

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

1 May - 26 June 2017

Chapter 2

Reviewer Name	Chapter / SPM	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	Response (from Chapter 2)
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 redundancy 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".	Agree, redundant text on LDR definition and approach has been taken out in discussion with other CLAs. The final report has been streamlined as much as possible.
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.	Agree, consistency between chapters has been checked in the final report.
Germany	All Chapters					Please ensure that in all chapters information and case-studies are provided from all regions.	In chapter 2, we made a particular effort to include examples and case studies from all word regions, supported by the expertise within the group of authors, and a thorough review of the available litterature.
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 .	The SPM has been revised based on the updated key findings from the chapters.
Germany	All Chapters					Please include the concept on 'planetary boundaries' in your discussions.	The concept of planetary boundaries is discussed in several chapters of the assessment.
Germany	All Chapters					Ensure that terminologies are used consistently throughout all chapters.	This has been addressed.
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 of these elements have been ensured for the final draft of the report, for all chapters.
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.	The consistency between the different chapters has been reviewed by the chairs and the TSU.
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.	The discussion on the role of agricultural lands in regards with degradation was addressed within the discussion on baseline, in chapter 1.
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.	The cross-referencing between chapters has been addressed at the 3rd authors' meeting in July 2017.
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 .	The consistency between the key messages of Chapter 2 and the content of the SPM referring to Chapter 2 has been checked.
Germany	All Chapters					We encourage the authors to spell out the acronyms when they are introduced for the first time in the text.	This has been checked
Germany	All Chapters					All reference lists need to be rechecked regarding completeness, spelling and they also need to by structured in a similar style.	This has been done, with the support of the TSU
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.	We agree with the comment and the definition of biodiversity. However, we worked with the terminology provided in the LDR scoping document which included: "Degraded land is defined as land in a state that results from persistent decline or loss of biodiversity, ecosystem functions and services...."
Astrid Hilgers	All Chapters					on the definition of landdegradation: 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.	This is now addressed under the definition of the baseline.
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 landmanagement practices and other response options should be considered. Chapter 6 provides this wider range of options.	We now give a more balanced vision of different agricultural practices (see 2.2.3.1). However, recent scientific scientific literature tends to confort this idea - see (Muller et al., 2017) mentioned section 2.3.2
Astrid Hilgers	All Chapters					more attention should be payed to the role that the private sector could pay, in the SPM and trouhgout 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. buisness for sustainabl;e landscapes, an action agenda, Scherr at all 2017, published by ecoagriculture partners and IUCN. 4. Scaling Up Investment & Finance for Integrated Landscape Management: Challenges & Innovations, Shames at all 2013, published by ecoagricultes 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 assesment 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	Thank you for these references. We added two of them in sections 2.2.2.3 and 2.2.3.2.
Astrid Hilgers	All Chapters					the term NCP should be explained in the spm and in teh beginning of the document	NCP has been defined in the Glossary and explained in the Preface of the whole report.

Finnish Government	All Chapters				<p>SPM, CH1, CH2 and CH4: The treatment of the difficult but fundamental issue of measuring 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> <p>In the scoping document Chapter 4 is requested to deal with status and trends of degradation and restoration. Because status and trends need to be rooted on some baseline to be meaningful (as was discussed just above) the treatment of baselines might be justified also in chapter 4. However, it is clear that the baseline aspects covered in chapter 4 are already covered in the SPM key message B1 and referenced to chapter 2 rather than chapter 4. Much of the text in chapter 4 is similar (i.e. partly same) to the text in the SPM as well as in the Chapter 2 and thus it seems that replicating the text in Chapter 4 is redundant. To avoid confusion and repetition the section 4.1.2.3 and the related key message in the Executive Summary of Chapter 4 should be deleted and replaced with a simple reference to the SPM and/or to Chapter 2.</p> <p>Finally, in Chapter 1 there is also a box on establishing baselines (Box 1.1). While again some of the text seems to be the same as what is used in SPM and CH2 there are also clearly deviating elements not used in other parts of the Assessment. After reading the SPM and relevant sections of Chapter 2, the box in Chapter 1 appears largely overlapping, somewhat contradicting and much too detailed. The details about the specific years for the different states are very restrictive and the terms index state and the desired state seem not to conform to the terms commonly used (reference or baseline and target respectively). The purpose of this box is unclear because as far as it can be assessed, it is not utilized by the rest of the assessment. There are more details about the baseline issue in Chapter 2 as correctly stated in Chapter 1, but there is no elaboration of the index state or the desired state or the specified years in Chapter 2. To avoid confusion this box and the associated key message in the Executive Summary of Chapter 1 should be deleted.</p>	The baseline discussion has been clarified in the SPM of the whole LDRA and in the Box
Finnish Government	All Chapters				<p>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.</p>	These comments are relevant to CH6 and CH8, not directly to Ch2. These comments have been taken into account by Ch6 and 8 respectively.
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 lessons 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>	Agree, role of financial sector is important. It has been addressed in the final report, especially in Chapter 6 and 8 (in accordance with the scope). In chapter 5, we also included the discussion on different valuations of ecosystem services.
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>	Agree. The formatting has been ensured for the final draft.
Pavlos Tyrologou and María José	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>	The final report has been nuanced. The drivers (including the role of heavy industry in land degradation) are addressed in Ch3 and 4 in detail.

IPBES Knowledge and Data Task Force	All Chapters					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).	Note that none of the IPBES core indicators have been listed as relevant to Chapter 2 by the KD TF and TGI.
U.S. government	All Chapters					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 downstream 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.	The topic is dealt with under "Long distance impacts and their legal implications" (2.2.1.3.) We admit that the example is from a human perspective only, but this is due to the fact that Ch2 deals with human perceptions. However, we discuss the intrinsic value of Nature in subchapter 2.3.1.2.
José Romero	All Chapters					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.	The land/soil definition has been reintegrated to Ch2, section 2.2.1.3, last subsection.
José Romero	All Chapters					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.	We assessed our use of trade-off in the chapter with scrutiny and made sure that it is neither positively nor negatively commentated
José Romero	All Chapters					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?).	Agree, confidence statements should be consistent. This has been ensured for the final report.
Australia NFP	All Chapters					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. 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.	Agree, clear policy guidance on WHAT (package of) measures would support conservation of BES and which don't (chapt 3, 4, 5 and 7) and HOW these measures could be implemented in an effective and efficient manner (instruments, governance in chapt 6 and 8) were lacking in previous drafts. Chapt 7 provides a set of measures in its Key Messages. These elements have been added to the SPM
Australia NFP	All Chapters					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. 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.	Chapter 1 provides a methodology for case study selection. The case studies are no longer replicated throughout the report and are more diverse in nature.
Australia NFP	All Chapters					Lack of consistency throughout the report's chapters, including definitions used for essential concepts. 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.	Agree, the UNCCD definition of LD should be mentioned. However, the definition of land degradation for LDRA was set out and approved by IPBES Plenary, and can not be changed.

						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.	Agree, we adjusted the references used to promote consistency, or explain why other sources are used and why they differ.
Australia NFP	All Chapters						
Miguel Taboada	Chapter 2	General				Productivity increases because of crop breeding, biotech, may cover up non-clinc syntoms of land degradation. A good example is soybean crop that is less sensible to soil degration than other crops like maize. Farmers are not concious of these problems because crop yields do not decrease. I suggest to include a specific section on the cover up of land degradation by technology.	This is dealt with in the food security section 2.3.1.4
UNCCD SPI	Chapter 2	General				This definition of degraded land: "degraded land will specifically be understood as land that has experienced anthropogenic loss of biodiversity and ecosystem functions and services" is a stricter definition and inconsistent with that given in chapter 1.	the definition was edited to match the one from the scoping and ch1. L. 422 and 427
UNCCD SPI	Chapter 2	General				this is a broad generalisation. In cases where there is no direct or indirect deforestation palm oil is a very beneficial product, with very low carbon footprint. eg Wicke et al 2008: oil palm plantations on degraded land and improved management, can achieve emissions reductions of more than 150%, turning oil palm plantations into carbon sinks	We deleted the sections dealing with Palm Oil.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Sustainable use of natural resources can provide multiple benefits to biodiversity, local livelihoods and human health;	Thank you for your comment but we do not understand what is expected from the authors.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Land degradation will have negative impacts on social cohesiveness and mental health;	Thank you for your comment but we do not understand what is expected from the authors.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Indigenous land is central to cultural traditions and cultural well-being;	Thank you for your comment but we do not understand what is expected from the authors.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Climate change is already negatively impacting ecosystems and biological interactions and these impacts are expected to intensify, if no action taken;	Thank you for your comment but we do not understand what is expected from the authors.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Land restoration reduces the pressure from human population explosion,	Thank you for your comment but we do not understand what is expected from the authors.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Ecological processes on land restoration programs;	Thank you for your comment but we do not understand what is expected from the authors.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Conservation corridors accounting for resilience principles; and	from the authors.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Ecosystem vulnerabilities/pathways to regime shift;	Thank you for your comment but we do not understand what is expected from the authors.
Mahmood Yekeh Yazdandoost	Chapter 2	General				Wherever possible, the emphasis may also be given to the following aspects: 1-Implementing partnerships for development at the subnational level; 2-Significant threat posed by unsustainable business practice to global biodiversity and the landscape in which we live; 3-Ecosystem services scarcity and markets strategy; 4-Ecosystem services a method for sustainable development; 5- Understanding economic policy-making; 6-Healthy ecosystem for adaptation and health	Thank you for your suggestions. However, we consider that those do not concern this chapter (on concepts and perceptions) but rather, other chapters, for instance on drivers of land degradation (chap.3), ecosystem services (chap.5), and approaches for restoration (chap.6).
Pat Brereton	Chapter 2	General				As Environmental Communicators - need single overview one line summary - to highlight	The Executive Summary provides an overview of the key issues.
Jonathan Davies	Chapter 2	General				This definitional challenge runs throughout the chapter and throughout the LDRA and it can only realistically be addressed by including a much stronger statement up-front about other interpretations of degradation, otherwise the inconsistency is very incongruous. I would start with a paragraph on the inadequacy of the term "degradation" and the subjectivity based on land use objectives. Natural, pre-disturbance, state is only one baseline and it is of limited value in assessing whether agricultural land is degraded or sustainably managed. Farmers invest heavily in clearing biodiversity to produce food and they probably consider this to be up-grading the land, not de-grading it. "Degradation" therefore needs to always include a qualifier - degraded forest, degraded crop land etc., which then allows the degradation to be evaluated against the land use objectives. This in turn enables us to take into consideration the desired state of the land according to the land user, and also to evaluate whether the land user's interpretation of sustainability is scientifically valid.	the definition was edited to match the one from the scoping and ch1. L. 422 and 427. We are discussing with other chapters

