

External review of the second order draft of the land degradation and restoration assessment.

1 May - 26 June 2017

Chapter 8

Reviewer Name	Chapter / SPM	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	Response (from Chapter 8)
LI Qingfeng	All Chapters					Overall comments for the Book: 1,there seems too many repetitions in different chapters and sections for the subject matters of definitions, descriptions and explanations, etc., of "land degradation and restoration". Although they are necessary for each individual Chapters, it seems a little bit redundance if appearing in the same book. 2, The economical (cost-benefit) analyses, as well as the ecological assessments, behind the "Successfull stories", should be strenthened, if the stories are more convincing, in paticularly, if the success is backed with big "projects".	Checked. Most of the repetition was removed, except what was necessary to allow good text flow.
Germany	All Chapters					We urgently request the chapter authors to ensure that all facts and figures contained in the chapters are accurately cited and adequately referenced with up-to-date sources. We also encourage chapter authors to cross-check, whether the same facts and figures on a specific theme are being used throughout the assessment.	Facts and figures in chapter 8 have been checked for alignment and up-to-date referencing has been provided. All facts have also been aligned to the SPM
Germany	All Chapters					Please ensure that in all chapters information and case-studies are provided from all regions.	Most regions are covered in Chapter 8
Germany	All Chapters					We kindly request the co-chairs and chapter authors to ensure that the key findings emerging from each chapter are captured in the key messages of the SPM.	All chapter key messages were captured in the SPM that was presented at the 6th Plenary
Germany	All Chapters					Please include the concept on 'planetary boundaries' in your discussions.	Not in Chapter 8
Germany	All Chapters					Ensure that terminologies are used consistently throughout all chapters.	The Glossary was developed to ensure for consistency of use of terms
Germany	All Chapters					It is appreciated that each chapter starts with an "executive summary" Please ensure that all Figures/Tables have a high resolution quality. A glossary should be included that provides definitions/explanations of the frequently used terms Each chapter should also start with a list of acronyms/abbreviations used in the chapter. In some Figures and Tables colours have been used to outline status and trends in a regions or a country. It would be very helpful if the same colour is used for a country/region throughout a chapter and preferably throughout all 8 chapters. The term 'NCP' should be used consistently and with the exact wording provided in IPBES-5/1.	All points taken into account in Chapter 8. NCP was only used where appropriate
Germany	All Chapters					Ensure that definitions, facts, figures and trends outlined in the 8 chapters e.g. on the spatial extent of land degradation / the spatial extent of wetland / water / soil / urbanisation / deforestation / wild fires / conflict, etc... are consistent across all chapters.	Consistency has been checked across chapters for the final draft.
Germany	All Chapters					It is also not clear whether there is consistency between the chapters, what role agricultural lands have in the land degradation theme? Are they considered per se to be degraded sites or are they transformed lands, whose productivity can be negatively affected through severe exploitation? Clarification required.	Agricultural areas were used in both forms depending on context within a specific chapter

Germany	All Chapters					We strongly encourage the authors to check, whether information on certain issues has already been provided in one of the previous chapters of the assessment report. If this is the case, then it would be useful to avoid redundancies and rather consider cross-referencing between chapters. Sometimes the impression arose that there was no exchange between the authors of the different chapters.	Checked; cross referencing was done but there still remained some repetition remained.
Germany	All Chapters					We strongly encourage the chapter authors to ensure that their key findings are reflected in the key messages of the summary for policymakers.	All chapter key messages are reflected in the SPM presented at the 6th Plenary
Germany	All Chapters					We encourage the authors to spell out the acronyms when they are introduced for the first time in the text.	In Chapter 8, acronyms were defined at first appearance
Germany	All Chapters					All reference lists need to be rechecked regarding completeness, spelling and they also need to be structured in a similar style.	Done
Thomas Brooks	All Chapters					Congratulations to all authors for their great efforts towards delivery of this SOD	Thank you
Thomas Brooks	All Chapters					In many places, the report uses language like "biodiversity and ecosystem functions and services". I recommend deleting the "functions and" throughout. This would be consistent with a) the wording and intent of widely-accepted definitions of biodiversity (eg CBD, IPBES itself) that encompass all levels and types of genetic, species, and ecosystem diversity (see eg Noss 1990 Conserv Biol), and b) the IPBES conceptual framework, which i) includes composition, structure, and function of genetic, species, and ecosystem diversity in its "Nature/Mother Earth" component while ii) including ecosystem services/nature's gifts in its "Nature's Contributions to People" component.	Function is not used in Chapter 8
Astrid Hilgers	All Chapters					On the definition of land degradation: Agreement on baselines is a essential to set verifiable targets and track progress towards these targets. A natural state baseline, although it has some problems to solve, offers a fair and unambiguous reference to compare current and future state and trends. However, land degradation is a multidimensional issue, concerning the change in and trade offs between soil variables, vegetation, biodiversity components, water characteristics and many ecosystem functions and services. Consequently assessing any deviation from the natural state baseline of one or more of these factors as ' degradation' would result in the entire world being degraded. In this approach land degradation would lost its political utility. An alternative approach would be to map and quantify these changes compared to the natural state baseline without judging as ' degradation', and consider these changes as trade-offs, often unintentionally, from a particular use of the land such as forestry, cropland or housing. Whether these changes and trade offs are accepted or not and can be considered as degradation belongs to the political domain, not the scientific. This approach creates a strict distinction between measuring and assessing factual changes and the judgment whether it is acceptable or not, clarifying the different roles of science and politics, and taking away the barriers to fulfill their tasks properly.	The discussion on baselines has been nuanced and detailed in Chapter 1 and Chapter 2 of the assessment report.
Astrid Hilgers	All Chapters					The assesment, in specific the SPM and chapters 2 and 3, seem to be biased towards conservation agriculture as a solution, while a wider range of sustainable land management practices and other response options should be considered. Chapter 6 provides this wider range of options.	The final assessment report provides a more balanced view of sustainable land management practices.

						<p>More attention should be paid to the role that the private sector could play, in the SPM and throughout the document. References p.e.1. Levashova 2011 Opportunities and challenges for private sector entrepreneurship and investment in biodiversity, ecosystem services and nature conservation, Opportunities and challenges for private sector entrepreneurship and investment in biodiversity, ecosystem services and nature conservation. 2. Jenkins, Scherr and Inbar 2012 Markets for Biodiversity Services: Potential Roles and Challenges Journal Environment: Science and Policy for Sustainable Development 3. Business for Sustainable Landscapes, an action agenda, Scherr et al 2017, published by Ecoagriculture Partners and IUCN. 4. Scaling Up Investment & Finance for Integrated Landscape Management: Challenges & Innovations, Shames et al 2013, published by Ecoagriculture Partners 5. Finance for One Planet, Leenders and Bor 2016 www.rvo.nl/CoP_FINC 6. Scaling up investments in ecosystem restoration, policy brief Netherlands Assessment Agency, Sewell, Bouman, van der Esch 2016 http://www.pbl.nl/sites/default/files/cms/publicaties/pbl-2016-scaling-up-investments-in-ecosystem-restoration_2088.pdf 7. Outcome Statement – Global Landscapes Forum: The Investment Case 2016 http://www.landscapes.org/wp-content/uploads/2016/06/GLF-London-Outcomes-v02.pdf</p>	
Astrid Hilgers	All Chapters					Comments is addressed in Chapter 6	
Astrid Hilgers	All Chapters				the term NCP should be explained in the SPM and in the beginning of the document	This has been done, thank you.	
Finnish Government	All Chapters				<p>degradation against a baseline is well addressed in the LDR Assessment. However, there is obvious overlap and redundancy as well as some conflicting information between different parts of the assessment on the issue. In the SPM the key message B1 is related to the issue of baselines and it is well elaborated in the second part of the SPM with some text, a figure and a box. The issues covered are clearly referenced to the Chapter 2 where many of the statements are further elaborated and the issue is also well covered in the Executive Summary of Chapter 2. This is appropriate as according to the Scoping Document for the LDR Assessment the chapter 2 is requested to deal with concepts.</p> <p>The overlap and some conflicting messages can be found from chapters 1 and 4. While the nature of Chapter 1 is clearly introductory and as such treating the issue of baselines could be well justified, the messages it conveys relative to the SPM and Chapter 2 are conflicting. In the Executive Summary of chapter 1 the last point reads: "Degradation and restoration are both concepts which require a baseline to be measured (unresolved). (Box 1.1). The types of baselines which can be used are briefly discussed here, and elaborated in chapter 2." Here the confidence term 'unresolved' is contradictory to the very clear statement in the B1 of the SPM: "[Land degradation] is scientifically measurable (well established). Land degradation can only be measured in comparison to a baseline,...". It seems the confidence statement in the Ch 1 Executive Summary may be incorrect. It is hardly unresolved that a baseline is needed to measure amount of degradation or restoration.</p> <p>Somewhat similar statement is found in the Executive Summary of Chapter 4: "Land degradation takes place in both natural vegetation and on previously transformed land, so choice of an appropriate baseline against which to assess change is important (unresolved)". Again, the choice of confidence term may be incorrect. The statement is that appropriate baseline is important and this is likely to be well established.</p>	Not a comment for Chapter 8. Relevant points were treated in relevant chapters that were addressed in this comment.	
Finnish Government	All Chapters				C6. The word instrumental responses used in SPM, Ch 6 and 8 is kind of confusing. Legal responses are considered to be "enabling responses" not in the category of "instrumental responses". This distinction is problematic as legal instruments are also instrumental responses. I would rather say that well functioning legal and governance systems are enabling responses, while specific legal instruments such as environmental impact assessments, legal standards etc are instrumental responses.	Chapter 8 only deals with policy instruments and competencies to design and use them, included legal instruments.	

