.pdf The recommendations reflect the advance made in the field of indicators for the assessment of LDD. It includes among others: (i) , the adoption of a conceptual framework to select , organize indicator sets and applied to LD (Niejmeier, de Groot, 2008 Ecol. Ind. 8 : 14-25. : Orr 2011 cientific review of the UNCCD provisionally accepted set of impact indicators to measure the implementation of strategic objectives 1, 2 and 3: White APer version 1 UNCCD , Bonn http://www.unccd.int/en/programmes/Science/Monitoring-Assessment/Documents/White%20paper_Scientific%20review%20set%20of%20indicators_Ver1.pdf) (ii) the integration of cross-scale indicators from global to national, locally-relevant indicators as proposed by the approach followed by Sommer et al, 2011 Land degradation and Assessment 22: 184-197 and Zucca et al. 2012 Ecological Indicators 157-170 to prepare the 3rd edition of the World Atlas of Desertification . A initiative leaded by the EU-Joint Research Center; and (iii) to promote Participatory and multi-criteria approaches to best integrate the changing goals and perceptions of the different stakeholders (reed et al 2008 Ecol. Appl 18: 1253-1269	Reference added
Victor M. Castillo (UNCCD)	Chapter 8	19	538	19	539	Schwilch et al. 2011 LDD 22: 214-225 provide examples of experiences on monitoring sustainable land management practices to address land degradation	Reference added
Hamid Custovic (SPI)	Chapter 8	21	576		Section 8.3	Add a section on the role of standards and certification, which may be region or sector-based; voluntary or mandatory. Include mention of the upcoming ISO standard ISO 14055-1 Environmental management -- Guidelines for establishing good practices for combatting land degradation and desertification -- Part 1: Good practices framework, due to be published in early 2017. see http://www.iso.org/iso/home/news_index/news_archive/news.htm?refid=Ref2053 Add text on the efforts to devise frameworks for selection of indicators - ie principles/criteria/indicator frameworks for sustainability assessment in forestry and agriculture (there are many examples: eg Montreal Process for SFM, FSC, PEFC; for	Addressed in Chapter 6
Royal C. Gardner	Chapter 8	21	578	21	578	Policies are environmental governance? That seems unclear and inconsistent with previous use of the term policy. Perhaps the development and implementation of environmental policies are an aspect of environmental governance?	Rephrased

German government	Chapter 8	21	578	21	579	Include the term "rehabilate". See bold addition: *"… - are often paramount to restore **and/or rehabilitate** degraded areas or prevent land degradation".*	Rehabilitations is part of restoration. This is specified in Capter 1 and glossary
Victor M. Castillo (UNCCD)	Chapter 8	22	596	26		Section 8.3.1: A more extensive reference to global policy instruments is needed. Part of the section is particularly biased from an a European perspectives , making a lot of references to European tools and instruments. In particular a clear reference to the UNCCD as a legally binding agreement to protect land, halt land degradation and restore degraded land is missed	The text has been extensively revised and refocussed on land, also non-EU
German government	Chapter 8	22	596	26	759	The entire discussion on "Type of legal instruments" is strongly focused on soil issues. It is necessary to strengthen discussions on legal and regulatory instruments directly addressing biodiversity and ecosystems services. Regarding the use of "land" and "soil" in this section, expand on the relationship between both as provided in the following document: ICCD/COP(12)/CST/6 (check also the statement in chapter 2, page 19, lines 750-762).	The text has been extensively revised and broadened to land degradation.
German government	Chapter 8	22	596	27	798	With reference to section 8.3.1 titled "Legal and regulatory instruments": In this context, degradation particularly relates to the deterioration in the usability of ecosystems for the biotic production. The description is very abstract. The section mainly deals with various international instruments, such as hard law or soft law. It is not possible to verify the description. Please provide clearer picture.	The text has been extensively revised and refocussed on land degradation (instead of soil)
German government	Chapter 8	22	596	27	798	With reference to section 8.3.1: The instruments described in this section are generally suitable. However, it should be noted that soil is <u>one</u> environmental factor among many in the landscape. Therefore, it should not be focused on the "soil", but take advantage of the structure of the environmental factors in the endangered landscape in this chapter.	The text has been extensively revised and refocussed on land degradation (instead of soil)
Royal C. Gardner	Chapter 8	22	603	22	605	I disagree with the statement that environmental law in many countries has the tendency to enable decision-makers to ignore wider factors that affect soil. Many countries require (in concept) EIAs that call for these factors to be taken into account. It's not the law itself that is the problem, but perhaps the lack of a mechanism to enforce the law as written.	EIA and enforcement have been added
Hamid Custovic (SPI)	Chapter 8	22	606			Soil and land degradation are mentioned side by side. What is the relationship between both? Is soil not part of land? Include a definition of land so that the relationship becomes clear.	Explained in Chapter 1 and Glossary.