Jonathan Davies	Chapter 2	General				<p>This paragraph is proposed as alternative text for section 2.2.1.1 (opening paragraph): "The Land Degradation and Restoration Assessment took as its starting point the definitions of degraded land and restoration provided by the IPBES plenary (IPBES, 2015): "Degraded land is defined as the state of land which results from the persistent decline or loss in biodiversity and ecosystem functions and services that cannot fully recover unaided within decadal time scales". "Restoration is defined as any intentional activity that initiates or accelerates the recovery of an ecosystem from a degraded state" and "rehabilitation is used to refer to restoration activities that may fall short of fully restoring the biotic community to its pre-degradation state". Taken together these definitions mean that the concept of restoration refers to interventions whose intended outcome is full recovery of the ecosystem to its pre-degradation state, while rehabilitation has the intended outcome of partial recovery of the ecosystem. Inability to recover unaided is caused by i) crossing an ecological tipping point to a new state or regime, such that the ecosystem is unable to recover on its own within decadal time scales, or to ii) business-as usual land use management that prevents an ecosystem from recovering unless aided by an alteration or cessation of the management."</p>	<p>Thank you for your suggestion. However, we chose to keep the original version of the paragraph, as has been discussed and agreed among the authors of chapter 2.</p>
Jonathan Davies	Chapter 2	General				<p>This paragraph is proposed as additional text for section 2.2.1.1: "The LDRA highlights the challenge of operationalising this definition of land degradation, particularly since the large body of literature on both land degradation and restoration are not informed by the same definition. The term "degradation" is subjective and is applied according to the land use objectives of the observer. For assessments of biodiversity and ecosystem services the definition provided above may be suitable. For other land uses the definition is inadequate, as for example in the case of agricultural land management, which accounts for a significant proportion of the world's land surface and which must be central to any effort to achieve environmental sustainability. In such cases land has been deliberately transformed and the pre-existing state of biodiversity and ecosystem services may be an unreliable guide as to whether the land is degraded, degrading, sustainably managed, or improving."</p>	<p>Thank you for your suggestion. However, we chose to keep the original version of the paragraph, as has been discussed and agreed among the authors of chapter 2.</p>
Jonathan Davies	Chapter 2	General				<p>This paragraph is proposed as additional text for section 2.2.1.1: "Restoring all agricultural land to a pre-existing state is incompatible with many of the sustainable development goals, including poverty reduction and food security. It is necessary to objectively define the desired state of biodiversity and ecosystem services according to the explicit land use objectives, which may often include multiple sub-objectives such as food production, water shed protection, climate change mitigation and others. Rehabilitation and sustainable management can then be guided towards these goals."</p>	<p>Thank you for your suggestion. However, we chose to keep the original version of the paragraph, as has been discussed and agreed among the authors of chapter 2.</p>
Jonathan Davies	Chapter 2	General				<p>This paragraph is proposed as additional text for section 2.2.1.1: "This inconsistency is addressed recurrently in the LDRA, but it demonstrates the importance of either reaching consensus, or adopting more nuanced language to avoid over simplification and then inconsistency. The term "degradation" is unhelpful unless associated with a qualifier: degraded forestland, degraded crop land, degraded wetland etc. This allows degradation to be evaluated against the land use objectives, and according to the perception of different land users. This in turn allows those objectives and perceptions to be objectively validated and operationalised."</p>	<p>Rejected, but thank you for the suggestion.</p>
Emmanuelle Quillérou	Chapter 2	General				<p>Generally speaking, there are too many acronyms which hinder reading and understanding (ILK, LDRA, CF, LDRA, MEP, NCP, NPI, LDS, KLC...). Presumably, the point is for your report to be read and understood by people working in different fields and from very different disciplinary background. Using acronyms creates a "club" culture which goes against what you are trying to achieve with these reports (ie make knowledge mainstream which is by definition the exact opposite of a small old boys' club which is exclusive rather than inclusive). To give an example, MEP to me is automatically a Member of the European Parliament and NOT a multidisciplinary expert panel. The same acronyms used to refer to very different things in different contexts could create more confusion than clarity for the decision-makers you are targeting.</p> <p>Aside from institutions such as FAO, IUCN, UNEP etc, and one or two acronyms max that are used 2 or 3 times per page on average, I would recommend to remove the acronyms throughout all chapters of the report, especially since length will not increase by much overall.</p> <p>In-text references to IUCN sometimes use the acronym, sometimes its full name - needs harmonising.</p>	<p>Thank you for pointing that, the acronyms have been dealt with.</p>

Emmanuelle Quillérou	Chapter 2	General				<p>After reading through, I lost track of what you wanted to put across in this chapter. It is way too long and "catalog"-like. Maybe adding partial conclusions to refocus on why a point is relevant to the overall chapter theme would help? Also, reading through the overall chapter structure, the message you would like to convey was not clear. 2.2.1 Scientific concepts for assessing the status and responses of biodiversity and ecosystems may be better in section 1 as it details concepts rather than perceptions as such. 2.2.2 is an outlier as the current structure stands here as it does not refer to perceptions nor concepts.</p> <p>In the second section, maybe the below could work better? biophysical perceptions of land degradation and its impacts social perceptions of land degradation and its impacts indigenous perceptions of land degradation and its impacts You are currently mixing up perceptions of land degradation with impacts perceived by various stakeholders; when your title talks about perception of land degradation (not of its impacts). The two are linked so maybe the key in getting a clearer chapter 2 lies with differentiating between the two types of perceptions (1) of land degradation and 2) of the impacts of land degradation) more explicitly?</p> <p>I like the title of 2.3 very much. I would try and get something in a similar vein for 2.2.</p>	<p>We agree that the titles should be more explicit and we edited them so they are more glamorous. However, regarding your second comment, we kindly disagree that section 2.2.2. does not address perceptions nor concepts. See Urihiri, Mauri, Mana, Hau (spiritual concepts) [Section 2.2.2.1.]. Regarding your suggestion of sub-titles for 2.2, for the spirit of the chapter we find more appropriate to show that perceptions of land degradation and its impacts vary according to social contexts (see figure 2.2).</p>
Germany	Chapter 2	General				<p>This chapter will substantially benefit from a more balanced assessment. Some statements provided in this chapter might be perceived as being biased or even ideology-driven. For instance on page 4, lines 112-113, or for example in ch 2.2.3 (page 41, lines 1679-1681): "Agriculture became a technique to be mastered rather than a traditional knowledge to be transmitted; peasants became farmers: a profession and not a social condition".</p> <p>Also, the validity of numerous statements remains unclear because of missing references and the lacking consideration of concepts such as digital techniques or breeding techniques for soil protection in the discussion.</p>	<p>About the quotation "a profession and not a social condition", it is the result of several qualitative studies led in mainly in Europe, not an opinion. We added the references. About the lack of references showing more balance, we also added them.</p>
Germany	Chapter 2	General				<p>Most of the figures need to be improved (higher resolution).</p>	<p>High resolution figures have been provided</p>
Eila Gendig	Chapter 2	General				<p>The description traditional land use/agricultural practices with high-energy input on the one hand and alternatives to these systems on the other hand seem to be very biased towards highlighting advantages and benefits of the second option. A more balanced approach would increase credibility.</p>	<p>Our mission was to assess existing references on Land Degradation and Restoration. It appears that most of these references defend the idea that low input agriculture is a better alternative than conventional high input practices. This is the case for both land degradation and food production (see section 2.3.2.1 - "towards alternative paradigms", and reference therein). Our assessment shows that a scientific consensus is emerging towards this "traditional" and "post-traditional" practices. However, we agree that intensification may, in some cases, be a better solution than extension, the reason why we added references on that subject.</p>
Suneetha Mazhenchery Subrama	Chapter 2	general				<p>the chapter is very engaging very well articulated and captures several nuances related to different perceptions of land use and degradation</p>	<p>Thank you!</p>
UNCCD SPI	Chapter 2	General				<p>1. We found the Executive Summary unclear. 2. It is very important to take account of the perceptions of different stakeholders, but a chapter which limits scientists to being merely stakeholders on a par with other actors is a rather odd approach. It raises the question about why scientific advice is needed at all. It also fails to distinguish between the perceptions of different stakeholders and scientific analysis of the perceptions of different stakeholders. 3. As another example of structural limitations, at the start of the chapter the authors say that concepts for assessing land degradation will not be defined until Chapter 6.</p>	<p>1. We reviewed the executive summary 2. It is arguable to say that scientists should be disconnected from the society they live in. It is better to consider them as citizens whose contribution is providing scientific knowledge as a decision support. For instance, participating in a global assessment is per se a form of engagement. In the introduction we explain the difference between concepts as tools and concepts as social constructs. Nonetheless, we took into account your concern about "scientists as merely being stakeholders" and qualify our definition of the specificities of the scientific approach (L.384-386). See also our discussion on the evolution of scientific concepts (line 382-392). 3. The sentence was removed (L.267-268).</p>
Astrid Hilgers	Chapter 2	General				<p>Chapter is extremely interesting and informative, but should be made shorter and accessible to become effective in the IPBES process</p>	<p>Thank you. We will reduce the size of the chapter and avoid the use of jargon as much as possible.</p>
Finnish Government	Chapter 2	General				<p>General comment on Ch2: While Chapter 2 is relatively clear, there are many places where the text could be improved and sharpened. A thorough final edit should be conducted as it is likely to improve the readability of the chapter. This comment concerns the whole chapter including some of the key messages in the executive summary.</p>	<p>Thank you. Indeed we went thoroughly through the content of the chapter to sharpen it and improved it where possible. We specifically expanded part 2.2.4.1 to avoid misunderstandings.</p>
Ben ten Brink	Chapter 2	General				<p>Chapter is extremely interesting and informative, but should be made shorter and accessible to become effective in the PBES process</p>	<p>Thank you. We reduced the size of the chapter and avoided the use of jargon as much as possible.</p>
South Africa	Chapter 2	General				<p>Very useful content, excellent document</p>	<p>Thank you!</p>
Mahmood Yekeh Yazdandoost	Chapter 2	4	99	4	103	<p>Correct</p>	<p>Thank you</p>