Caroline van Leenders	All Chapters					<p>I've been working in the financial sector since 2014. I've run a Community of Practice of 15 financial institutions on natural capital in The Netherlands and wrote the eBook Finance For One Planet with Iersso9ns and 12 stories from their practice. I'm now involved in helping DG Environment of the EC with moderating a Community of Practice of financials on biodiversity. See http://ec.europa.eu/environment/biodiversity/business/assets/pdf/mission-statement_en.pdf and I'm working on the start of a CoP FIs and sustainable Landscapes in Africa. I see more and more FIs interspersed in biodiversity and investing with a landscape approach. I think it is high time to make financial flows more visible and include private finance more. If you want any details please contact me!</p>	Addressed in Chapter 6
Virginia Meléndez Ramírez	All Chapters					<p>All the Chapter could start with an introduction and end with the conclusions, you could standardize the chapters + Several images in some chapters can not be seen well</p>	Chapter 8 starts with an introduction. It used the last paragraphs of the last section to tie the final knot. It avoids a conclusion because it would appear like it is a conclusion for the whole book.
Pavlos Tyrtogou and María José Rubial from the Panel of Experts on Soil Protection of the European Federation of	All Chapters					<p>Most of the document is ecology and agricultural orientated but there is a fair amount of water (surface and ground) and mining so there is some geology discussed but not in depth. We also miss a deeper assessment on the contribution of heavy industry in land contamination and degradation and the legal and political instruments in place (or maybe missing) to prevent the land degradation and promote its protection (i.e.: environmental liability directive and/or others)</p>	Not addressed in Chapter 8
IPBES Knowledge and Data Task Force (KD TF)/ Task Group on Indicators (TGI)	All Chapters					<p>This review provides feedback from the IPBES Knowledge and Data Task Force (KD TF) / Task Group on Indicators (TGI) on the use of IPBES core indicators in your assessment. We see potential for inclusion of additional core indicators and for the more consistent use of the standardized visuals provided. For information on core indicators potentially relevant to a given chapter, please see http://www.ipbes.net/indicators (or see the tab named, "core indicators" in this spreadsheet) and check the indicator trend graphs shared by your TSU. For the trends of IPBES core indicator, standardized visualizations should be used as much as possible to ensure the consistency between and within the assessments. The KD TF/TGI aim to follow up with specific recommendations in the near future. In the meantime, do not hesitate to reach out to them through your TSU or the KD TF TSU (ipbes.kdtsu@gmail.com).</p>	Thank you, the relevant core indicators were added in Ch3, Ch5, Ch4 and Ch6
U.S. government	All Chapters					<p>The role of biodiversity and functioning ecosystems appears to only be seen through a human lens and one that is directly connected to a specific area. Loss of biodiversity and ecosystem function in one area may affect down stream or far removed ecosystems - land degradation in one area may have huge affect in other areas both for biodiversity and ecosystem function (think migratory birds). The document should have a greater focus on the role of land degradation on a wider set of ecosystem functions than currently apparent.</p>	The text has been nuanced, and the issue of teleconnections / telecoupling has been dealt with across chapters.
José Romero	All Chapters					<p>General: in this report, the two concepts of "land" and "soil" seem to be interchangeable. It would be useful to define both terms in a glossary attached to this report. The definition of both terms should take into account and explain differences and nuances about "what is above ground" and "what is below ground" for land and soil.</p>	This report uses land as defined in Ch1. Soil is mostly referred to in Ch4 when specifically referring to biophysical properties of the soil. The final glossary has been included with the full report

José Romero	All Chapters					<p>General: in this report, the concept of "trade-off" is used in a rather negative sense, while generally a trade-off is a situation reached for the satisfaction of divergent views and interests, which is considered to be a positive solution. We wonder if this rather negative use of trade-off in the report would be correctly translated in the other non-English languages. For example, in French, we would rather think of a happy outcome when a trade-off (e.g. a compromise, a good deal) is done in front of irreconcilable antagonisms. If the use in this report is more in a negative sense, then why not qualify trade-offs as e.g. "harmful". We hope that the English speakers authors understand our point and find a way out to address it in English as well as in the other non-English languages.</p>	The final report has gone through rounds of revisions to ensure clarity of language.
José Romero	All Chapters					<p>General: the use of the uncertainty statements in the Key Messages should follow some logics: either only in the headings, or everywhere in the paragraphs, or not at all in this section, etc. Currently, it is not clear what the rule is and which parts of the statements are accompanied with which uncertainty statement (e.g. if it is in the heading, then the whole paragraph has the same level of uncertainty?).</p>	The uncertainty statement is placed after the sentence or set of sentences to which it applies. If a different level of certainty is associated with consecutive sentences, then these uncertainty statements are placed at those needed intervals.
Australia NFP	All Chapters					<p>There is a lack of clear guidelines and recommendations for policymakers, particularly in the Summary for Policy Makers which is where we would expect to see them. What is really needed is a quick and easy guide to help a range of decision makers develop and implement policies which reflect the latest scientific data which this report should include.</p> <ul style="list-style-type: none"> o For example, page 3 of Chapter 1, the Executive Summary of the Chapter, claims that the paper, as an assessment of land degradation and restoration, will evaluate, summarize and present the latest evidence to guide decisions. From our reading of the SPM and chapters, there appears to be little guidance for policymakers and decision makers on how to use the latest evidence to develop policy options. 	The Summary for Policy Makers highlights potential/plausible actions in section C
Australia NFP	All Chapters					<p>The case studies in the report are not detailed enough in their current state to be broadly applicable, with little information on their outcomes, methods, and successes.</p> <ul style="list-style-type: none"> o Case studies are frequently repeated across the chapters. More examples including possible applications in different landscapes/areas/political environments would be useful as well as the case studies effectiveness, implementation and any lessons learned. An understanding of the criteria used to rate each case study would be very useful. 	Thank you , the case study criteria has been set out in detail in Ch1
Australia NFP	All Chapters					<p>Lack of consistency throughout the report's chapters, including definitions used for essential concepts.</p> <ul style="list-style-type: none"> o The report uses a definition of land degradation different to that used by the United Nations Convention to Combat Desertification (UNCCD), the premiere international body overseeing global efforts to address land degradation, desertification and drought. For example, on Page 3 of Chapter 1, in the Executive Summary, the UNCCD definition of land is used, however the UNCCD definition of land degradation is not used in the report. References to the UNCCD would be useful, along with adopting its definitions/glossary for concepts like land degradation, land restoration, etc. 	The definition of land degradation, restoration, degraded land has been directly approved and provided by IPBES Plenary in the scopingn document. We used those definitions as is, as we had no scope to change them. A full glossary with definitions has also been submitted with the final report.

Australia NFP	All Chapters					The use throughout the report of references which are significantly dated or not consistent throughout the chapters. This makes the assessment appear to have a lack of a clear methodologies which seek to establish the quality and clarity of the evidence base used to make claims throughout the report. o A specific example of both inconsistency in referencing and use of outdated sources occurs on pages 95 and 96 of Chapter 4, and page 38 of Chapter 3. In Chapter 4, the report uses a 2005 Global Forest Resource Assessment to make claims about the extent of forest cover in a number of countries, including Australia. Yet, in Chapter 3, the report uses a much more recent Global Forest Resource Assessment, from 2015, to look at trends in forest cover decline. If there's no way to use the most recent studies/iterations of reports to support claims in the Report, then the reason for using an older report should be made clear.	Revisions have been done across the assessment to ensure consistency among chapters.
Mahmood Yekel	Ch.8	General				All chapters should follow the same pattern. Acronyms only appeared in chapter 4 and chapter 8.	Acronyms are listed for the complete assessment
Mahmood Yekel	Ch.8	General				Economic valuation approaches as a strategy should link; ecosystem functioning, health and development;	Economic valuation has been removed from the chapter
Mahmood Yekel	Ch.8	General				Land restoration should be well integrated as a basic foundation for post 2015 sustainable development;	Section 8.4 places land degradation and restroation in the context of the SDG 15
Mahmood Yekel	Ch.8	General				Recognition of the major land protection gaps required;	This chapter reports on some challenges and solution for protection (section 8.3).
Mahmood Yekel	Ch.8	General				Land restoration as an integrate part of national planning processes;	This comment is very broad. Chapter 8 addresses planning in several sections and boxes (8.2.2, 8.2.3, 8.3)
Mahmood Yekel	Ch.8	General				Land restoration as a core planning program;	This comment is very broad. Chapter 8 addresses planning in several sections and boxes (8.2.2, 8.2.3, 8.3)
Mahmood Yekel	Ch.8	General				Basic conservation principles in land restoration program should be addressed;	Chapter 6 addresses and evaluates reposnse actions.
Mahmood Yekel	Ch.8	General				Sources of stress and contributing factors in land restorations should be addressed; and	This Chapter reports on a set of driver factors and enabling conditions for restoration (8.3, 8.4)
Mahmood Yekel	Ch.8	General				Strategies to change attitudes and social norms should be developed	Section 8.3.4 addresses institutional competencies for the design and implementation of instument to for example increase awareness of resource users and to establish efficient national councils that implement broad-scale restoration strategies
Karen Holl	Ch. 8	General				I found the organization of the first half of this chapter to be hard to follow.	We have clarified the structure of the chapter and carefully revised phrasing
Marcus Zisenis	Ch.8	General				More examples should be given how non-monetary, non-use values can be integrated in socio-economic systems (e.g. TEEB). Balanced trade-offs rarely exist of land use and thereby the different incorporated biodiversity values, but concrete proposals should be more often given how this could be achieved (e.g. ecological farming in the EU with a marketing strategy, quality and control standards in a legally binding directive, and non-use ethical, as well as food quality values for the consumers and more stable markets for producers than traditional cheaper food from intensive farming practices).	Examples of decision support tools for non-monetay values are given in 8.2.2.
Douglas, Diane	Ch. 8	General				Excellent. No comments	Thank you
Esther Turnhout	Ch. 8	general				The chapter needs better coordination with chapter 6 to decide where policy instruments will be discussed. As per tools, it will be useful to refer to the IPBES classification of policy support tools. The chapter also needs a more systematic discussion of how different tools promote and exclude specific values and ILK. A final general point is that many of the texts are not very specific about LDR. This link can be strenthened, or if the link is absent, the text can perhaps be removed	We have moved text on policy intruments to Chapter 6. Where relevant we have made the link to LD & R more explicit.