German government	Chapter 8	22	606	22	610	Please also expand on measures for 'hazard control' or 'averting danger'.	This section has been rewritten.
Hamid Custovic (SPI)	Chapter 8	22	611	25	726	Type of legal instruments are directed towards soil. What about other legal instruments for instance for biodiversity or water?	The text has been extensively revised and broadened to land degradation.
German government	Chapter 8	22	611			Take into account agricultural regulations like sewage sludge ordinance, fertilizer directive etc.	The text has been extensively revised, however, these specific directives have not been added
Royal C. Gardner	Chapter 8	22	624	22	627	It may create a misimpression to lump international conventions and national laws into the same "hard" law category. Many MEAs lack specific mandatory requirements but instead create a framework for cooperation. For example, Harrop and Pritchard (2011) suggest that CBD does not operate as hard law: http://www.sciencedirect.com/science/article/pii/S095937801100015X	THe disucssion on soft and hard law has been removed from the text.

Royal C. Gardner	Chapter 8	23	638	23	638	The statement that there are very few hard law or specific legal tools directed toward LDR is contradicted by the later discussion about EU laws on page 36, line 1124 and following. In addition, the US has a long history of legal tools directed at land restoration (e.g., the Wetlands Reserve Program), although this assessment might characterize that as an economic instrument.	THe disucssion on soft and hard law has been removed from the text.
Victor M. Castillo (UNCCD)	Chapter 8	24	675	24	684	Mention need to be made to the objective of the convention art 2: the objective ..is to combat desertification and mitigate the effects of droughts in countries experiencing serious drought and /or desertification..through effective action at all levels, supported by international cooperation and partnership arrangements in the framework of an integrated approach which is consistent with Agenda 21m with a view to contributing to the achievement of sustainable development of affected areas. Parties signatories to the Convention that considered themselves as affected 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	This section has been rewritten and multiple aspects of the UNCCD have been included
Victor M. Castillo (UNCCD)	Chapter 8	24	685	24	692	The national responses to the UNCCD is given by the National Action Programmes. Article 9 of the Conventions says that In carrying their obligations affected country parties shall prepare, make public an implement national action programmes. Content of the national action programme are regulated by article 10 of the Convention. They include, as appropriate, inter alia measures in the filed s of: sustainable management of natural resources, sustainable agricultural practices. It shall give particular attention to the implementation of preventive measures for land that are not yet degraded or which are only slightly degraded. The content of the NAP are being modified (article 4 of respective annexes)according to the particular conditions (article 2) for each of the 5th Regional Implementation Annexes addressing a wide variety of driving causes of desertification from socio-economic to climate change as soil and land degradation process form water and wind soil erosion to soil contamination	This section has been rewritten and multiple aspects of the UNCCD have been included
German government	Chapter 8	24	690	24	690	The definition of "artificial soil" needs to be provided.	Rephrased
German government	Chapter 8	24	702	24	703	The authors state that many practices that are not intended to directly protect soils can also have a direct and positive effect on it. This statement rather leads to the perception of soils being an integral part of land. Therefore, please explain, why chapter 8 mentions "soil" and "land" separately, as if they are not really interconnected. (see also lines 705-706, where soil is *"considered as an interface, a filter"*).	The text has been extensively revised and refocussed on land degradation (instead of soil)
Victor M. Castillo (UNCCD)	Chapter 8	25	727	25	759	It is our understanding this text should refers to land instead of soil. Land is a broader concept that encompasses soil vegetation and water resources that is perceived by the user , and owners, of the territory. In this senses we would need to quote Reynold and Stafford-Smit 2002 referring “while this is a term (land degradation) often equated with soil degradation, it is a more general phenomenon that involves ecosystems” (In Reynolds& Stafford-Smith; Do Human Cause Deserts? Pag 3 in Reynosld, J.F and Stafford-Smith eds : Global Desertification: Do Human Cause Desert. Dahlen University Press	The text has been extensively revised and refocussed on land degradation (instead of soil)
Royal C. Gardner	Chapter 8	26	749	26	749	The sentence about conflicts (direct and insidious indirect) is unclear. What does this mean?	Rephrased

German government	Chapter 8	26	761			Shouldn't one focus more on self-enforcing local mechanisms based on cooperation of local user groups in case the state law machinery does not lead to successful enforcement as a kind of second best in those countries where the ideal does not work?	In section 8.3 we focus on national level policy instruments, and competencies at other deciosn making levels have also been discussed
Marina Rosales Benites de Fra	Chapter 8	26	770	26	771	Law enforcement problems are often related **with a lack of governance, favored with abundant and unclear legislation usually develop at centralist policies.**	Law enforcement challenges have been added to 8.3
German government	Chapter 8	26	777			Before talking about better communication it may be more coherent to discuss whether and how customary, more infromal law and reconciliation could be harmonized with statutory law.	More discussion on the integration of instruments has been included in section 8.3.6
German government	Chapter 8	27	801	27	802	In some countries/regions, the legal environment can be confronted with a lack of harmonization of customary and statutory laws, resulting in them contradicting each other This could challenge measures for decision support to address land degradation, restoration or rehabilitation because user rights, access rights, control rights, transfer rights and tenure security may differ between the state and customary institutions. It is therefore important to further elaborate on this issue in this chapter. It would also be very useful to include one or two concrete examples on the effects of a lack of harmonization of customary and statutory laws, or even a success story.	More discussion on the integration of instruments has been included in section 8.3.6
Joel Houdet	Chapter 8	28	823	28	848	A strong emphasis should be put on ecological tax reform (different approaches, limitations and opportunities). A huge body of litterature on climate change / energy and water aspects.	Thank you.