Mahmood Yekeh Yazdandoost	Chapter 2	4	99	63	2628	Needs editing. Probably lots of explanation on philosophical aspect might not be needed.	We are not entirely sure of which philosophical aspects you are referring to (do you mean conceptual?). On the other hand, a chapter on perceptions and concepts is bound to have a certain level of abstraction.
U.S. government	Chapter 2	4	99	4	103	This title is too long - shorten it and incorporate the rest in the narrative which follows.	We removed the first two sentences and left the following (L.100-103): "When dominant or mainstream perceptions and concepts have an undesired impact on nature and its contributions to people, promoting alternative perceptions and concepts can transform practices towards more desired impacts (well established)."
Emmanuelle Quillérou	Chapter 2	4	100	4	103	Not sure what (well established) is referring to. Confidence over the results? It must be written somewhere but it may be better to add another word to indicate this more clearly, e.g. "confidence level: high, well established results" or something similar. At least for the first occurrences.	The use of this confidence level is a constraint from the assessment. We adopted a set of four levels of confidence which are explained in CH1.
Virginia Meléndez Ramírez	Chapter 2	4	100	4	100	Instead of community, the term human communities can be used	This sentence has been deleted in the new version.
UNCCD SPI	Chapter 2	4	100	4	100	replace from community to community with "between communities"	This sentence has been deleted in the new version.
Steve Prince	Chapter 2		102		102	replace "can" with "may"	We replaced "can" by "may" as suggested.
UNCCD SPI	Chapter 2	4	112		113	This is a misrepresentation of the goals of sustainable development	We edited the sentences on lines 113 and 117, and the explanatory text that follows to clarify our point on Sustainable Development. The headline now reads "Sustainable development was conceived as based on three pillars (social, environmental and economic). In its implementation, however economic growth is predominantly considered as the main driver of social and environmental progress (well established)."
Emmanuelle Quillérou	Chapter 2	4	113	4	114	"This perception leads to continuing land degradation and undervaluation and loss of nature's other contribution to people. " I would challenge this assumption: sustainable development is NOT MEANT to drive land degradation, quite the opposite. But sustained economic growth in the past has been one of the drivers of land degradation. Sustainable development is indeed sustained economic growth BUT within ecological and social limits as Sustainable development = economic + social + environmental (see UEP framework). You therefore cannot say <i>sustainable</i> development is driving land degradation by definition. Practice is different but it is bad implementation of sustainable development principles that has failed to benefit land degradation rather than the definition of sustainable development which is responsible for this. Alternatively, there may be places where sustainable development considerations have driven land degradation if losses in terms of land quality or outputs have been traded off against social and/or economic and/or other environmental benefits.	We edited the sentences on lines 113 and 117, and the explanatory text that follows to clarify our point on Sustainable Development. The headline now reads "Sustainable development was conceived as based on three pillars (social, environmental and economic). In its implementation, however economic growth is predominantly considered as the main driver of social and environmental progress (well established)."
Steve Prince	Chapter 2		113		113	".. perception can lead to..." There are some rather too sweeping statements throughout the Summary, such as this one. I suggest being a little more circumspect (see line 155)!	The sentence referred to at line 113 has been removed. On line 155 (in the SOD), we disagree with the fact that "consumption patterns adopted by segments of the civil society" constitutes a sweeping statement.
Diana Patricia Alvarado-Solano	Chapter 2	4	114	4	116	Is important to exposed in the summary that the land degradation is also related with the public policies related to increasing the crops area, specially, monocrops, which in the developing countries is one of the economic activities that has leaded to land degradation and desertification.	This is a good point. We added a mention to public policies regarding monocrops and a reference to Box 2.4 in L.117-120 as follows: "Land degradation continues to be represented by some as an effect of underdevelopment, while the impacts of development on land degradation tend to be disregarded (e.g. public policies supporting export crops (Box 2.4 in 2.2.4.3)), and the loss of nature's other contributions to people is undervalued."
Sandhya Chandrasekharan	Chapter 2	4	117	4	118	"The Environment vs. Development discussion opened in Stockholm and gave birth to the apparently consensual sustainable development principle". Keeping in mind that most people will read only the summary, it is important to clarify that the The Environment vs. Development discussion opened in Stockholm helped create clarity that it was not in fact environment v/s development, but environment for development. A sustainable resource base and the taken-for-granted ecosystem services are the very foundation on which long lasting and meaningful development rest. Please spell it out (even at the risk of being elementary) to replace the current negative and non-committal formulation in the line.	We substituted the expression "The Environment vs Development discussion" by "The Environment/Development discussion" in the executive summary. However, our chapter deals with perceptions and section 2.2.4.1 is explicit about the diverging perceptions of the ins and outs of this summit from which derived the subjacent North/South tension. Even if the Stockholm Conference was "the very foundation" of the sustainable development concept, it is not established that this led to "long lasting and meaningful development".
Steve Prince	Chapter 2		120		120	To avoid being too sweeping, I suggest: "...leading to some failures to stop..."	We have edited the sentence which now stops after the word "implemented" and does not discuss the failure to address land degradation.

Emmanuelle Quillérou	Chapter 2	4	123	4	124	"Development and economic activity in general cause negative externalities and degradation (2.2.1.5)." --> Not always. There are instances where development has led to increased environmental quality. It is the case in Western countries for pollution in particular. This is referred to as environmental Kuznet curves in economics and is controversial between economists. But there are cases where economic development has led to improved environmental conditions so you need to be more cautious in the way you are expressing the concepts here.	cf infra, we rephrased the sentence
Steve Prince	Chapter 2		123		123	Less sweeping version: "...activity can cause..."	we deleted "in general" and added "can"
Diana Patricia Alvarado-Solano	Chapter 2	4	124	4	125	The "polluter pays principle" has not been applied to land degradation. At least there is not study cases documented yet.	We kindly disagree as in France for instance, the polluter pays principle is implemented and used to remediate soil pollution, which is a form of land degradation. It's worth for Europe as well. However we agree that the spoiler pays principle applied more generally to LD is needed.
Germany	Chapter 2	4	125			What is actually meant by "spoiler pays principle"? Provide a reference for further reading.	Instead of spoiler we are now using the commonly understood expression of "polluter pays" and suggest to widen the scope of the principle (L125-126).
Yildiz AUMEERUDDY-THOMAS	Chapter 2	5	126		129	It is not quite clear what you mean by weak governing structures. In many areas, at local level, the major problem is the disparity between rules established at national level and governing structures at the local level. This does not mean that governing structures are weak locally. It is in many cases because the latter are disregarded by other levels of governance.	We apologize but we could not find the sentence you're referring to. It is maybe in another chapter?
Emmanuelle Quillérou	Chapter 2	4	127	4	134	I would challenge the beginning of this paragraph by saying it is nice in principle but consumers are already faced with too many labels and too much information, leaving them to pick and choose what they want to see/hear. So although this whole paragraph is nice in principle, the practice is far from being that easy to implement! Internalisation of price externalities is one way of doing it, but there are others (boycotts, labels such as organic/fairtrade etc). There are theories (and evidence) that say that people accept anything to get work and survive at first, with increasing levels of demands over time for better work conditions, environmental conditions etc (even the Chinese are starting to demand from their government that they act against air pollution, which I think is quite a strong signal!).	Although we did not discuss "boycott", we do discuss labels on sections 2.2.3.3 and 2.3.2.2. We are also not suggesting to change people's priorities, but to develop tools to raise environmental awareness.
Sandhya Chandrasekharan	Chapter 2	4	127	4	128	please qualify the "citizens" that are referred to here - Citizens in the global north maybe?	Thank you for raising this point. We did not mean the Northern Citizens, however we replaced the word with "people"
Sandhya Chandrasekharan	Chapter 2	4	128	4	134	I wonder how this is stated to be well established? Have the educated citizens of the developed or developing countries radically altered their consumption baskets to support how "well established" it is? I am quite sure 90% of the cocoa produced in Africa is still consumed in Europe for (counter) example. In general, the case for citizen action seems overstated in contrast to clear political action to stop unsustainable trade practices.	You are right, "well established" is not correct. But we respectfully underline the fact that the reviewer probably misread the key message. It is built on "if... then..." and has nothing to do with the cocoa currently consumed in Europe. We also underline the fact that in a consumption society, not consuming is probably the most powerful lever in citizens' hands.
Pavlos Tyrologou and María José	Chapter 2	4	131	4	134	It is good to include all these concepts as a basic element within the education content of any system in any country. Although the action of people with this training is either an action aimed at minimizing impact, there must be other incentives in the form of a requirement established by the political system, and these requirements will never be effective if not put into value, with a tangible unit (measurable), both the impact and the dependence of natural capital. Not only citizens but industry (drafted by the policy makers) is in the end that who have the true power to carry out the change that Citizens demand within a culture of minimizing the impact.	We agree, but incentives are not within the scope of our chapter, see chapter 6 and 8.
Sandhya Chandrasekharan	Chapter 2	4	135	4	139	the valid point in this paragraph. The rest needs very critical rethinking	We kindly disagree, this paragraph is the product of critical thinking and stems from our readings. We would need more specific inputs to "rethink" it.
Mahmood Yekeh Yazdandoost	Chapter 2	4	144	4	145	Correct	thank you
Virginia Meléndez Ramírez	Chapter 2	4	144	4	145	Is a firmation very well established?	We have rephrased: "established but incomplete".
Steve Prince	Chapter 2		144		144	What about gains in cultural diversity which prompt new ways to use the land?	we rephrased the sentence and opened it to new ways of land uses
Suneetha Mazhenchery Subrama	Chapter 2	4	145			no degree of confidence attributed	The degree of confidence has been added