Germany	Ch.8	General			Chapter 8 - the chapter provides detailed information and numbers related to the Climate Change (CC) issues. Other issues related to land (economics, agriculture) are lacking this attention to detail. It would present a more consistent picture, if other land-related parallel global challenges would be reinforced with some numbers as well. Otherwise the chapter presents a picture of leaning heavily towards CC.	In section 8.4 we describe in detail degradation policies in the context of the SDG 15 and the Aichi Targets and provide a general overall of interaction with other policy areas.
Germany	Ch.8	General			Concrete decision support (DS) tools are being proposed in this chapter. It is therefore important to link or to include DS tools outlined in this chapter with/in the IPBES web portal on Supporting Policy Formulation and Implementation (see the work of IPBES Deliverable 4c on 'policy support tools' and also http://ipbes-demo.net/).	Chapter 8 refers to the online IPBES catalogue on decision support tools including URL.
Germany	Ch.8	General			We encourage the authors to avoid using acronyms in chapter headings (e.g. replace 'DS tools' with 'Decision Support tools'). We also encourage the authors to spell out the acronyms when they are introduced for the first time in the text.	We have replaced most acronyms with full names.
Germany	Ch.8	General			There are many examples from the EU region which are included in this chapter. If possible, please also consider some more case studies on policy tools from other regions.	We have extensively revised section 8.3 and 8.4.1, which were heavy on EU examples and introduced more cases from all over the globe
Beria Leimona	Ch. 8	General			The support for better inventions and policy making for land restoration has been beyond 'decision support system', but since a decade ago, there is a concept of 'negotiation support system', where the use of knowledge is to bridge various perceptions, state of knowledge and political bargaining among multistakeholders (Check: Clark, W.C., Tomich, T.P., Van Noordwijk, M., Guston, D., Catacutan, D., Dickson, N.M., McNie, E., 2016. Boundary work for sustainable development: natural resource management at the Consultative Group on International Agricultural Research (CGIAR). Proceedings of the National Academy of Sciences 113, 4615-4622; Leimona, B., Lusiana, B., van Noordwijk, M., Mulyoutami, E., Ekadinata, A., Amaruzaman, S., 2015. Boundary work: Knowledge co-production for negotiating payment for watershed services in Indonesia. Ecosystem Services 15, 45-62.) The tools have been compiled in this book: Van Noordwijk, M., Lusiana, B., Leimona, B., Dewi, S., Wulandari, D., 2013. Negotiation-support toolkit for learning landscapes. World Agroforestry Centre, Bogor. Authors to consider and recognize the evolutions from decision-support to negotiation-support.	Negotiation tools are now mentioned in 8.2.3

Finnish Government	Ch8	General				<p>General:The chapter is about decision support, but it lacks the structure to do so. For example, the introduction includes a large table, 8.1, about the environments whose degradation has been assessed at different spatial levels. What is completely missing is a systematic decision-theoretic framework about</p> <p>(i) what are the land use outcomes we are interested about?</p> <p>(ii) what are the land use decisions that would influence these outcomes and that could commonly be influenced by decision support? Which types of decisions are most important?</p> <p>(iii) what are the processes and information that could influence these decisions? Which are most important?</p> <p>(iv) where are different the classes of tools and specific implementations of methods (=tools) placed to influence these decisions?</p> <p>As related logic one could think about "Value of information" Runge et al. or Results Chains of the Conservation Measures Partnership. At present, the value of the text is reduced because the position and importance of different analyses and tools remains unclear. There is a major emphasis on institutional and policy issues, cost-benefit analysis and ecosystem services, but clarity is missing on the decisions themselves.</p> <p>Admittedly, the basics of decision making are outlined around lines 579/593 (which is late in the manuscript), nevertheless, the following sections are underspecific wrt to outcomes, common objectives, actions available, influence paths of tools. Overall, the chapter seems more bottom-up than top-down analysis of what is needed for LDR.</p>	We have made the goals for using decision support tools more explicit in the text (8.2.1), synthesized the information in the tables with decision support tool in which we now specify the application outcomes, and we now introduce decision making in the first chapter section (8.1.1), .
Finnish Government	Ch8	General				<p>General: The chapter would benefit from a set of criteria for evaluating LDR DST tools. When you are looking for a tool, what should you look for? What things should the tool be able to do to address one class of LDR problems? (like is the tool for explaining pattern or prediction; is it for ecosystem services or biodiversity or both; is it a general technology or a ready implementation of specific analysis; is it freeware or commercially available; is it ecological analysis or policy, etc., you get the idea.)</p>	We have aligned the two synthesis tables on decision support tools, specifying what each tool needs, at what spatial level it is applied, and what the application outcomes are.
Finnish Government	Ch8	General				<p>General: The major approach of Conservation Evidence, developed in Cambridge, is completely missing. CE has systematically collated evidence about what conservation actions/interventions work (and what not), and it is a major source of information about what habitat restoration and management actions work. Seems like a major omission.</p>	We suggest reviewers to submit this tool to the IPBES online decision support tool catalogue: https://www.ipbes.net/deliverables/4c-policy-support-tools
Finnish Government	Ch8	General				<p>General: It seems the Web of Science has not been searched with key words such as "habitat restoration AND software", as several tools from systematic conservation planning and spatial prioritization are missing.</p>	Section 8.2 does indeed not provide an exhaustive list of tool, only some popular examples. The IPBES tool catalogue provides a more complete overview: https://www.ipbes.net/deliverables/4c-policy-support-tools
Pavlos Tyrologou and María José Rubial (PESP-EFG)	Ch.8	General				We are happy to see a whole section on Decision Support tools in this chapter	Section 8.2.1 and 8.2.2 provide an overview of common decision support tools
Astrid Hilgers	Ch.8	General				The chapter needs better coordination with chapter 6 to decide where policy instruments will be discussed. As per tools, it will be useful to refer to the IPBES classification of policy support tools. The chapter also needs a more systematic discussion of how different tools promote and exclude specific values and ILK. A final general point is that many of the texts are not very specific about LDR. This link can be strengthened, or if the link is absent, the text can perhaps be removed	We have moved text on policy instruments to Chapter 6. Where relevant, we have made the link to LD & R more explicit.