German government	Chapter 8	28	823	29	890	With reference to 8.3.3 titled "Economic and financial instruments": The section is incomplete; it could therefore not be evaluated.	Agreed. The section has been developed
Royal C. Gardner	Chapter 8	28	825	28	828	Additional examples to encourage restoration include: restoration as a requirement to maintain eligibility for agricultural benefits; granting exclusive use or access to public lands; allowing increased bag limits and hunting seasons; and creating safe harbors from future regulation. See Gardner (2003) http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1129993	Thank you. On the ground responses are addressed in Chapter6
Royal C. Gardner	Chapter 8	28	829	28	843	The example from India is unclear.	The example has been clarified
German government	Chapter 8	28	844			Add the common agricultural policy of the EU.	Thank you.
Ian Dickie	Chapter 8	28	874			Accounting systems: as well as at national level (SEEA), also at organisation level – namely environmental profit and loss, Corporate Natural Capital Accounting, which	SEEA is added to sectio 8.3.3.
Royal C. Gardner	Chapter 8	29	877	29	878	A shift toward environmental stewardship is also much needed for restored lands.	Yes, we have broadened the context of ecosystem stewardship
German government	Chapter 8	30	932	30	933	The authors may wish to also analyse/consider the following recently published publication regarding the inclusion of para-ecologists in assessment and montoring activities in Namibia and in South Africa: Schmiedel, U., Araya, Y., Bortolotto, M.I., Boeckenhoff, L., Hallwachs, W., Janzen, D., Kolipaka, S.S., Novotny, V., Palm, M., Parfondry, M., Smanis, A., Toko, P. 2016. Contributions of paraecologists and parataxonomists to research, conservation, and social development. In: Conservation Biology, Vol. 30, No. 3, 506-519.	Excelent reference! Has been incorporated into text and reference list.
Victor M. Castillo (UNCCD)	Chapter 8	31	934	31	934	Reference should be also made to land user and managers	...and to promote the emergence of a new generation of scientists and land managers ... Text has been adjusted to include them.
Gengxing Zhao	Chapter 8	31	958	31	960	There could be a little more detailed on the analysis and understanding LDR using the information collected above.	More detail has now been added to this section.
Douglas Nakashima	Chapter 8	33	1000			8.4.3 Enhance synergies Further INVESTIGATE knowledge coproduction between western science and ILK, e.g.: - Sezdbek and Aibek 2016 (Kyrgyzstan): Case study of cooperation of Aigine CRC with	Thanks for the detail. The relevant reference (the edited book as a whole) has been added

German government	Chapter 8	33	1034			Please provide an example how to address complex social-ecological interactions and stakeholder involvement through an Social-Ecological System approach.	Where possible, examples of successful use of decissin support tools have been used to develop a consensus point have been given.