Emmanuelle Quillérou	Chapter 2	4	146	4	147	"traditional knowledge and management systems, which have proven sustainable over decades or centuries". It is not because they have been sustainable in the past that they are still adapted to this day and age. Natural conditions may have changed, rendering them irrelevant, but more importantly social and cultural conditions may have changed too! What I am driving at is that the whole executive summary is a compilation of broad bush statements that are true in specific contexts but NOT universal truths in spite of being portrayed as such. I find your summary very misleading and a dangerous road to take for scientists wanting to remain as objective and factual as possible.	We kindly disagree with the reviewer. Traditional (i.e. Indigenous and Local) knowledge are defined in IPBES glossary as precisely those which are still vivid today. The universal truth is that these systems, where they still exist, are generally less destructive than conventional agriculture. Mixed cropping is one of the practices that have been successfully applied in agroecology, for instance. If the system does no longer exist, or if the situation has changed, then the system is not traditional anymore, so our assertion continues to be truth. An interesting case is exposed in box 2.3, section 2.2.2.2, of traditional system abandoned then readopted after years of international aid. About our executive summary being a compilation of broad statements subjective and non-factual, the reviewer should remember that we are talking about concepts and perceptions in the context of a science/policy interface assessment.
Steve Prince	Chapter 2		148		149	Again, this is a bit too generalized. Rather than "overwhelmingly", perhaps "...is often..." and add "external economic pressures" (e.g. Structural readjustment programs); and "...frequently provoked by external population pressure and even development programs..."	We edited this sentence but don't think that structural readjustment programs apply here.
Emmanuelle Quillérou	Chapter 2	5	151	5	152	Some of the mainstream worldviews and practices have been derived from traditional and indigenous knowledge. Making them opposite is an exaggeration	Thank you for this comment, we edited the sentence accordingly: "[...] but are embedded in the development of worldviews and practices and can still today provide alternatives to mainstream practices."
Germany	Chapter 2	5	151			What is meant by "IL"? Indigenous knowledge? If so, please spell out.	IL stood for Indigenous and local. We have now written it fully instead of using an acronym
Steve Prince	Chapter 2	5	151		151	ILK??	ILK stood for Indigenous and Local Knowledge. We have now written it fully instead of using an acronym
Emmanuelle Quillérou	Chapter 2	5	154	5	174	This whole paragraph mixes two very different things up and is therefore misleading. 1) demography as an environmental problem. 2) demography as a social problem. In terms of 1, too many humans are putting too much pressure on our planet. This is the idea behind the ecological footprint and self sufficiency day. Ecological footprint = how many Earths we would need if everyone were to consume the same as European / Americans etc... Earth sustainability day = day where we have consumed all resources that the Earth can generate in one year, earlier in the year every year. In terms of 2, this is simply because we do not have any instruments from the environmental field to tackle demography. It is not so much a social problem but rather that the tools we have available are linked to social aspects. In terms of the welfare system, although this is how it tends to be thought about, it is NOT the number of working people vs welfare-dependent people that matter but rather how much wealth the active population can generate and whether it is enough to feed into the welfare state system. There have been productivity increases which mean that one working person generates much more wealth now than 20 years ago. In other words, the pie (wealth generated every year) is getting bigger so a given % of the pie represents a greater amount of food. To take a parallel that you may understand better, it is not because there are fewer farmers that we produce less food. It is the same principle for the welfare state...	The reviewer is talking about a fact (augmented productivity) which is not sufficient to explain why many developed countries lead natalist campaigns, based on the argument that it is necessary to support retired citizens (see for instance this post from former director of UN population division, who compares population growth in developed countries to a Ponzi scheme: https://www.theglobalist.com/is-population-growth-a-ponzi-scheme/). Even Malthus considered that encouraging population growth was a way to maintain low wages.
Steve Prince	Chapter 2		155		155	This is a good example of a balanced statement, not too sweeping as noted in earlier comments.	Thank you

						to this but is hardly reflected in the summary) " Successful closing of the transnational development gap and thus eradication of the difference in per capita consumption will increase the relative importance of the latter. " - not if the "real problems" of overconsumption, and implicit assumption (very, very problematic) in this formulation that the development gap will be bridged through "catch-up development" to this unsustainable and havoc causing model. And to fix that, the real problems that need "fixing" are "global markets/ unequal trade/ TNCs" and "global media" not the number of people in highly populated countries. " About half a century ago the size and the growth of human populations was recognized as a major driver of environmental degradation {2.2.1.5, 2.2.2.4, 2.2.4.2}. In 1972, the declaration of Stockholm acknowledged the environmental problem caused by overpopulation and stated that countries should control their demography without affecting human basic rights. Soon after Stockholm, however, the population problem was deemed a social or educational problem, and it was no longer addressed as an environmental issue. " - Yes, Western/Northern perspectives on the issue were replaced with critical ones from the Global South. And the data from UN-SCP and Ecological Footprint data still lend support to counter the unacceptable statements made here. The population "problem" exists only because of the (over/ unsustainable) consumption "problem" and if everyone (especially the elites in highly inequitous societies) consumed sustainably and within their geographical boundaries, population would not be a "problem". Yes, all people, and especially poor people, ought to be entitled to a good quality of life, no doubt, and challenging demographics pose a human rights problem for sure. That requires fixing inequity, not victim-blaming is the moot point. Culture and religious reasons for son preference are not easy to "engineer" changes around. Development (which ensures gender equality, economic opportunity, autonomy for women) is the best contraceptive, and its a chicken-or-egg situation for developing countries to get there, is what the authors of these lines need to consider. Clearly, there are no social scientists in this group.	We don't understand how our message is victim blaming. We are confident that our chapter is well-balanced, and we certainly do not focus on developing countries. A sound policy should address both side of the coin, here population and ecological footprint. From an ideological point of view, our chapter is trying to go beyond this North/South paradigm and to consider Land Degradation and Restoration as a global concern to be dealt equally by all countries. The population of Niger grew 500% since 1960 and it is arguable to assert that the poverty rate in this country is due to Western countries' ecological footprint. We will address your comment by insisting on consumption, especially meat, which is also a demographic problem (the demography of cattle), and we will add a box in the policy-makers subsection, quoting the main arguments used in Stockholm 1972 by the Brazilian Ambassador Josué de Castro, who was <i>de facto</i> the spokesman of developing countries. What he said 45 years ago is very similar to the ideological content of your comment.
Sandhya Chandrasekharan	Chapter 2	5	157	5	174		
Astrid Hilgers	Chapter 2	5	157	5	174	be more specific: Reconsidering demographic growth as a key environmental problem is strongly supported. In several regions, in particular in specific regions: sub Saharan Africa, Nort Africa, Middle East and South Asia demographic growth will lead to serious challenges, jeopardizing sustainability, stability and security in the coming decades.	We disagree with the fact that demographic growth is a regional problem. If we were to admit this fact, then no policy could be implemented. Dealing with demographic growth as a global problem is the only way to find solutions.
Ben ten Brink	Chapter 2	5	157	5	174	Reconsidering demographic growth as a key environmental problem is strongly supported. In several regions, in particular sub Saharan Africa, Nort Africa, Middle East and South Asia demographic growth will lead to serious challenges, jeopardizing sustainability, stability and security in the coming decades.	We disagree with the fact that demographic growth is a regional problem. If we were to admit this fact, then no policy could be implemented. Dealing with demographic growth as a global problem is the only way to find solutions.
Steve Prince	Chapter 2		157		158	" depends not only on how much each consumer consumes, but also on the number of consumers." This is obvious! Does it need to be said?	We do think that the distinction needs to be made.
Suneetha Mazhenchery Subrama	Chapter 2	5	159			no degree of confidence attributed	The degree of confidence has been added
Virginia Meléndez Ramírez	Chapter 2	5	159	5	159	while it is too a crucial environmental issue	We don't understand the comment.
Yildiz AUMEERUDDY-THOMAS	Chapter 2	6	159		161	"There is huge potential for land-based climate change mitigation strategies but tapping this potential requires both strong protection measures and the development of agricultural systems that combine high-yields and close-to-natural soil organic carbon levels " It is not demonstrated that the best option is to increase sustainable yields" in a small area for human well-being and from an ecological and biodiversity conservation perspective, rather than develop an extensive agricultural system with yields that are reasonable. Indeed everytime we increase yields (productivity) we HAVE to use large amount of inputs that are likely also to impact climate change etc. Moreover there will be also issues of inequity and access to the products if we increase yields in small areas (even if it is sustainable ecologically). This is a very complex issue that still needs to be tackled not only from the point of productivity.	This comment doesn't correspond to our chapter
Steve Prince	Chapter 2		162		162	"birth control" is clearer	We prefer "inclusive demographic policy", it reflects better the process by which people themselves don't feel the need or necessity to have many children.
Steve Prince	Chapter 2		165		165	again, a confusing euphemism for birth control	We kindly disagree and do not see a confusion in this particular case, as we are not talking about birth control (see our response to the previous comment)
Steve Prince	Chapter 2		167		167	replace "or" with "and"	thank you, we rephrased
Finnish Government	Chapter 2	5	174	5	174	Food waste seems a bit out of place in this key message. This issue should be developed further here or perhaps in another key message.	thank you, we stopped the sentence after "demographic growth"
Emmanuelle Quillérou	Chapter 2	5	179	5	179	Virtually certain????? What does this mean? Surely you do not want the report to be taken as coming out of virtual reality.	virtually certain has been excluded the ipbes vocabulary, we use now "well established"
Sandhya Chandrasekharan	Chapter 2	5	181	5	187	what about the economic value of the alternate use to preserving nature? People may be making very rational-thinking informed (but short-term) choices to forgo nature's benefits. I find the whole 'benign' faith on "large segments of civil society" and their wisdom, a little lacking in validity.	we replaced "large segments" by "a part"

Mahmood Yekeh Yazdandoost	Chapter 2	5	183	5	185	Correct	Thank you
Pavlos Tyrologou and María José	Chapter 2	5	183	5	195	That's a good message. But this message will never come effectively if one does not take into account the economic variable that can mean for companies the loss of their natural capital, on which they depend to successfully operate an asset or a business. The question of human well-being is indisputable, but it has to be understood and made tangible (in measurable units) by governments and companies. It is true that many of the nature's contributions to people have no market prices, but can be valued through other monetization methods like revealed preferences and declared preferences.	We agree with your two points and believe that the first one is addressed in L. 240-242 "estimated costs and benefits...biological and cultural diversity". And the second one about values is addressed among the whole assessment even though not specifically in this key message.
Emmanuelle Quillérou	Chapter 2	5	185	5	188	It is not the perception of services to humans as being abstract that decreases economic importance (economics include consideration of non monetary values, it is financial or monetary perceptions that do not), it rather decreases their consideration in decision-making based on limited information summed up in numbers (be them monetary or biophysical or else...)	This key message is specifically addressing the fact that economic valuation is lacking for some of nature's contributions to people, which limits their consideration in decision-making. We do not imply that other quantification (e.g. biophysical) are not lacking as well, but those instead to focus on the financial aspects.
Emmanuelle Quillérou	Chapter 2	5	191	5	193	Quality of life is a reference to living standards and NOT purchasing power. Confusion between the two concepts.	Our point is that many high income societies consider purchasing power as a synonym of well-being and social prestige.
Finnish Government	Chapter 2	5	193	5	195	It seems that here something (a verb) is missing from the last sentence as it is not coherent as it is.	Thank you for the careful reading, we added "were" before related
Germany	Chapter 2	5	196	5	201	Please explain what is meant by "international community". In ch 2, line 2257 you state the concept of "Ecological solidarity", which needs to be explained in more detail.	About the concept of ecological solidarity, we developed (in section 2.2.1.3) and added a definition to the glossary. We also added a link to the appropriate section in the key message. Concerning "international community", we use widely accepted terminology which represents the sum of all countries in international assemblies.
Astrid Hilgers	Chapter 2	5	196	6	217	A very interesting vision on rights and duties. The broadening towards ecological solidarity is worth to be internationally discussed.	Thank you
Marcia Levaggi	Chapter 2	5	196	6	217	En particular, líneas 211-212. La idea de extender el sentido del concepto "ecological solidarity" para delimitar el área protegida y su inserción territorial, supone una vulneración al principio de soberanía nacional. Asimismo, Argentina no admite la creación de un "cross-boundary legal regime".	We acknowledge the new paradigm implied by this concept and agree that its definition can be adjusted, however, outside its legal recognition, ecological solidarity is a scientific reality that can't be ignored. Furthermore, there can be an international recognition of ecological solidarity with no transboundary consequences. It will be clarified in our chapter. It has been clarified in section 2.2.4.3.
Ben ten Brink	Chapter 2	5	196	6	217	A very interesting vision on rights and duties. The broadening towards ecological solidarity is worth to be internationally discussed.	Thank you
Emmanuelle Quillérou	Chapter 2	5	198	5	198	It is not just international jurisprudence that limit environmental action, surely individual self-centered national interests are also playing a big part in this, with incentives to freeride on action! You clearly lack a social scientist like an economist for inputs to this report, as with any other land degradation related report, which is limiting the impact you could have if you were calling upon the humanities and social sciences for real rather than instrumentalising them. Game theory, political economy, group behaviours and individual behaviours in groups may have relevant inputs for this section, in addition to law which is good but too limited compared to this paragraph's opening line.	This chapter has been produced by experts in ecology, sociology, ethnology, economy, and law. The particular key message that you are referring to concerns legal solutions. Natural Capital and other kind of monetary valuation of nature, which are fashionable, have not proven their efficiency although they are mentioned in all assessment since the 90s (see Stern Report). Their efficiency against climate change is questionable. Nonetheless, Chapter 6 and 8 deal with economic tools.
Sandhya Chandrasekharan	Chapter 2	6	210	6	217	how about the ecological debt created by the last 50-100 years of consumption and informing a pattern of global lending/ sustainability restoration credits to fix that debt?	In the point that you are referring to, we discuss ecological urgencies threatening the future of mankind and chose not to address historical degradation for this reason.
Virginia Meléndez Ramírez	Chapter 2	6	211	6	211	There may be other more common terms for people, e.g. Solidarity for a healthy planet	"Ecological solidarity" is an established legal concept while "solidarity for a healthy planet" is not.
Emmanuelle Quillérou	Chapter 2	6	218	v	219	"A global consensus on the definition and baseline for land degradation does not exist (very well established).: I find this way of expressing the concepts very puzzling and confusing.	It means that there is no consensus about how to define land degradation, and even less consensus when it comes to adopting a baseline from which restoration could be derived.
UNCCD SPI	Chapter 2	6	218		221	The absence of an internationally agreed baseline does not preclude pursuit and proof of LDN: LDN requires that negative changes are balanced by positive changes - this requires only the capacity to detect change. The baseline against which it is assessed need only be the starting value for the indicator of assessment- there is no necessity for this absolute value to be established in an agreed international process that sets thresholds to classify land as degraded or otherwise.	This is not really entirely correct as in this case the baseline would be the state of the ecosystem at the point when we have agreed that the LDN is reached i.e. 2030