Finnish Government	Ch.8	1	2	1	2	Title is unclear. Can you be more specific about what "address" means? Prevent? Understand? Predict? Reverse?	The chapter title was given to us in the Scoping document. The introduction clarifies that the chapter deals with different aspects of decision making; tools & information, competencies and interactions across policies, to support avoiding, reducing and reversing land degradation
U.S. government	Ch.8	4	93	4	93	For readability, prefer that LDR (and LD) not be used (substitute with "land degradation," "land restoration," or "land degradation and restoration").	We substituted the acronym with land degradation and restoration
Astrid Hilgers	Ch.8	5	116	6	169	Tools to make a financial baseline study of a landscape are missing.	No specific tools are mentioned in the Executive Summary. In section 8.2.3 the need for a economic assessment is mentioned while table 8.2 lists tools that include financial cost/benefits of restoration.
Caroline van Leenders	Ch.8	5	116	6	169	Tools to make a financial baseline study of a landscape are missing.	No specific tools are mentioned in the Executive Summary. In section 8.2.3 the need for a economic assessment is mentioned while table 8.2 lists tools that include financial cost/benefits of restoration.
Emmanuelle Quillérou	Ch.8	5	118	5	118	Not sure "salinity of a tool" exists but not sure which word should be there instead. I am flagging this typo up because it will be difficult to spot later on.	Thank you. This is corrected.
Sandhya Chandrasekharan	Ch.8	5	118	5	118	salinity of a tool?	Thank you. This is corrected.
Uriel Safriel	Ch.8	5	118			"salinity"?	Thank you. This is corrected.
McAfee, Brenda	Ch.8	5	118	5	118	salinity, perhaps this is a typo? If not, requires explanation.	Thank you. This is corrected.
Finnish Government	Ch.8	5	119	5	119	Why are multiple tools always needed? What if the problem is simple? Simply sounds false.	This sentence has been rephrased to indicate that different questions need different tools.
Finnish Government	Ch.8	5	122	5	124	What do you mean it is well established that decision making always needs through investigation of all information and comparison of long-term and short-term... What about decision making using incomplete information. What about needing to do decision in finite time with whatever is available? Sounds like no decision can be done without a 5-year research project.	This key message has been rephrased and the word thorough removed.
UNCCD secretariat	Ch.8	5	128	5	134	This message is not entirely correct. The scientific conceptual framework developed by the Science Policy Interface of the UNCCD provides support evidence-based decision support through the decision-making process. The LDN conceptual framework, focuses on the goal of LDN and the supporting processes required to deliver this goal, including biophysical and socio-economic aspects, and their interactions. The framework provides a scientifically-sound basis to understand LDN, to inform the development of practical guidance for pursuing LDN and to monitor progress towards the LDN target. The LDN conceptual framework emphasises the goal of LDN which is focused on maintaining or enhancing the land resource base - in other words, the stocks of natural capital associated with land resources, in order to sustain the ecosystem services that flow from them, including food production and other livelihood benefits. Orr, B.J., A.L. Cowie, V.M. Castillo Sanchez, P. Chasek, N.D. Crossman, A. Erlewein, G. Louwagie, M. Maron, G.I. Metternicht, S. Minelli, A.E. Tengberg, S. Walter, and S. Welton. 2017. Scientific Conceptual Framework for Land Degradation Neutrality. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany. http://knowledge.unccd.int/knowledge-products-and-pillars/scientific-conceptual-framework-land-degradation-neutrality-overview	This key message has been rephrased. In the chapter we now refer to the LDN framework/indicators.
Mahmood Yekel	Ch.8	5	139	5	140	True.	OK. Thank you
Annelies Sewell	Ch.8	5	142	5	144	This sentence does not make sense. Do you mean they need to be aligned well in order to reduce potential conflicts?	The key message has been rephrased.
Annelies Sewell	Ch.8	5	144	5	148	add the need for better orchestration organisations	The key message has been rephrased.
Chandrasekharan	Ch.8	5	145	5	148	very important point, well made	Thank you.

Uriel Safriel	Ch.8	5	152			the term 'wasteland' is not used anywhere else in the whole chapter	Wasteland has been removed.
Sandhya Chandrasekharan	Ch.8	5	155	6	160	and ideological apparatus like education curricula (esp. Agriculture, forestry science, engineering disciplines, economics) and media need to be completely overhauled to be in line with the required paradigm shift (this is well known, but could be reiterated here)	The key message has been rephrased.
Uriel Safriel	Ch.8	5	156			the term "ecosystem functions" and "ecosystem services" are often used interchangeably, and it may be useful to address how they differ, either somewhere else in the assessment and/or repeated in this chapter.	The message has been rephrased.
Karen Holl	Ch.8	5	158			should be "legislation for land use..."	The message has been rephrased.
Annelies Sewell	Ch.8	6	166	6	169	add the need for partnerships	The message has been rephrased.
Germany	Ch.8	8	194			Regarding the box on 'other policy areas': What about 'infrastructure and transport' and 'trade'?	The box has been updated, only the policy areas discussed in this chapter are included
Esther Turnhout	Ch.8	8	203			In section 8.2 the chapter should take care not to overstate the importance of information based tools. Mostly, their role in supporting decision making is unproven. I am not sure whether the subclassification per 'function' or 'purpose' is helpful. I found it confusing because for these functions you would expect also other tools (non information tools) to be included.	We have changed the table for application outcome and highlight that also institution competencies are needed to make and implement decisions
Karen Holl	Ch.8	9	211	10		There are many monitoring acronyms used and it's not clear to the user what each of these monitoring systems is and what the data are useful for.	All acronyms are spelled out now.
Astrid Hilgers	Ch.8	9	213	9	236	not clear what the point is of 8.2.1.1 the statements seem not very well established.	The section is a brief preamble to the section, the statements are explained more in depth later in the chapter.
Uriel Safriel	Ch.8	9	219			what is NCP? Not in the list of abbreviations	The abbreviations are spelled out now and also included in the glossary.
Esther Turnhout	Ch.8	9	236			I am not sure what the point is of 8.2.1.1 There are quite a few rather broad and sweeping but ill supported statements there, for example related to indicators and participation. The entire section can perhaps be skipped.	The section is a brief preamble to the whole section, the statements are explained more in depth later in the chapter.
Javier Ernesto Cor	Ch.8	9	236	9	236	There should be more detail information about the technologies used (e.g. from where and how do these tools support their information, in the case of databases). These should also include information from the IUCN Red List of Ecosystems database.	Information on the tool technologies is added, as well as a description of the IUCN RL
UNCCD secretariat	Ch.8	9	240	9	240	Desertification is not an indicators of land degradation	The term "Desertification" has been dropped from the list
Jun Wang	Ch.8	9	241	9	243	The method of remote sensing should also be cited.	Remote sensing has been added.
Javier Ernesto Cor	Ch.8	10	261	10	266	These should also include information from the IUCN Red List of Threatened Species database.	IUCN RL information has been added
Jun Wang	Ch.8	11	299	12	306	In Table 8.1, some other bioclimatic indices (Davis et al., 2017) such as soil moisture, runoff, potential evapotranspiration and so forth may also be considered at local to regional levels. (Reference: Davis, T. W., Prentice, I. C., Stocker, B. D., Thomas, R. T., Whitley, R. J., Wang, H., Evans, B. J., Gallego-Sala, A. V., Sykes, M. T., Cramer, W. (2017). Simple Process-Led Algorithms for Simulating Habitats (SPLASH v.1.0): Robust Indices of Radiation, Evapotranspiration and Plant-Available Moisture. <i>Geoscientific Model Development Discussions</i> , 10, 689–708. https://doi.org/10.5194/gmd-10-689-2017	Information has been incorporated to the section and in table 8.1
Uriel Safriel	Ch.8	11	303			Table 8.1 (a) column 3 bottom - propose to change biodiversity loss to biodiversity change	The term has been changed accordingly.
Uriel Safriel	Ch.8	11	303			Table 8.1 (b) in what is assessed, "ecosystem services" is missing	The tool only capture ecosystem functions (ecosystem service tool are listed in section 8.2.2)

						(d) - Landscape level? Or Watershed level? In which scales do landscape and watershed modelling for profitability and ecosystem services being considered? Check: Suyamto, D.A., Mulia, R., van Noordwijk, M., Luisana, B., 2009. FALLOW 2.0: manual and software. World Agroforestry Centre, Bogor. Lusiana, B., van Noordwijk, M., Cadisch, G., 2012. Land sparing or sharing? Exploring livestock fodder options in combination with land use zoning and consequences for livelihoods and net carbon stocks using the FALLOW model. Agriculture, ecosystems & environment 159, 145-160. The model also considers farmers' behaviour and knowledge as variables, which have not been reflected here.	
Beria Leimona	Ch.8	12	305	12	305		Watershed level and the FALLOW tool have been included
Astrid Hilgers	Ch.8	13	307	14	371	In 8.2.1.3 participatory scenario studies to identify possible options and alternatives are missing. The article by Kok et al, Sustainability Science January 2017, Volume 12, Issue 1, pp 177-18 will be useful here. But maybe this fits somewhere else in the chapter (in 8.3.4?)	The work by Kok et al has been added to the assessment text.
Esther Turnhout	Ch.8	8.2.1.3	307			In 8.2.1.3 I miss participatory scenario studies to identify possible options and alternatives. The article by Kok et al, Sustainability Science January 2017, Volume 12, Issue 1, pp 177-18 will be useful here. But maybe this fits somewhere else in the chapter (in 8.3.4?)	The work by Kok et al has been added to the assessment text.
McAfee, Brenda	Ch.8	13	317	13	326	This paragraph provides a clear and concise explanation of a complex phenomenon that is difficult to understand	Thank you
Beria Leimona	Ch.8	13	339	14	371	Challenges in maintaining the ILK may be elaborated. Cetinkaya, G., 2009. Challenges for the maintenance of traditional knowledge in the Satoyama and Satoumi ecosystems, Noto Peninsula, Japan. Human Ecology Review 16, 27-40.	This box has been moved to Chapter 6 and the suggested update has been made.
Karen Holl	Ch.8	13	339			Box 8.1 is interesting but it doesn't illustrate an example of identifying future land degradation which is the header. It seems more like an approach that could be used to mitigate land degradation which was more the topic of chapter 6. There was a large amount of overlap between chapters 6, 7, and 8 and it wasn't clear which topics belonged in each chapter. The	This box has been moved to Chapter 6 and replace with a new box in which examples of tool use are given
Emmanuelle Quillérou	Ch.8	14	382	14	388	Qadir, M., Quillérou, E., Nangia, V., Murtaza, G., Singh, M., Thomas, R.J., Drechsel, P., Noble, A.D. (2014) Economics of Salt-induced Land Degradation and Restoration. Natural Resources Forum, A United Nations Sustainable Development Journal, 38: 282-295. Provides examples of mitigation options.	Thank you. Mitigation options are discussed in Chapter 6.
Finnish Government	Ch.8	15	407	16	437	The box and associated text seems misguided. First, one could disagree about MCDA, MCA, LCA, etc being "tools". These are general applied mathematics approaches to decision making. A tool is something that has an implementation. These do not, they need specific implementation before they can be used. Second, cost-benefit analysis, cost-effectiveness analysis and MCDA are given as separate. Well, CBA can well be cost-effective. MCDA would certainly include costs. Overall, this box hardly is conceptually accurate nor helpful for getting something done.	The box only provides a brief description of commonly used tools.
Karen Holl	Ch.8	15	412			Box 8.2 is helpful in giving a general overview of different decision support tools. A box that walk the reader through how different options were compared and then a decision made would be helpful. Box 8.3 starts in that direction but there's not enough detail for a general reader to understand how different remediation options were compared and then one selected.	The two boxes only provide a brief description of commonly used tools.
Jun Wang	Ch.8	16	438	16	438	Unexpected comma appears.	Corrected.
Finnish Government	Ch.8	16	466	16	467	This is not really true. For a tool to be useful, it needs to address the relevant factors in a specific case. Most tools would only address a partial or much simplified problem, which does not provide for good results. Picking an operation and and suitable tool is not very easy.	We agree.