Hamid Custovic (SPI)	Chapter 8	34	1062		Section 8.4.1	This section should be shortened and deliver more on policy support tools based on key messages emerging from the assessment.	The section has been significantly shortened. We have added more information on policy support tools
German government	Chapter 8	34	1062			Section 8.4.1 gives a bit of the impression that it needs some more focusing. The first paras include a lot of repetition and "warming up" phrases. We encourage you to make the first paras shorter and punchier, and rather provide more information on policy support tools and key messages to support decision to address land degradation and support restoration of degraded land.	Section has been made shorter. The repetition has been removed. Additional information relevant for the section has also been accessed and included
Victor M. Castillo (UNCCD)	Chapter 8	34	1073	34	1078	The role of land management in mitigating and adapting to climate change is pointed out in two recent publications delivered by the UNCCD: Pivotal soil carbon (http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/2015_PolicyBrief_SPI_ENG.pdf) and Land matters fro climate: reducing the gap and approaching the target (http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/2015Nov_Land_matters_For_Climate_ENG.pdf). Authors will find there updated data on the potential of land and soil to synergistically address land degradation and climate change issues	Thank you for this invaluable information. We have made use of the relevant information
Royal C. Gardner	Chapter 8	35	1088	35	1092	In addition to UNCCD's indicators, you may wish to reference the indicators for the Ramsar Strategic Plan, adopted by Resolution XII.2.	Thank you for this invaluable information. We will make use of the relevant information
Victor M. Castillo (UNCCD)	Chapter 8	35	1088	35	1092	See comments before on the objectives of the UNCCD	Thank you for this invaluable information. We will make use of the relevant information
Victor M. Castillo (UNCCD)	Chapter 8	35	1092	35	1092	In March 2016 the UN Statistical Commission approved draft global indicator framework intended for the follow-up and review progress towards SDGs at the global level. The indicator for SDG 15.3 “by 2030, combat desertification, restore degrade land and soil, including land affected by desertification, drought and flood, and strive to achieve a land degradation neutral world is “Proportion of land that is degraded over total land area” this indicators is composed of three sub-indicators land cover and land cover change; land productivity and carbon stocks above and below grounds that were already adopted by the UNCCD as part of the country reporting mechanism	Thank you for this invaluable information. We will extract the relevant information
German government	Chapter 8	35	1095	35	1097	Provide a reference for the statement that agricultural activities are an important driver of land degradaiton and responsible for approximately 80% of deforestation worldwide.	In the process of refining this section, the referred to statement was removed. There is, therefore, no more need for this reference
Victor M. Castillo (UNCCD)	Chapter 8	35	1107	35	1112	On the relationship between land degradation and climate change, one of the most recent reference is the impulse report produced for the UNCC 3rd scientific conference on “Climate change and desertification: Anticipating, assessing & adapting to future change in drylands” available at: http://3sc.unccd.int/documents-outputs/preparatory-documents/impulse-report	Thank you for this invaluable information. We have extracted the relevant information
Royal C. Gardner	Chapter 8	36	1124	38	1215	This section seems to be very EU-centric. At an appropriate place the US Agricultural Conservation Easement Program (which applies to wetlands, grasslands, forests) could be discussed: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/easements/acep/?cid=stelprdb1242695. It might also be helpful to refer to Jenkins et al. (2010) who found that the estimated social value (ES) of Wetland Reserve Program lands surpassed the value of government payments for restoration in one year: http://isiarticles.com/bundles/Article/pre/pdf/14437.pdf	Thank you for this invaluable information. We have extracted the relevant information

Victor M. Castillo (UNCCD)	Chapter 8	36	1137	36	1145	It is suggested including reference to the EU research programme on land degradation and desertification . They addressed land degradation under in a wider perspective that is not only limited to soil-related matter. A comprehensive information on these porjects can be found at: http://www.desire-his.eu/index.php/en/recent-european-research	Thank you for the reference. We have made use of it to help us broaden the scope of the assessment
Douglas Nakashima	Chapter 8	37	1208			8.4.1 [subsection]The Common Agricultural Policy BALANCE consideration of CAP with potential negative impacts of the tool, 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)	Thank you for the reference. It has helped us give a more balanced view of CAP.
Victor M. Castillo (UNCCD)	Chapter 8	38	1226	38	1234	Reference to SDGs should be made. In particular to SDG 15 and its target 15.3 by 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and flood, and strive to achieve a land degradation neutral world	Agreed. The reference has been added.
Fujiang Hou	Chapter 8	38	1240	38	1240	Please change "pasture" to "grassland".	The word has not been changed to grassland because the text here refers to land uses not land cover type. The word has instead been changed to "livestock grazing" to make it fit in with the rest of the uses indicated.
German government	Chapter 8	39	1249	39	1250	Provide a reference for the statement that *"land degradation over the next 25 years may reduce global food production by up to 12%"* .	The reference (IFPRI, 2012) has been added
Gengxing Zhao	Chapter 8	39	1259	39	1264	Fig.8.4. It seems all the national level policies on other areas are negative to national and global policies on LDR.	We have refined the diagram to show that the relationships between LDR policies and other policies could either negative or positive.
Victor M. Castillo (UNCCD)	Chapter 8	39	1259	39	1260	Figure 8.4: In the box on global policies on LDR mention should be made to the UNCCD; In the box on national policies of LDR mention should be made to the National action programme to combat land degradation and desertification	Agreed. We have added the suggested points.
Lim Li Ching	Chapter 8	43	1410	43	1413	The literature has plenty of examples of the benefits of agroecological approaches which combine science and ILK. See Altieri & Koohafkan (2008). Enduring farms: climate change, smallholders and traditional farming communities. Third World Network Environment and Development Series 6. 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 for the reference. We have made use of it to help us broaden the scope of the assessment