UNCCD secretariat	Chapter 2	6	218	6	221	The concept of LDN implies not net loss of land-based natural capacity between two different point on time (Barron et al. 2017). It implies that negative changes are balanced by positive changes. It can be done by detecting changes in the values of an agreed number of indicators. The baseline can be established by equaling to the value of indicators at initial time. There is no necessity for this absolute value to be established in an agreed international process that sets thresholds to classify land as degraded or otherwise. This message may discourage actors to take actions to halts, reduce and revert land degradation waiting for a "universal but hardly feasible" consensus of the "ideal state of Nature". Indeed it contradicts key messages of chapter 4 that rearmks" However, recent baselines such as the presnte, 10 or 20 years in the past may be far more relevant when considering zero net degradation targets"	The baseline discussion has been clarified in the SPM of the whole LDRA and in the Box. Please see final version of the report for this finalized discussion on baselines. See section 1.1, Box 1.1 and the SPM.
Ben ten Brink	Chapter 2	6	218		249	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 and desired use of the land such as forestry, cropland or housing. Whether these changes and trade offs are accepted or not belongs to the political domain, not the scientific. This approach creates a strict distinction between measuring and assessing factual changes on the one hand and the judgment whether it is acceptable or not (so whether it concerns 'degradation') on the other, clarifying the different roles of science and politics, and taking away the barriers to fulfill their tasks properly. I strongly propose to consider this approach as a more scientific and objective one, finally paving the way to making progress in this field, and breaking the deadlock of never ending discussions on definitions and judgements. Consequently, it should be considered to avoid the expression 'land degradation' in the LDRA report, and leave that to the policy making phase in the policy cycle. I am aware it seems weird, but fundamental flaws require fundamental solutions. In their review all other chapters may reflect on this approach, given their findings and synthesis from the literature.	This is a good comment but all of its content could not be incorporated to the chapter at this stage and indeed it would have needed rescoping of the whole assessment. The baseline discussion has been clarified at the SPM.
Steve Prince	Chapter 2		218		219	Yet this paragraph goes on to present an exclusive definition, not acknowledging others (see Ch 1 Box 1.1, Ch 4 section 4.1.2.3). In fact, the definition given here is at variance with the agreed concepts following lengthy discussions between most CLAs and the Conveners, by email and Skype. The LDRA-agreed definition is used in Chapter 1 and Chapter 4. At least the difference should be noted here and reasons given why it is rejected.	The issue of baseline has been extensively revised in the chapter and in the SPM
Emmanuelle Quillérou	Chapter 2	6	219	6	220	"this lack of consensus precludes sound scientific assessment of the extent and magnitude of global degradation" Only for the natural sciences, not for economics. This is a reason that is holding off action and should not. Yet you are repeatedly handing it over on a plate to justify inaction! This is not the first time that action is required even though we cannot measure impacts perfectly well... and there are surely ways to check how operational and functional ecosystems are. Surely degradation is related to how much potential for productivity there is (land generating 20% of total potential yield is considered degraded land, whereas land with 100% potential yield is considered fully functional and non degraded). This would explain that we have less degradation in high income countries than in low income countries (developing vs developed is a classification is no longer relevant, the level of income is used instead).	The difference between economics and natural science is that natural science deals with actual and effective restoration; so a lack of consensus have an impact in the real world. About developed/developing countries, we agree that this expression is old fashioned, but it is IPBES' terminology.
Germany	Chapter 2	6	222	6	248	The 'natural state baseline' is an interesting concept. However some questions arise, such as: How and where can the complex information be attained in order to determine the natural state baseline? What role does climate change play in this concept? How do agricultural areas fit in the natural state baseline concept (see also the definition of rehabilitation provided in ch 1, page 7, lines 196-197)? How does this concept fit to the SDG 15.3 target on striving to achieve land degradation <i>neutrality</i> by 2030? Surely, the natural state baseline concept is interesting for restoration purposes. But as the authors state in the SPM on page 3 lines 51-52: "restoration to some pre-degraded state is not always possible in a time period of several decades and may not be desirable in some cases." Therefore, you may wish to propose a more differentiated response pathway on how to address land degradation and restoration (see also ch. 2, page 10, lines 364-367 on the necessity to assess and understand the needs of different actor groups).	Thank you for your comment. The issue of baseline has been extensively revised in the chapter and in the SPM.
Steve Prince	Chapter 2		223		224	As noted in Ch 4, this seems reasonable until it is realized that, at least in most cases, it is impossible to determine with adequate accuracy.	The issue of baseline has been extensively revised in the chapter and in the SPM.
Steve Prince	Chapter 2		231		231	Dishonesty is unlikely to be a major problem. Maybe "valid" would be better?	Revised

Steve Prince	Chapter 2		232		233	See comment on lines 218-9.	Revised accordingly
Sandhya Chandrasekharan	Chapter 2	6	235	6	239	problematic and to be seen in the light of the previous comment	This comment is not specific enough to be addressed
Steve Prince	Chapter 2	6	236		248	This is a very odd argument. Essentially it says because of the possibility of some misinterpretations of data, all objective data should be ignored, and the "natural state", which is mostly guessed at, regarded as superior. Thus it is being proposed that a misunderstanding should be countered with the unknowable! Are there any examples of such serious misuse of data acquired in the past 50 yrs?	The issue of baseline has been extensively revised in the chapter and in the SPM
UNCCD SPI	Chapter 2	6	242		248	Acknowledge that this conclusion that absolute degradation is greater in the most developed countries is dependent on the application of the IPBES definition of land degradation and would not necessarily apply if the UNCCD definition was applied.	This is not relevant as we use the IPBES definition, given to us in the Scoping Document, which was approved by IPBES Plenary (please see annex VIII to Decision IPBES-3/1).
Marcia Levaggi	Chapter 2	7	248	8	255	En la línea 253 aparece mencionada la necesidad de contar con "New transnational legal concepts such as 'ecological solidarity' and alternative paradigms of human development" provenientes de los sistemas de conocimientos tradicionales y la sociedad civil, que tendrían un rol clave en el manejo de la degradación de tierras. Cabe señalar que el Derecho Internacional Público no define principios "transnacionales". En tal sentido, y como fue manifestado, Argentina solicita excluir dichos conceptos del documento final.	We acknowledge the new paradigm implied by this concept and agree that its definition can be adjusted, however, outside its legal recognition, ecological solidarity is a scientific reality that cannot be ignored (the Amazon forest has an impact on rains in Sahara). Furthermore, there can be an international recognition of ecological solidarity with no transboundary consequences. It will be clarified in our chapter. Finally, there are indeed transnational legal concepts such as the Universal Declaration of Human Rights.
Steve Prince	Chapter 2	7	258		258	It should be noted that the proposed metrics of degradation are primary production, soil carbon and land cover (Convention on Biodiversity UNEP/CBD/SBSTTA/20/INF/60 1 April 2016). There is disagreement over the value of these since they can only be measured at local scales (at most a 3rd level administrative unit) - much smaller than the continental scale that CBD intends.	The reviewer has not familiarized himself with the scoping document and therefore is making arguments we can not accommodate. Please see annex VIII to Decision IPBES-3/1 for further details on the scoping mandate of the assessment and each specific chapter.
Eila Gendig	Chapter 2	7	264	7	265	Suggesting changes to policy sounds ambitious. As national backgrounds and intentions for policies are vastly different, a one-size fits all suggestion for policy development is hardly achievable.	We give a general idea of what new trends in education could be, it is not prescriptive and quite flexible.
Eila Gendig	Chapter 2	7	267			I do not agree with "chapter 1 described the different concepts"	This sentence has been deleted.
Emmanuelle Quillérou	Chapter 2	7	273	7	274	"Social sciences do not obey the same regime of proof as natural science." You CANNOT state this, which suggests that social sciences are less valid than natural ones. Plus some social sciences obey the same regime of proof required of the natural sciences (economics being one of them in some of its subdisciplin at any rate).	1) Social sciences do not obey the same regime of proof when it deals with perceptions and concepts. One cannot say that what a shaman explains is "well established" thanks to an assessment by major scientific journals. Even those social sciences which rely on quantitative data have to analyze them with a certain degree of subjectivity. However we will add "such as History, Philosophy or Anthropology". It was important to state that; otherwise there would be no social science at all in the assessment. 2) Regarding economics as being equal in its methods to natural science, it is undeniable. However we would appreciate the reviewer to give some example of well established economic realities.
Steve Prince	Chapter 2	7	273		276	This is very misleading. There are well-developed "Qualitative data" methods that are well-established in social sciences and, while there are obvious differences with physical measurements, much progress has been made. Rigorous analytical tools are available in the social sciences, for example Agent-based modeling. I strongly advise that lines 273-6 are deleted.	Social sciences do not obey the same regime of proof when it comes to perceptions and concepts. One cannot say that what a shaman explains is "well established" thanks to an assessment of major scientific journals. Even those social sciences which rely on quantitative data have to analyze them - the data are well established, but not the analysis, which relies on expert opinion. However, we will add "such as History, Philosophy and Anthropology".
Germany	Chapter 2	7	290	7	292	The term "too slow" is relative. You may wish to expand your discussion by also analysing the time feeling of other relevant stakeholders, besides NGOs, in order to analyse the reasons for different time-scales and approaches, which exist in the different stakeholder arenas (for instance different roles in society), and where synergistic potentials can lie.	Actually we wrote "appears to be too slow" - to the eyes of other stakeholders of course. We will rephrase.
Emmanuelle Quillérou	Chapter 2	7	291	7	291	"The capacity of civil society (including NGOs)..." not just to propose but also demonstrate and practise.	We have rephrased the sentence which now reads:"The capacity of civil society (including NGOs) to propose alternative policies or practices is a powerful instrument to contribute to decisions at all political scales. It is also the main reason for being optimistic about our capacity, as citizens and human beings, to avoid and reverse environmental degradation."
Eila Gendig	Chapter 2	7	292			I do not see a focus for international decisions in this case. Rather "...civil society...is a powerful instrument to contribute to..." decisions at any spatial scale.	We have rephrased the sentence which now reads:"The capacity of civil society (including NGOs) to propose alternative policies or practices is a powerful instrument to contribute to decisions at all political scales. It is also the main reason for being optimistic about our capacity, as citizens and human beings, to avoid and reverse environmental degradation."
Steve Prince	Chapter 2		296		296	objective?	Rephrased
Eila Gendig	Chapter 2	8	307			Consider re-locating part 4 to the front of chapter 2. As this would help guide to embed concepts and perceptions within the IPBES framework and not to retro-fit it.	Good suggestion, but we cannot change the order of the chapter at this point.