Thomas Brooks	Ch.8	17	507	17	508	CHAPTER 8. Add TESSA to Table 8.2 (see Peh et al. (2013) TESSA: a toolkit for rapid assessment of ecosystem services at sites of biodiversity conservation importance. Ecosystem Services), and add an equivalent paragraph into the accompanying text.	The TESSA tool is included in the IPBES online decision support catalogue.
Finnish Government	Ch.8	17	507	18	508	Table 8.2 fails in that its title says it is about restoration. But, the table only includes information about ecosystem services tools. What about biodiversity? Isn't restoration for biodiversity as important as restoration of ESS. Also, many of these tools are about mapping and valuation, which is not adequate for planning of management, which requires analysis of the consequences of actions.	The title of the table has been changed.
Javier Ernesto Cor	Ch.8	17	507	17	508	Table 8.2- Should also include other tools such as the Ecological Integrity Assessment. This tool provide land managers, conservationists, and agencies with critical information on factors that may be degrading ecosystems in order to restore them.	The table is not exhasutive and only show some examples of tools. We suggest reviewers to submit this tool to the IPBES online decision support tool catalogue: https://www.ipbes.net/deliverables/4c-policy-support-tools
Karen Holl	Ch.8	17	507	20		Table 8.2 lists yet another set of decision models that could be used, but again doesn't offer an explicit example of how the model can be used in decision making about land management options. This would be extremely helpful, as well as some thoughtful critique of the approaches. These tables, boxes, and lists (starting on p. 15 and running through p. 20) read like a laundry list but don't help the reader understand the strengths and limitations to these approaches. There are a lot of assumptions made by these decision making tools which limits their utility to a wide range of situations. I was quite lost by the end of this section about what approach seems most promising for prioritizing land management decisions. One large table or list with a description of the approach, pros, cons, and a reference to an example where it was used would be helpful rather than multiple lists.	The table design has been improved to describe tools by application extent, methods, and applciation outcomes. This table design is in line with table 8.1
Sandhya Chandrasekharan	Ch.8	19	510	19	511	Consider how the deployment of these tools is mediated by the technological development of the society in question, and parameters of social development more broadly. Would it not be relevant for this global assessment to look at a region specific/ degree of social development appropriate and feasible manner/scenario of bridging the problem-need gap?	Institutional competencies are discussed in 8.3
Thomas Brooks	Ch.8	18	517	18	517	CHAPTER 8. Add a paragraph about the Integrated Biodiversity Assessment Tool (see https://www.ibat-alliance.org/ibat-conservation/ and https://www.ibatforbusiness.org/) here. This is widely used in the private, public, and conservation sectors to "Prioritize locations and plan for LDR responses", but does not fit under the more specific sections below. Bennun et al. (2017) Conservation Letters (http://onlinelibrary.wiley.com/doi/10.1111/conl.12353/full) is an important reference, as is Dudley et al. (2014) https://portals.iucn.org/library/node/44911	We suggest the reviewer to submit this tool to the IPBES online decision support tool catalogue: https://www.ipbes.net/deliverables/4c-policy-support-tools
Sandhya Chandrasekharan	Ch.8	20	541	20	545	how is scientific data and information feeding into the ROAM methodology (since peopls perceptions seem key, which they are no doubt). But beyond perceptions and local actions to mitigate, I am not sure to what extent it helps address structural problems (like being embedded in high-input agriculture/monocropping) or market linkages	Details on the tool can be found in the ROAM website.
Karen Holl	Ch.8	20	575			Box 8.5 is an interesting case study of how science can inform management and how government can play a role in land management, but I didn't see that the use of any of the decision making support tools was illustrated. What I was looking for here, and I think is needed, is an example that clearly demonstrates how one of these decision support tools has been used to inform actual on-the-ground management and select among different management options.	We moved the box from this section to 8.2.3, and added photos to illustrate the monitoring effort.

Karen Holl	Ch.8	22	577	27	727	Section 8.2.3 – Again the discussion of linking DS tools to support the decision making process is very general and talks mainly about obstacles. Any specific example about how to linking DS tools to an actual case study would be helpful to ground this section which is currently so general and abstract that I have difficulty seeing it being of use to decision makers.	This section has been revised to make the link to the information and tools more explicitly to land degradation and restoration decision making.
Esther Turnhout	Ch.8		577			I have doubts about the added value and relevance of section 8.2.3, including the figure.	This section has been revised to make the link to the information and tools more explicitly to land degradation and restoration decision making.
Annelies Sewell	Ch.8	23	594	23	595	Why only social? Where is economic? Or socio-economic?. It's not only about the benefits we get from nature and land, but also how they are extracted, the means. Socio-economic factors are also addressed in various assessments including the ROAM assessment by WRI and IUCN. How you use land is often based on economic and monetary factors rather than the social or biophysical systems alone.	We added " including economic" to clarify.
UNCCD secretariat	Ch.8	25	679	25	683	Among initiatives on monitoring, please make reference to the Land Degradation Neutrality Target Setting Programme conducted by the Global Mechanism of the UNCCD that is providing to 110 countries information on indicators and establishing baseline for tracking progress voluntary national targets on LDN (see more information at: http://www2.unccd.int/actions/ldn-target-setting-programme	Reference is added.
McAfee, Brenda	Ch.8	26	700			An excellent summary and guide to the decision-making process	Thank you
Esther Turnhout	Ch.8		702			I have problems with the very instrumental and technocratic phrasing in this subsection. When the text advocates for 'seamless use of knowledge and information, it seems to neglect two things: 1 that these tools have limitations and that they are not neutral and 2 that decision making is a matter of politics. I think the assessment should not advocate such technocratic view of policy making.	We revised this section and make clear tools and information are only a part of good evidence-based decision making, besides competencies.
Astrid Hilgers	Ch.8	27	713	27	717	The support with literature needs to be improved. For example after the first bullet, relevant literature needs to be included that has documented the functioning of information based policy tools (such as indicators, scenario studies or models) at the science policy interface.	These bullet points were removed and the issues have been explained in other parts of the chapter (mostly 8.3) where more background literature is given
Esther Turnhout	Ch.8		713			If the section remains in the assessment, the support with literature needs to be improved. For example after the first bullet, relevant literature needs to be included that has documented the functioning of information based policy tools (such as indicators, scenario studies or models) at the science policy interface.	These bullet points were removed and the issues have been explained in other parts of the chapter (mostly 8.3) where more background literature is given
Astrid Hilgers	Ch.8	27	718	27	720	Particularly 8.3 has a lot of overlap with chapter 6	A large part of 8.3 has been moved to Chapter 6
Esther Turnhout	Ch.8		718			Particularly 8.3 has a lot of overlap with chapter 6	A large part of 8.3 has been moved to Chapter 6
Uriel Safriel	Ch.8	27	721	27	722	"ecological integrity" is likely to be perceived as a slogan, unless somewhere in the LDR assessment or/end cited literature this term is defined and explained	The term is introduced in Chapter 3 and included in the Glossary
Karen Holl	Ch.8	28	752	36		For the legal instruments section, specific examples of legislation are given in many cases, and this is helpful to ground the writing so that the reader can understand how the approaches are actually implemented.	Examples have been included in section 8.3.1
McAfee, Brenda	Ch.8	28	757	28	757	invitation to member states	Changed.

McAfee, Brenda	Ch.8	28	758	28	763	The example of the particular situation of the EU could be cut as it does not add further clarity to the discussion. A variety of sub-global regulatory instruments exists. One would expect to find Target 15 mentioned in this section.	Many EU examples have been replaced with illustrations from other continents.
Abisha Mapendembe	Ch.8	28	764	28	765	I would stress SDGs as they have a longer time framework (2030). Aichi Targets are coming to fruition in 3 years time - i.e. 2020	The SDG play a more prominent role now in section 8.3.1, with many examples.
McAfee, Brenda	Ch.8	28	770	28	771	The objectives being referred to need to be stated again to link the sentence to the first paragraph or move the text to first paragraph.	The paragraphs have been restructured
McAfee, Brenda	Ch.8	29	800	29	808	This paragraph appears to have relevant messages but requires editing to improve clarity.	The section has been restructured and carefully revised
Uriel Safriel	Ch.8	30	853		855	"improving the status of biodiversity and the services provided by preserved ecosystems" - I wonder if the tight linkage between biodiversity and ecosystem services is addressed in other chapters of the assessment; If so may I suggest to recall it also in this chapter, for example - improving the status of biodiversity and hence the services provided by the conserved ecosystems."	This issue has been addressed in other chapters (incl Chapter 5)
McAfee, Brenda	Ch.8	30	854	30	855	Land conservation and sustainable use would be equally relevant to degradation and restoration. The entire paragraph requires work to improve clarity of the message.	This part has been rewritten
Uriel Safriel	Ch.8	30	864			not clear what this 'artificialization' mean, hence the difference between quantitative and qualitative provisions is not clear	This part has been rewritten
McAfee, Brenda	Ch.8	30	864	30	864	Artificialization needs an explanation. Is the idea soil sealing?	This part has been rewritten
McAfee, Brenda	Ch.8	30	867	31	876	If this paragraph is referring to the mitigation hierarchy clearly described earlier in the chapter, it would improve clarity to refer to it here and use similar terminology.	Terms have now been consistently used
McAfee, Brenda	Ch.8	31	881	31	881	Good point about the illusion of reconciling economic development with protection of the environment.	Thank you
Finnish Government	Ch.8	31	896	33	994	The section about ecological compensation could mention the widely used term "biodiversity offset". The citations are quite incomplete wrt offsets (original refs, reviews are mostly missing). Many important concepts, the mitigation hierarchy, in-kind vs flexible offsets, no net loss, etc are not covered. Later on then, there is a section about offsets (should be biodiversity offsets) starting on line 1271. These two should probably be merged as they are close enough to the same thing.	This section has been further developed and the mitigation hierarchy is discussed in combination with offsetting (8.3.1.2)
McAfee, Brenda	Ch.8	31	905	31	905	May be relevant to mention the possibility for biodiversity gain through restoration.	An example has now been given
Jun Wang	Ch.8	32	939	32	939	Only the last name of the author should be cited in the reference.	Corrected.
India NFP	Ch.8	32	940	32	954	<i>The text reads: "Several criticisms have been made against the management of these sums. One criticism is that these funds can be used to plant exotic species such as eucalyptus for commercial use (biofuel) and not to create or restore native species (Narain, 2011). Another criticism concerns a partial use of the sums collected by Ad hoc CAMPA. Changes are noticeable by a new compensatory afforestation bill voted in July 2016. The latter is intended to improve the applicable legislation and the management of the amounts allocated. In particular, these can be used to finance a reforestation program at the national level, the green India program." This information is outdated and needs to be replaced by the following text. The Compensatory Afforestation Fund Act, 2016 has come into force and addresses a range of issues related to afforestation and the CAMPA. Rules are being framed under the Act for effective utilisation of the fund for afforestation.</i>	The outdated text has been removed
Otávio Gadiani Ferrarini and Carlos Alberto de Mattos Scaramuzza	Ch.8	33	957	33	958	The federal Law No. 4771/1965 (Forest Code) has been repealed since the publication of Law No. 12,651 / 2012 (Protection of Native Vegetation Law). Therefore, it does not make sense to say that the previous law establishes the rules of protection. It is necessary to update this.	This example has been removed

Otávio Gadiani Ferrarini and Carlos Alberto de Mattos Scaramuzza	Ch.8	33	966	33	969	<p>There is incorrect information in this paragraph:</p> <p>i) the information that "the latest changes to the forest code in 2011 reduced environmental claims by lowering, for example, the percentages to 50% for the Amazon forest instead of the initial 80%" is not correct because the current law still keeps the 80 % in forest areas in the Amazon region, but in some exceptional cases this rate can be 50%.</p> <p>ii) the information that the "obligations only to clearings after the year 2000" is wrong because the obligation is only to clearings after the year 2008.</p> <p>On the impacts of the current changes in Brazilian legislation on forests and native vegetation, it is suggested to use the information from the study by Soares-Filho et. Al. (2014) "Cracking Brazil's Forest Code"</p>	This part has been rewritten and the example replaced with an illustration for Brazil
UNCCD SPI	Ch.8		970		994	<p>which falls under "Legal measures to restore land: Compensation" seems to be an inadvertent blending of two different approaches to "voluntary compensation". The first appears to be voluntary compensation by international companies as part of their corporate social responsibility (CSR) strategies. The second is Land Degradation Neutrality (LDN) which has been highlighted in Box 8.6 (975-987). However the text which follows this, which starts with "This compensation scheme has an undeniable financial interest..." seems to be referring to CSR (although this is not clear). This is both confusing and inaccurate as LDN has no direction financial component. We suggest the following to address this problem:</p> <p>1. First, we recommend moving LDN (including Box 8.6) out of the CSR text in 970-994 and place it in a new paragraph immediately after, revising what currently is in lines 973-975 as follows: At the international level, Rio +20 introduced the idea of a voluntary neutrality-based approach to ensuring no-net loss as a target in the fight against land degradation (Box 8.6). "</p> <p>2. Second, we suggest revising Box 8.6 to improve both its accuracy and relevance to this overall section of Chapter 8. This includes a) retitling the box (line 976, which currently only focuses on degraded land), b) replacing much of the text in line 984 with "LDN was defined at the 12th..." as the current text is not accurate or necessary, c)</p> <p>Box: 8.6 Land Degradation Neutrality (LDN) On September 25, 2015, the United Nations General Assembly adopted a new agenda for 2030 comprising 17 global Sustainable Development Goals and 169 associated targets. Among these goals, goal 15 aims to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". Target 15. 3 associated with this goal is "By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation neutral world". LDN was defined at the 12th session of the Conference of the Parties to the UNCCD (COP 12) as "a state in which the quantity and quality of the necessary land resources to support ecosystem functions and services and improve food</p>	This example has been removed from the section. Chapter 6 discusses LDN in detail.
Karen Holl	Ch.8	33	973			"this idea of not having a net loss of <u>habitat</u> ". Need some descriptor of what the net loss is.	The part has been rewritten.
UNCCD secretariat	Ch.8	33	973	33	975 Box 8.	Land Degradation Neutrality does not refer only to degraded land. Please change the title of the box it is incorrect and confusing. On the other hand LDN has not direction financial component	This example has been removed from the section. Chapter 6 discusses LDN in detail.
McAfee, Brenda Virginia	Ch.8	34	1023	34	1023	The paragraph needs an introductory statement. As written, it appears that the statement is part of Agenda 21.	The section has been restructured and partly rewritten.
Meléndez Ramírez	Ch.8	35	1063	35	1063	Box 8.7 e.g.: www.fao.org/fileadmin/user_upload/pes-project/docs/FAO_RPE-PES_PSAH-Mexico.pdf	We kept the current ULR
Jun Wang	Ch.8	35	1065	35	1066	Only the last name of the author should be cited in the reference.	Corrected.
Uriel Safriel	Ch.8	37	1115	37	1116	Message of this paragraph is not clear.	The section has been partly rewritten and carefully revised.

McAfee, Brenda	Ch.8	37	1122	37	1137	The mining framework for Canada provides examples of northern projects that have established processes for greater input of indigenous peoples into decision making about mineral development activities and of cases where indigenous groups have developed their own protocols for engaging with the mining industry and protecting their lands. http://miningwatch.ca/publications/2012/7/18/introduction-legal-framework-mining-canada	Example is now used in section 8.2.1
Uriel Safriel	Ch.8	37	1137			Any reference to this statement regarding sacred groves and water?	Reference have been added to box 8.7
Karen Holl	Ch.8	38	1167	46		The section on Economic and Financial Instruments is much more clearly written and easier to follow than the earlier sections of this chapter.	Thank you
Annelies Sewell	Ch.8	38	1169	38	1170	For more examples see Shames et al 2014	Text has been moved to Chapter 6. Specific examples are now discussed in section 6.4.2.3.
Annelies Sewell	Ch.8	38	1172	38	1173	This sentence does not make sense. Do you mean, nature and ecosystem services are often public goods and/or non-monetary in nature which makes them difficult to value. In order to be able to compare natural capital to other capital, monetary valuation of ecosystem services where possible is used to precede development of financial instruments. Non-monetary valuation of ecosystem services is therefore developing rapidly (Daily et al 2009)	We agree.
Astrid Hilgers	Ch.8	38	1174	43	1356	Public funds are missing	Text has moved to Chapter 6. Different forms of financial and economic instruments related to public funds (tax, subsidy) are incorporated in the revised text as example cases [section 6.4.2.3].
Caroline van Leen	Ch.8	38	1174	43	1356	Private funds are missing	Text has moved to Chapter 6. Different private funds, e.g. commonland, are incorporated in the text under the sub-heading 'corporate social responsibility' in section 6.4.2.4.
Annelies Sewell	Ch.8	38	1182	38	1183	PES and offsetting are the most well known but not the newest ideas. It would be more interesting to add how they have developed and what more recent efforts look like, for example the recent developments in enabling investments, such as risk reduction and first loss/partial risk guarantees. The Development Bank of Latin America (CAF) is setting up a partial risk guarantee for private equity impact investors involved in Initiative 20x20, to reduce the risk for their investments (FAO & Global Mechanism of the UNCCD, 2015), and USAID has provided the Althelia Climate Fund with a 134 million USD risk sharing guarantee (USAID Press Office, 2014). Availability of low-cost public capital through government support can also help to leverage private capital in developing countries, by reducing upfront costs for investors, whilst also being profitable. Also missing is the scale of different investors involved. Pension funds are gaining interest in restoration activities given the potential for long term returns. Green bonds and international financing such as the Green Climate Fund and GEF should also get a mention. It is not to say that PES and offsetting aren't of course key financial activities, but it's good to show the diversity of options in development, which can be used in combination across a landscape and across the timescale of projects, depending on different users, risk and returns.	Text has moved to Chapter 6. This comment relates to various aspects. Given the scope of Chapter 6, the analysis of financial and economic instruments has been focused on the type and effectiveness of such instruments. PES and offsetting have been discussed from that perspectives only. Latest private sector investments in restoration (e.g. commonland) has been incorporated in the revised text (section 6.4.2.3 - sub-section natural capital accounting).
Astrid Hilgers	Ch.8	39	1192	39	1193	Public goods are also highly relevant for private investors	We agree.
Caroline van Leen	Ch.8	39	1192	39	1193	Public goods, like clean water, are also highly relevant for private investors	We agree.
Finnish Governme	Ch.8	39	1193	39	1193	off-setting is misspelt	Corrected.
Astrid Hilgers	Ch.8	39	1194	41	1270	The disucssion about PES discusses the (lack of) effectiveness of PES but does not discuss the very specific kinds of values that this instrument promotes. There is literature on this that should be reflected. I think the discussion of whether PES are really PES or 'subsidies in disguise' is not relevant for this assessment. A useful reference might be Turnhout et al. 2013 in Conservation Letters	Text has been moved to Chapter 6. The specific kind of value PES promotes (and often ignores) has been added in the revised text (section 6.4.2.3, sub-section PES).