Eila Gendig	Chapter 2	8	312			Where in Figure 2.1 would ecosystem services sit? Why are they not included in "Reality"? There is a dual aspect to ecosystem services - they are including perceptions and personal values, beliefs, but also the biophysical components of ecosystems. If there is to be a focus on the cultural and intrinsic aspect of ecosystem services, these may as well be overarching and transcending the whole diagramme or covered in both - reality and worldview.	We defined Reality as what exists independently of human knowledge. Thus our figure is consistent. However we have modified this part of the figure which now reads "reality/nature/world"
Steve Prince	Chapter 2		314		315	Thus the Target or Desired State (Chapters 1 and 4) is the appropriate reference, not a theoretical Natural State	This is not correct as has been discussed in the Chapter and in the SPM
Javier Ernesto Cortés Suárez	Chapter 2	8	316	8	320	This definition should also consider perceptions as the result of the interactions between individuals of the natural system (in this case ecosystems or landscape) and individuals of the cultural ecosystem (set of values that regulate the existence within a social group). Perceptions should be understood as "the understandings and sensitization of a society over its natural environment". I suggest to look over the following manuscript, in order to complement the definition of perception: Chuprine, A. 2013. Estudios de percepción en la sociedad rural como herramienta para el abordaje del conflicto vida silvestre y sociedad: Enfoque, conceptos y función. Documento de trabajo. ICOMVIS-UNA. Heredia.	We really appreciate the suggestion, but it was a very long way before we adopted a definition adapted to our purpose. It has to be simple while fitting the content of the chapter.
U.S. government	Chapter 2	8	334	8	338	While it is appropriate to focus within this chapter on the role of ecosystem services in supporting human well-being, in fact "in its broadest sense" human well-being is also dependent on social, economic, and other inputs that are derivative enough from ecosystem services that connections are no longer clear to most people. It undermines the holism of the definition of human well-being to restrict it only to that portion directly dependent on ecosystem services. Listing other factors, then clarifying focus on the ecosystem-services support for human well-being may protect against error in definitional logic, without undermining the key focus within the term, as intended for use in this chapter.	We acknowledge the fact that Human Well-Being is a complex concept. We now refer to IPBES glossary where well-being is defined adequately.
Steve Prince	Chapter 2	8	334		335	Could cite Ch 1 on the comparison of ES and NCP.	We have added citations to Chapter 1 but also retained sections of the definitions in chapter 2 because it helps the reader to get the message.
Steve Prince	Chapter 2	8	341		341	replace dash with "to"	We do not understand this comment, neither why we should make the replacement
Steve Prince	Chapter 2	8	342		342	replace dash with "perception of"	We do not understand this comment, neither why we should make the replacement
Pedro Mendoza	Chapter 2	9	346	9	346	In the figure 2.1, it's not clear the use "the princess"	The figure has been edited and simplified. Illustrations of the different actors that perceive a given landscape have also been removed.
Emmanuelle Quillérou	Chapter 2	9	346	9	346	I do not understand the colours, revise figure by using black and white only to increase impact across various communities	The figure has been edited and simplified. Illustrations of the different actors that perceive a given landscape have also been removed.
Joanne Perry NZ focal point	Chapter 2	9	347		348	The images used in the perceptions column are very odd. I am not sure why you have Snow white as the natural scientist, is this a place holder image	The figure has been edited and simplified. Illustrations of the different actors that perceive a given landscape have also been removed.
Sandhya Chandrasekharan	Chapter 2	9	348	9	348	The natural scientist image could be replaced. Is currently Snow White from Walt Disney animation?	The figure has been edited and simplified. Illustrations of the different actors that perceive a given landscape have also been removed.
Virginia Meléndez Ramírez	Chapter 2	9	348	9	349	In the figure 2.2 It could be better to place real people	The figure has been edited and simplified. Illustrations of the different actors that perceive a given landscape have also been removed.
Emmanuelle Quillérou	Chapter 2	9	349	9	Figure 2.0	Why is a Disney princess representing natural scientists? Also, aren't botanists a kind of natural scientists? "Soil scientists" may be better than "natural scientists" in your example here.	The figure has been edited and simplified. Illustrations of the different actors that perceive a given landscape have also been removed.
UNCCD SPI	Chapter 2	9	349		Figure 2.1	A more suitable comment to be made by the farmer would be "no weeds = good farmer", as "perfect rows" is not a noteworthy achievement in mechanised agriculture - no skill in achieving this. An alternative could be good establishment - ie no gaps - but that would be harder to convey.	The expression "good farmer" comes from our review of papers dealing with farmers' perception and attitude about their own role and relationship with nature, as exposed in section 2.2.3.1
U.S. government	Chapter 2	9	349	9	Figure 2.2	Please delete photos of "characters" under the perceptions column. As shown, they could be viewed as stereotypical and in poor taste. Further, there may be potential issues regarding intellectual property misappropriations. Images also do not provide value for readers; we recommend allowing readers to make their own mental image of a "natural scientist", "botanist", etc.	The figure has been edited and simplified. Illustrations of the different actors that perceive a given landscape have also been removed.
Germany	Chapter 2	9	349		349	Nice picture to portray a "natural scientist" (is it Snow White searching for the Seven Dwarfs?)!	The colors have been standardized
Eila Gendig	Chapter 2	10	353			Arrows, as well as the "Worldviews"-Box are depicted in red	Edited
Emmanuelle Quillérou	Chapter 2	10	353	10	353	Again, colours tend to mask information to some scientific communities and/or nationalities. Please revise using black and white only. What does the external frame represent? Unclear.	This was not possible