Finnish Governme	Ch.8	39	1194	41	1270	Perhaps make the point that it makes a major difference from the perspective of ESS or biodiversity if payments are for temporary or permanent measures.	Text has been moved to Chapter 6. The text in PES sub-section within section 6.4.2.3 has been revised to reflect the comment.
Esther Turnhout	Ch.8	39	1194			The discussion about PES discusses the (lack of) effectiveness of PES but does not discuss the very specific kinds of values that this instrument promotes. There is literature on this that should be reflected. I think the discussion of whether PES are really PES or 'subsidies in disguise' is not relevant for this assessment. A useful reference might be Turnhout et al. 2013 in Conservation Letters	Text has moved to Chapter 6. The specific kind of value PES promotes (and often ignores) has been added in the revised text (section 6.4.2.3, sub-section PES).
Emmanuelle Quill	Ch.8	39	1204	39	1205	Something to check consistently throughout all chapters: the reference to "public goods". Many actors other than the buyer benefit from the ES and the benefit does not diminish when it is used means that the good is non rival. To be a public good, it also needs to be non excludable which is not often the case. It would be more accurate to say that ecosystem services can display public good <i>characteristics</i> and be associated with market failures.	Agree. Text has moved to Chapter 6. The text has been revised to add clarity.
Emmanuelle Quill	Ch.8	39	1204	39	1217	you could cite the following paper by Sengalama and Quillérou which aims to assess feasibility of a PES scheme in Uganda with downstream water users paying for upstream farming practices that are more sustainable and that allow for higher downstream water levels, as an alternative to government-funded PES. Sengalama, T., Quillérou, E. (2016) Paying for water in Uganda: is paying upstream land users a possible solution? The Solutions Journal, Special issue on "Sustainable Land Solutions", September-October, 64-73.	Text has moved to Chapter 6. The text has been substantially revised and several more relevant citations have been added in the sub-section on PES within section 6.4.2.3.
Emmanuelle Quill	Ch.8	40	1225	40	1229	Agri-environmental payments in Europe are prone to adverse selection and moral hazard, reducing their effectiveness. The first paper below (2010) shows that there is adverse selection at farm-level. The second paper (2011) shows that adverse selection is reduced at regional level because of explicit factoring in of environmental quality, and that there is auspicious selection rather than adverse selection. • Quillérou, E., Fraser, R.W. (2010). Adverse Selection in the Environmental Stewardship Scheme: Does the Higher Level Stewardship Scheme Design Reduce Adverse Selection? Journal of Agricultural Economics, 61(2): 369-380. • Quillérou, E., Fraser, R.W., Fraser, I.M. (2011) Farmer compensation and its consequences for environmental benefit provision in the Higher Level Stewardship Scheme. Journal of Agricultural Economics, 62(2): 330-339.	Text has been moved to Chapter 6. The suggested concepts and the references have been incorporated in the revised text of 'payment for ecosystem services' within section 6.4.2.3.
Finnish Governme	Ch.8	41	1271	43	1356	A fair number of the central concepts of offsetting are completely missing from the text: in-kind & out-of-kind (flexible) offsets; additionality, permanence, leakage, time delays, uncertainty, avoided (averted) loss offsets etc. Spash 2015 Biol Cons is a relevant critique of offsets. Major offsets policy documents by BBOP, IFC and IUCN are not cited.	Thank you for the comment. Text has been moved to Chapter 6. Biodiversity offsets related key concepts have been incorporated in the revised text and the suggested references have also been cited.
Esther Turnhout	Ch.8	41	1271			studies that strongly doubt the ecological effectiveness of offsetting, arguing that there is in fact net loss. These should be included in the assessment. The point that offsetting only slows down but does not stop biodiversity loss is obvious and important but also often missed. The whole idea of offsetting is predicated on loss. For offset banking this means that credits can only be traded (and profits can only be made) when biodiversity destruction continues. Perhaps this is a	Text has been moved to Chapter 6. The specific kind of value biodiversity offset promotes (and often ignores) has been added in the revised text (section 6.4.2.3, sub-section 'biodiversity offsetting').
Jun Wang	Ch.8	41	1278	41	1278	There is missing comma in the first reference, and unexpected bracket appears.	Corrected.
Jun Wang	Ch.8	41	1300	41	1300	There is missing dot and comma after 'al' in the reference.	Corrected.

Germany	Ch.8	41	1303	41	1305	Regarding LDN component of SDG 15, consider including the following reference as well: Orr, B.J., A.L. Cowie, V.M. Castillo Sanchez, P. Chasek, N.D. Crossman, A. Erlewein, G. Louwagie, M. Maron, G.I. Metternicht, S. Minelli, A.E. Tengberg, S. Walter, and S. Welton (2017). Scientific Conceptual Framework for Land Degradation Neutrality. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany. ISBN 978-92-95110-42-5 (hard copy), 978-92-95110-41-0 (electronic copy). http://www2.unccd.int/sites/default/files/documents/LDN%20Scientific%20Conceptual%20Framework_FINAL.pdf	Text has been moved to Chapter 6. The suggested referene has been cited in biodiversity offsets sub-section within section 6.4.2.3.
UNCCD secretaria	Ch.8	41	1307	42	1309	Please replace the sentence: Under this LDN approach, the UNCCD's Science-Policy Interface (SPI) recommends that ecological compensation 1308 should be implemented by respecting the "mitigation hierarchy" With Under this LDN approach, the UNCCD's Science-Policy Interface (SPI) recommends that ecological compensation should use land potential to ensure equivalence in exchange, and follow the response hierarchy of Avoid > Reduce > Reverse land degradation (Orr et al, 2017). Orr, B.J., A.L. Cowie, V.M. Castillo Sanchez, P. Chasek, N.D. Crossman, A. Erlewein, G. Louwagie, M. Maron, G.I. Metternicht, S. Minelli, A.E. Tengberg, S. Walter, and S. Welton. 2017. Scientific Conceptual Framework for Land Degradation Neutrality. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany.	Text has been moved to Chapter 6. The sentence has been replaced as suggested.
Karen Holl	Ch.8	42	1310		1347	A good reference on the failure of the wetland mitigation policy in the US is National Research Council. 2001. Compensating for wetland losses under the Clean Water Act. National Academy Press, Washington, D.C. The estimate is that only about 20% of the ecosystem services were actually being mitigated at the time of the publication.	Text has been moved to Chapter 6. The suggested citation has been added to emphasize the point of poor performance of the compensating mechanism (section 6.4.2.3, sub-section 'biodiversity offsets')
Royal Gardner	Ch.8	42	1314	42	1315	I am not aware of any biodiversity offset program that permits credits to be sold and re-sold. That is certainly not the case in the US. Perhaps this is referring to a program in another country? If so, which one?	Text has been moved to Chapter 6. This is the case in Australia under 'Biobanking'. However, the text has been revised to focus on US wetland mitigation banking, thus the sentence has been deleted to improve clarity of the message.
Jun Wang	Ch.8	42	1329	42	1329	The brackets there must be checked	Done
Royal Gardner	Ch.8	42	1342	42	1347	This is a bit simplistic summary that lumps together studies that focused only on permittee-responsible mitigation (PRM) and studies that considered PRM and third-party approaches such as mitigation banks and in-lieu fees. At the time of these studies, PRM was the predominate form of compensatory mitigation. Since the 2008 regulation promulgated by the US EPA and Corps of Engineers, mitigation banks are the preferred mechanism for providing offsets. Mitigation banking is not perfect (see eg Ruhl on migration of wetlands from populated to more rural areas), but it is an improvement over the status quo (PRM).	Text has been moved to Chapter 6. The text has been revised to address this comment to add specificity and enhance clarity on permittee provided compensatory mitigation and the mitigation banking (see biodiversity offsets in section 6.4.2.3)
Royal Gardner	Ch.8	42	1349	42	1350	"Areas with threatened species and rare habitats are irreplaceable, under strict regulation, and must not be included in market exchange"? Again, I have two issues. First, this statement is very policy-prescriptive, rather than offering options that are policy relevant. Second, the text just mentioned conservation banking (and did so on page 32 as well). Conservation banking in the US by definition involves threatened and endangered species.	Thank you. Text has been moved to Chapter 6. The text has been revised extensively to fit into the scope of chapter 6. The sentence is no more a part of the revised text.
Virginia Meléndez Ramírez	Ch.8	43	1357	43	1357	you can add e.g. In Mexico: www.biodiversidad.gob.mx/pais/cien_casos/pdf/Cien%20casos.pdf page 102	Thank you. Reference has not been added.
Annelies Sewell	Ch.8	43	1370	43	1373	A good statement, I would add that the involvement of the public sector in restoration projects is therefore essential, and must be present in partnerships to safeguard public goods.	Thank you
Royal Gardner	Ch.8	43	1371	43	1372	A very good point on complexity and institutional capacity.	Thank you
Caroline van Leenders	Ch.8		1374			The IUCN and the University of Nijenroode have for that reasons started the Green Finance Academy. http://www.wur.nl/nl/activiteit/Masterclass-Green-Finance-Academy-6-10-March-2017.htm	This section has been removed as it does not address institutional competencies.