Javier Ernesto Cortés Suárez	Chapter 2	10	357	10	367	I believe that this must be seen not only from the actors and their needs but also from their obligations and responsibilities in land degradation and restoration process. Likewise, I consider important to organize such actors (civil society, private and public sector) in terms of their relations in a territory and in particular with regard to land degradation and restoration topics.	Good suggestion. We rephrased.
Steve Prince	Chapter 2		357		357	You could note a list with a slightly different focus in: Prince, S. D. (2016). Where does desertification occur? Mapping dryland degradation at regional to global scales. In R. Behnke & M. Mortimore (Eds.), In The End of Desertification? Disputing Environmental Change in the Drylands. Springer-Praxis Earth System Science Series.	This is a book chapter to which we do not have access (https://link.springer.com/chapter/10.1007/978-3-642-16014-1_9). Looking at the abstract, the chapter seems to deal with the mapping of desertification, so I am not sure of what the list of actors would be. This comment refers to the following sentence in the chap: Vogt et al. (2011) identified several groups of actors that have different needs in terms of type and frequency of information related to land degradation and different capability for response [...].
Eila Gendig	Chapter 2	10	358	10	370	The second subset of actors (lines 368 - 370) is differently defined to the actors described in lines 358-364. Can you clarify why there is a difference?	The first subset is the one proposed by Vogt et al. (2011). The second subset is ours.
Steve Prince	Chapter 2		362		362	This term (desertification) has been the subject of a great deal of discussion and many (including some UNCCD literature) have adopted the less misleading term "dryland degradation". Would it not be better to use that here or, if not, at least cite the discussion in Ch 4 (Sect. 4.2.6.2.4.).	The cross-reference to Chapter 4 has been added.
Emmanuelle Quillérou	Chapter 2	10	373	10	374	Why only law and economics? There are other social sciences + humanities! Romve mention here as you are explaining this focus on the next page.	We clarified the fact that law and economics are part of 2,2,1, along with scientific concepts from natural sciences.
Kari T. Korhonen	Chapter 2	11	375	17	650	In this Sbu-Chapter ther terminology is questionable and deviates from e.g. chapter 4. Here all land that deviates from natural stage is regarded here as degraded land. Thus, all agricultural land, producing necessary food for people, is degraded. Also, all land where human extract some benefits are regarded degraded, even if such lands have maintained their capacity to produce well-being for humans and other living organisms. This approach can not work. Land that is purposively altered to increase well-being to human life should not automatically be regarded degraded. I recommend changin the terminology in this sub-chapter 2.2. This is not about degradation, this is about naturalness.	This is a comment from a person that is not familiar with the IPBES definition of degradation. Nevertheless this has been clarified by explaining that natural ecosystems may be degraded or transformed and that transformation is degradation from the perspective of the original ecosystem.. New figure was produced for the SPM to incorporate this issue.
UNCCD SPI	Chapter 2	11	375		376	Are you equating status of biodiversity and ecosystems with land degradation status? Clarify.	Yes because that is the IPBES definition
Javier Ernesto Cortés Suárez	Chapter 2	11	377	11	379	Natural science primary goal is not only to describe, but also as social science, to analyze environmental interactions from a biotic and abiotic perspective. These should be reviewed considering more recent definitions.	This is slightly edited
Steve Prince	Chapter 2	11	377		377	Add "to describe and understand."	Good suggestion.
Steve Prince	Chapter 2	11	383		383but now superceded by NCP in IPBES (Pascual, U., Balvanera, P., Diaz, S., Pataki, G., Roth, E., Stenseke, M., Watson, R. T., Başak Dessane, E., 1301 Islar, M., Kelemen, E., Maris, V., Quaa, M., Subramanian, S. M., Wittmer, H., Adlan, A., Ahn, S., Al-1302 Hafedh, Y. S., ... Yagi, N. (2017). Valuing nature's contributions to people: the IPBES approach. 1303 Current Opinion in Environmental Sustainability, 26, 7–16. 1304 https://doi.org/10.1016/j.cosust.2016.12.006)	NCP is used together with ESS
Marcus Zisenis	Chapter 2	11	393	18	683	It should be made more clear that the degree of deterioration/degradation depends on the land use and ecosystem conditions that people directly as inhabitants or indirectly by law want to achieve and to hold on for future generations and biodiversity on its own.	Throughout the assessment, the definition of degradation used follows the definition given in the scoping document. As a result, our discussion on the degree of degradation is made in relation to this working definition
U.S. government	Chapter 2	11	393	22	775	This is a very useful section describing the difficulty with development of baselines.	Thanks
Shiping Wang	Chapter 2	11	393	11	412	Usually there are different degraded magnitudes, including light, middle, heavy and extreme degradation. The degraded land can be recovered by natural restoration at least for the light and middle degradations. Probably the heavy and extreme degradations could not recovered unaided within decadal time scales because they beyond the degraded threhold. Therefore, the definition of degraded land is not accurate. Degradation is just be a stage or status that be successive processes far away to climix community, whether it can be recovered or not just be degraded magnitude, i.e. degradation should be taken into account the two aspects.	There is in fact no need to categorize land degradation which is continuous process.
Mahmood Yekeh Yazdandoost	Chapter 2	11	394	11	400	Definition of degraded land and rehabilitation occurred in many places! Isn't just once enough?	It is in Ch1 and here for a reason: to help reader to understand what follows
Virginia Meléndez Ramírez	Chapter 2	11	395	11	400	These definitions have already been presented	It is in Ch1 and here for a reason: to help reader to understand what follows
Jonathan Davies	Chapter 2	11	395	11	397	This definition was the starting definition for the LDRA, but I think the assessment throws the definition into uncertainty. It is extremely important to place this uncertainty - and the alternative definitions - up front so that one of our key audiences (the agriculture sector) does not immediately tune out.	This has been done in the Summary for Policy Makers, also drawing on the assessments on the definition of degradation emerging from all chapters.
Javier Ernesto Cortés Suárez	Chapter 2	11	397	11	406	These should be reviewed considering observations in chapter 1.	Completed

Mahmood Yekeh Yazdandoost	Chapter 2	11	400	11	406	When tipping point happen, on biodiversity aspect, some species (usually sensitive and vulnerable) may become extinct, then aided management for gone with the wind can't do anything.	The process of losing species won't stop, it can only be slowed down until human pressure (through economic and/or population growth) diminishes, which will not happen so soon (see Chapter 7 for further elaboration).
Jonathan Davies	Chapter 2	11	404	11	405	As part of the definition, if we say that land is degraded when business as usual land management prevents recovery then we are very clearly saying that all agricultural land is degraded land. This poses two problems. First is that the LDRA is then redundant to the agriculture sector, which in practice is probably the biggest actor in sustainable land mgt. Second is that this definition cannot support the assertion, made throughout the LDRA (including Ch7), that restoration will contribute to food security and a sustainable future. Based on such a restrictive definition of LD, restoration can only lead to massive decline in food production.	This issue has been clarified in the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Steve Prince	Chapter 2	11	404		405	Are you adding human inertia to the LDRA definition of degradation? It is obvious that land can be "permanently" degraded in the sense that inappropriate land management is continued and cannot be changed. If this additional definition is needed, it should be made clear that it includes land that is not degraded in the LDRA definition sense. This needs to be clarified. LDRA def: "degraded land" is defined as the state of land which results from the persistent decline or loss in biodiversity and ecosystem functions and services that cannot fully recover unaided within decadal time scales. "Land degradation", in turn, refers to the many processes that drive the decline or loss in biodiversity, ecosystem functions or services, and includes the degradation of all terrestrial ecosystems." (Decision IPBES-3/1 Annex VIII SCOPING FOR A THEMATIC ASSESSMENT OF LAND DEGRADATION AND RESTORATION . Parag IIA)	This section simply explains what the IPBES definition entails.
Emmanuelle Quillérou	Chapter 2	11	407	11	412	"i) whether the ecosystem can recover unaided, and ii) whether it can do so in a given time frame." This is not really helpful. There are a lot of repetitions in the beginning of this paragraph of things already in the previous ones. I would change the sentence quoted above by: "i) whether aid is needed for the ecosystem to recover, and ii) how it would take for the ecosystem to recover on its own, without rehabilitation efforts"	Thank you for your suggestion but we prefer to use the original formulation, for the sake of simplicity.
Pedro Mendoza	Chapter 2	11	411	11	412	Include the idea of disturbance levels (https://link.springer.com/article/10.1007/s11258-012-0153-y)	Thank you for your suggestion but we preferred to not included these as a categorization of a continuous phenomena.
Emmanuelle Quillérou	Chapter 2	11	413	11	413	Community: please specify that you are talking of an ecological community and not a human one.	Done, although the context was quite clear.
Steve Prince	Chapter 2		415		415	Do you mean "succession"? Also what about invasions by aliens, disease and other eruptions (e.g. insects, fungi), occasional environmental extremes?	We mean succession.
Javier Ernesto Cortés Suárez	Chapter 2	11	418	12	443	These should be reviewed considering observations in chapter 1.	This issue has been clarified in the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Jun Wang	Chapter 2	11	420	11	420	There is missing dot and comma after 'al' in the reference. "anthropogenic loss of biodiversity and ecosystem functions and services."	All references have been checked for the final version of the chapter.
Emmanuelle Quillérou	Chapter 2	11	421	11	422	What about natural loss of biodiversity and ecosystem functions? Surely there could be ecosystem degradation even without direct or indirect human action. I understand "anthropogenic loss" here as referring to anthropogenic impacts over ecosystems leading to a loss of ecosystem quality, rather than a loss to humans.	Naturally there can be ecosystem degradation without human but here the focus is on the problems we have caused.
Steve Prince	Chapter 2	11	423		424	Rarely can this be derived objectively and with adequate detail to assess contemporary degradation and recovery. See note on lines 218-9.	This issue has been clarified in the SPM of the LDRA
Steve Prince	Chapter 2		425		427	The IPBES-03 document uses this term twice only, and in neither case is it explained. To be consistent with the definition of degraded, presumably the meaning is a state that can recover itself, that is not permanently degraded. Even if the Scoping does mean pre-human for pre-degradation, there is no reason LDRA has to adopt a term that can easily be shown to be practically meaningless! (see Ch 1 Box 1.1, Ch 4 section 4.1.2.3)	This issue has been clarified in the Summary for Policy Makers of the Land Degradation and Restoration Assessment. We also need to follow the scoping document, agreed in plenary, that was given to us.
Jun Wang	Chapter 2	12	428	12	429	Only the last name of the author should be cited in the reference.	All references have been checked for the final version of the chapter.
Astrid Hilgers	Chapter 2	12	431	12	443	It should be noted that a common baseline is necessary to be able to aggregate local information to higher spatial scales and compare different locations.	This is a good comment and the comparability of the data is a part of the explanation we have provided.
Ben ten Brink	Chapter 2	12	431	12	443	It should be noted that a common baseline is necessary to be able to aggregate local information to higher spatial scales and compare different locations.	This is a good comment and the comparability of the data is a part of the explanation we have provided.
Steve Prince	Chapter 2	12	431		432	Please refer to the presentations in Ch 1 and 4 that state clearly there is and should not be one baseline. Different purposes require different types of baseline.	This issue has been clarified in the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Steve Prince	Chapter 2	12	432		433	This cannot be. How can you know if it is "close" when there is no independent data for comparison? The reference given merely states that a pre-human baseline is the only valid one; it has no supporting discussion nor does it consider alternatives. Delete, or qualify this statement.	This issue has been clarified in the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Jun Wang	Chapter 2	12	433	12	433	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.