Royal Gardner	Ch.8	43	1377	43	1379	Reference for assertion that PES financed by environmental taxes are most common and most successful?	This section has been removed as it does not address institutional competencies.
Jun Wang	Ch.8	44	1404	44	1404	There is missing comma in the reference.	This section has been removed as it does not address institutional competencies.
Astrid Hilgers	Ch.8	44	1412	46	1512	please include valuation from an ecosystem landscape perspective	This section has been removed as it does not address institutional competencies.
Caroline van Leenders	Ch.8	44	1412	46	1512	please include valuation from an ecosystem landscape perspective	This section has been removed as it does not address institutional competencies.
Javier Ernesto Cor	Ch.8	44	1412	44	1412	These should include other important information for Ecosystem services valuation, from the following bibliographic references:	This section has been removed as it does not address institutional competencies.
U.S. government	Ch.8	44	1412	46	1512	In valuation, it might be good to also consider non-monetary valuation. In application (especially in a collaborative decision-making framework) it is very useful to develop tradeoff information (between ecosystem services). This is especially important where monetary values are either difficult to derive or the resource is not amenable to valuation (e.g. cultural services). This is a viable "valuation" approach. This has application in comparing between projects or in looking at management alternatives on a project.	This section has been removed as it does not address institutional competencies.
Esther Turnhout	Ch.8		1412			in 8.3.3.3 valuation methods are discussed. To me, these are information based tools, not economic instruments	This section has been removed as it does not address institutional competencies.
Jun Wang	Ch.8	44	1432	44	1432	Unexpected bracket appears.	This section has been removed as it does not address institutional competencies.
Germany	Ch.8	45	1440			Spell out WTP.	This section has been removed as it does not address institutional competencies.
Karen Holl	Ch.8	45	1442			Should be "Among forest types"...	This section has been removed as it does not address institutional competencies.
Astrid Hilgers	Ch.8	45	1449	45	1457	This paragraph does not read well and should be rephrased, particularly the last sentence.. In general, I would say that there is no evidence to suggest that these valuation studies have had any discernible effect on decision making and there is every reason to suggest that their usefulness will be very limited. These studies have been done since the 1970s and scientific debate on how to value, what to value and in what units value should be expressed is going nowhere.	This section has been removed as it does not address institutional competencies.
Esther Turnhout	Ch.8		1449		1457	This paragraph does not read well and should be rephrased, particularly the last sentence.. In general, I would say that there is no evidence to suggest that these valuation studies have had any discernible effect on decision making and there is every reason to suggest that their usefulness will be very limited. These studies have been done since the 1970s and scientific debate on how to value, what to value and in what units value should be expressed is going nowhere.	This section has been removed as it does not address institutional competencies.
Uriel Safriel	Ch.8	44	1458	44	1471	What is missing in this review of failures of economic valuations of ES, is the difficulty and the undervaluing of many if not most of the regulating services, many of which are critical for human survival, much more than the cultural services	This section has been removed as it does not address institutional competencies.
Jun Wang	Ch.8	45	1464	45	1464	The brackets there must be checked	This section has been removed as it does not address institutional competencies.
Jun Wang	Ch.8	45	1476	45	1476	There is missing comma in the first reference, and unexpected bracket appears.	This section has been removed as it does not address institutional competencies.
Astrid Hilgers	Ch.8	46	1513	47	1554	Also for 8.3.4 check overlap with chapter 6. This paragraph seems underdeveloped and there is a lot missing here, including participatory tools and approaches.	We agree to avoid overlap with chapter 6. The authors of both chapters met to scan each paragraph and eliminate overlapping texts without disorganizing the flow of each chapter. Paragraphs have been deleted or swapped between the two chapters. As for the undeveloped nature; section 8.3.4 does not aim to describe the (decision support) tools per se, which is dealt with in detail on the IPBES online decision support tool catalogue (http://ipbes-demo.net/node/139). We made this clearer in the current version in the introductory part of section 8.3.4. Also, this part was originally much larger, but much of the enabling socio-cultural conditions are actually overarching concepts (such as participative tools), so several paragraphs have been moved to more general parts: introduction part of 8.3 and 8.3.6.

Finnish Government	Ch.8	51	1640	52	1682	This section is problematic. It seems to suggest that multi-stakeholder partnerships with cross-disciplinary approaches, competency to continuously auto-evaluate and adapt, ability to use integrated social and ecological information and ability to quantify ecosystems and its services as natural capital are "required to adequately govern land degradation response processes". One could disagree. If all this is really needed, then will anything ever get done? Are there not simple cases where simple responses suffice? Is the fourth item needed at all? Why is valuation needed to prevent land degradation? Do you need to apply valuation e.g. if it is about biodiversity?	We agree that this might be overwhelming if interpreted as minimum actions for achieving any progression at all on avoiding land degradation and promoting restoration. We rephrased this as more general guidance as for where enabling actions should lead to in order to tackle direct and indirect causes of land degradation. We do want to stress that these recommendations are recurrent in the literature. Well established consensus exists on this issue.
Esther Turnhout	Ch.8		1641			8.3.6 is very general, Same as 8.2.3, the question is if it can be skipped	We kept the section, revised it, and added a box to exemplify the issue
Annelies Sewell	Ch.8	51	1647	52	1682	I would add something on the orchestration of multiple streams of financing, different sources, projects, timescales, returns etc. this is important given the attention for the landscape approach and the need to create a strong investment track record to reduce the risk of investment, and to link the large streams of available finance with on the ground projects. Partnerships that look for synergies between different demands on land, cross sectoral cooperation.	We agree. This is now more clearly included at the final part of section 8.3.5
Jun Wang	Ch.8	51	1670	51	1670	The last reference must be put in the brackets.	Corrected.
Jun Wang	Ch.8	52	1673	52	1673	There must be a blank before the bracket.	Corrected.
Jun Wang	Ch.8	52	1680	52	1680	Unexpected bracket appears.	Corrected.
Jun Wang	Ch.8	52	1709	52	1709	Unexpected bracket appears.	Corrected.
Jun Wang	Ch.8	53	1734	53	1734	There is missing dot after 'al' in the reference.	Corrected.
Karen Holl	Ch.8	53	1735			Section on "Interactions between LDR and other policy responses". This section seems quite redundant with material in other earlier chapters in the land degradation assessment. Hence I think it could be removed here without losing any content.	We have integrated material from 6.5 to avoid duplication and redundancy
Royal Gardner	Ch.8	53	1742	53	1753	Again, it would be useful to include the Ramsar Convention and its Strategic Plan's goals/tragets on addressing wetland loss and degradation, and wetland restoration.	Added mention of Ramsar in 8.4.1
UNCCD secretariat	Ch.8	53	1748	53	1749	The UNCCD is not only focusing on restoring unproductive lands. The UNCCD aims to prevent and revert land degradation and desertification and mitigate effects of drought in affected areas in order to support poverty reduction and environmental sustainability.	This part has been deleted in response to other reviewer comments and due to integration of 6.5 into this section
Annelies Sewell	Ch.8		1765		1766	Missing climate in the this sentence - don't forget the carbon in soils, peatlands etc!	Added.
UNCCD secretariat	Ch.8	54	1779			We suggest including SDG, in particular SDG15 in the box of Global Policies on LDR. Also update the Global Policies in other areas by substituting MDGs by SDGs	All was added.
Jun Wang	Ch.8	55	1818	55	1818	Unexpected comma appears.	Corrected.
Karen Holl	Ch.8	57	1910			Here CA is used as an acronym for "conservation agriculture". Earlier in the chapter the same acronym was used for "compensatory afforestation". I highly recommend removing both acronyms as neither terms are that long to write and using the two words is clearer.	We removed the acronym
Virginia Meléndez Ramírez	Ch.8	58	1932	58	1932	you add conclusions of the chapter	The assessment chapter does not contain a conclusion. We ensured the chapter was wrapped up without adding a formal conclusion section