Steve Prince	Chapter 2	12	433		434	This implicitly takes the pre-human state as the baseline . As I have noted elsewhere in the Chapter, the fact that the natural state can only be inferred makes this a theoretical question with little practical relevance to IPBES.	This issue has been clarified in the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Steve Prince	Chapter 2	12	436		436	"..humans are..."	ok
Steve Prince	Chapter 2	12	437		438	If you are consistent and mean restore to the pre-human natural state , surely these are one and the same issue, not two confused ones.	This issue has been clarified in the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Steve Prince	Chapter 2	12	440		443	See note on lines 236-248	This issue has been clarified in the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Jun Wang	Chapter 2	12	442	12	443	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Shiping Wang	Chapter 2	12	443	12	428	pre-degradation state should climate climix or soil climix for a certain site for natural ecosystem. However, for arable land it could be complexity.	Apologies but we do not understand this comment and cannot address it.
Astrid Hilgers	Chapter 2	12	444	12	446	Not only extent and severity are key dimensions, but also the particular factor at hand should be noticed. There are numerous factors in which change can be expressed. Land degradation is not a factor, but a conventional entity, what means it is not a physically entity but a virtual entity, established by human agreement ('convention') . Therefore it can not be measured as such, such as 'soil organic carbon' content. This makes 'land degradation' a practically non-operational entity, and is it more practical and scientific to abandon the indicator 'degraded or degrading area' and just mention the change in the factors studied, its extent and severity. See also my comment on baselines. Please consider this approach in the final report, see	Of course the degraded components or indicators are important but the point here was that the area of extent where any factor that is considered is not enough but also how much the components have degraded within each area is important.
Ben ten Brink	Chapter 2	12	444	12	446	Not only extent and severity are key dimensions, but also the particular factor at hand should be noticed. There are numerous factors in which change can be expressed. Land degradation is not a factor, but a conventional entity, what means it is not a physically entity but a virtual entity, established by human agreement ('convention') . Therefore it can not be measured as such, such as 'soil organic carbon' content. This makes 'land degradation' a practically non-operational entity, and is it more practical and scientific to abandon the indicator 'degraded or degrading area' and just mention the change in the factors studied, its extent and severity. See also my comment on baselines. Please consider this approach in the final report, see	Of course the degraded components or indicators are important but the point here was that the area of extent where any factor that is considered is not enough but also how much the components have degraded within each area is important.
Steve Prince	Chapter 2		444		446	A truism. See note on lines 157-8	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Jun Wang	Chapter 2	12	446	12	446	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	12	448	12	448	There is missing dot or/and comma in each reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2		450		453	This could be deleted without loss.	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Javier Ernesto Cortés Suárez	Chapter 2	12	454	12	457	Figure 2.4 - In terms of the causal relationships of the elements that compose it is confusing. These should be reorganized. It is also important to consider that a transformed ecosystem can be also degraded by being retransformed into another transformed ecosystem with even more intense productive practices.	This has been edited
Mahmood Yekeh Yazdandoost	Chapter 2	12	455	12	457	Repeated figure.	We don't think so. You mean repeated in another chapter?
Virginia Meléndez Ramírez	Chapter 2	12	455	12	457	In the figure 2.4.another ecosystem? Is other land uses	This has been edited
Pedro Mendoza	Chapter 2	12	455	12	455	In the figure 2.4, the model must be modified, the green box gives rise to the transformation box as for other figures, remove colours and redraw in black and white for improved legibility to get your message across better.	This has been edited
Emmanuelle Quillérou	Chapter 2	12	455	12	455	The challenge arises from the fact that the pre-degradation state is no longer observable and needs to be estimated (rather than measured). The fact that the baseline cannot be observed any more once change has occurred needs to be explicitly stated .	We kindly disagree that removing colors would improve the legibility of the figure, on the contrary.
Emmanuelle Quillérou	Chapter 2	13	458	13	476	The challenge arises from the fact that the pre-degradation state is no longer observable and needs to be estimated (rather than measured). The fact that the baseline cannot be observed any more once change has occurred needs to be explicitly stated .	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Astrid Hilgers	Chapter 2	13	464	13	464	Reference to UNEP 2003 would be appropriate here.	Thank you, the reference has been added.
Ben ten Brink	Chapter 2	13	464	13	464	Reference to UNEP 2003 would be appropriate here.	Thank you, the reference has been added.
Steve Prince	Chapter 2	13	465		465	"Recent" refers to a time, so the qualifier "time-bound" is superfluous; it is a tautology. Its meaning is not obvious either.	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Germany	Chapter 2	13	466	13	468	Please check the statement "..., developed countries that started to significantly transform their environment already centuries ago, ... , while developing countries that started to transform their environment more recently ...". Reason: Developing countries are also geographically situated in historical cultural landscapes, which have been providing substantial social, agricultural, economic, cultural and knowledge impulses for entire humankind. These historic cultural landscapes have been subject to human interventions (land use) over millennia. Therefore, a more differentiated approach in addressing land degradation and restoration may be useful here.	This is used as an example of why the choice of the baseline matters and for this precise reason, we have not deleted it.
Germany	Chapter 2	13	473	13	476	Please provide references to underpin this statement.	References have been provided for the statement.

Emmanuelle Quillérou	Chapter 2	13	478	13	478	I have drawn similar figures for the Economics of Land Degradation but was told that they were difficult to understand. I think what you have done could be misleading: there is no reason for developing countries to have less impact on their environment than developed ones. That the impact is not the same is ok, but to quantify it in terms of degradation higher in developed countries is an unproven opinion rather than a demonstrated fact. You need to fine tune it by changing and going beyond the developed/developing countries classification. I think this figure does not really add anything compared to your text and can be removed.	We do not agree with this comment. We think the figure is helpful.
Germany	Chapter 2	13	478			Check this figure against the comments made on the concept of the natural state baseline.	We have checked the figure in light of the comments made on the natural state baseline.
Steve Prince	Chapter 2	13	478		486	See comment on this on lines 236-248. The issue is clearly stated in the text (although I disagree with it) and the Fig is not necessary. Rather than clarifying your point is quite hard to understand.	We do not agree with this comment. We think the figure is helpful.
Steve Prince	Chapter 2	13	487		487	Delete "For ecosystem services there is also a pre-degradation state".	This has been deleted
Steve Prince	Chapter 2	13	487		487	Are you saying this state differs from the pre-degradation state discussed above? Surely they are the same by your type of baseline? Perhaps you mean the pre-degradation state has biophysical and ecosystem services aspects?	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Steve Prince	Chapter 2	13	487		488	But degradation IS the loss of ecosystem services, by definition. By "increase" do you mean management practices, such as fertilizer use, that increase one service at the expense of others? Clarify.	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Steve Prince	Chapter 2	13	489		489	Aren't all ES except the "Cultural" group biological phenomena? Delete or rephrase "ecosystem services are not a biological phenomenon"	The sentence has been rephrased
Jun Wang	Chapter 2	14	493	14	494	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	14	496	14	497	It may be stated that a pre-degradation state baseline is necessary for assessing not only the magnitude of damage but also the extent of area damaged.	We have rephrased the sentence which now reads: "When considering the quantitative restoration target it is worth noting that degradation has at least two dimensions: the extent of area that has been degraded and the magnitude or severity of degradation (or loss of condition) within that area (Kotiaho et al., 2015; Kotiaho & Moilanen, 2015; Nkonya et al., 2016)."
Steve Prince	Chapter 2	14	497		498	Meaning unclear	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Steve Prince	Chapter 2	14	498		498	Delete "s" in "needs"	This has been deleted
Jun Wang	Chapter 2	14	499	14	501	Only the last name of the author should be cited in the reference, and the brackets there must also be checked.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2	14	502		502	A couple of examples would be useful here.	We understand your point about adding examples. However, the word limitations for the assessment prevented us from doing so.
Thomas Brooks	Chapter 2	14	503	14	503	Change "Today replacements are called" with "Some authors have called". As noted Lines 505-506, this is a debated concept, so it is not correct to imply that all authors use this terminology.	We kindly disagree and have not edited the sentence. There is nothing wrong with the concept of novel ecosystem it is just that people do not agree that they could be targets of restoration.
Javier Ernesto Cortés Suárez	Chapter 2	14	503	14	508	These should be reviewed because there are approaches from ecological restoration that include the maintenance of a degraded ecosystem as an activity of the restoration ecology process, or as an approach considering the goal to achieve in a degraded ecosystem.	I do not quite understand the comment.
UNCCD SPI	Chapter 2	14	503		507	In LDN conceptual framework we refer to such replacement, where applied to degraded land, as reclamation.	Thank you. LDN is referred to in a relevant section of the chapter. Here, we did mean novel ecosystems, as per the multiple literature references cited.
Pedro Mendoza	Chapter 2	14	503	14	503	The cities are "new ecosystems"	Noted. We don't use any specifics in the sentence to which this comment was made.
Royal Gardner	Chapter 2	14	509	16	593	With respect to baselines, you may wish to consider a recent special issue of Marine and Freshwater Research: "Understanding Change in the Ecological Character of Internationally Important Wetlands" that contains articles such as: Finlayson, C. M., Clarke, S. J., Davidson, N. C., & Gell, P. (2016). Role of palaeoecology in describing the ecological character of wetlands. Marine and Freshwater Research, 67(6), 687–694. Retrieved from http://www.publish.csiro.au/MF/MF15293 ; Gell, P. A., Finlayson, C. M., & Davidson, N. C. (2016). Understanding change in the ecological character of Ramsar wetlands: perspectives from a deeper time – synthesis. Marine and Freshwater Research, 67(6), 869–879. Retrieved from http://www.publish.csiro.au/MF/fulltext/MF16075 .	We considered this, but not included. The baseline discussion choreographed among all chapters of the assessment and the final updated SPM discussion is included in the SPM and CH1.
Steve Prince	Chapter 2	14	509			The introduction to the Box is almost identical to Ch 1 Box 1.1 - presumably because both have used my original text. Following this, it is largely conflicting with Ch. 1 (Box 1.1) and Chapter 4 (Sect 4.1.2.3). While such disagreement is a healthy symptom of a scholarly discussion, it is not appropriate for an Assessment. Some resolution must be reached - if necessary by vote and or Convener decision.	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment

UNCCD SPI	Chapter 2	14	509			It would be useful to provide an example of the "second challenge". One possibility would be the fire-dependent vegetation communities that have been established through burning regimes by indigenous people in Australia. The vegetation can only be maintained with anthropogenic burning; in the absence of fire a different veg assemblage takes over, to which Australian fauna are not adapted. refer to example in chapter 1.	We did not want to extend the text to contain the suggested examples.
Steve Prince	Chapter 2		519		519	See comment on this on line 465	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Astrid Hilgers	Chapter 2	14	523	14	523	Reference to UNEP 2003 would be appropriate here.	ok
Jun Wang	Chapter 2	14	523	14	523	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Ben ten Brink	Chapter 2	14	523	14	523	Reference to UNEP 2003 would be appropriate here.	ok
Jun Wang	Chapter 2	14	537	14	537	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Emmanuelle Quillérou	Chapter 2	15	538	15	565	In relationship to counterfactual thinking, you could cite Joseph William Bull; Navinder J Singh; Kenwyn B Suttle; Elena A Bykova; E.J. Milner- Gulland Creating a frame of reference for conservation interventions Land Use Policy Submitted 2015 Please use contact details below for more information on paper Joseph W Bull j.bull10@imperial.ac.uk +44 (0) 7837 172 886 E.J. Milner-Gulland e.j.milner-gulland@imperial.ac.uk Alternatively, you could more simply have a look at the current state and think on how to improve it, whether you have a counterfactual and 'natural baseline' or not. This way, urgently needed action is not dependent on whether you have been able to establish a baseline successfully. I think you should consider this option in addition to the ones you have listed. In a way, in this approach, it is the direction of change that matters more than how much closer to the baseline you are. I understand this is not enough to measure progress towards achieving SDG and associated targets, but it also shows that action is possible even without clear cut ways to measure progress (these can be piloted and established while action is being implemented).	We did not adopt the approach suggested here as setting the 15% target mean we need to measure the progress and it is not justified just to document there is progress.
Germany	Chapter 2	15	538	15	565	The 'counterfactual natural state baseline' is based on assumptions (e.g. what has not happened, but could, or might under differing conditions), and is considered to be "an understandable approach for establishing the natural state baseline". As a counterfactual natural state baseline is not based on fact but thoughts, it could easily lead to speculations, and also to contrary assumptions. Please expand on these aspects as well.	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Jun Wang	Chapter 2	15	544	15	544	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Astrid Hilgers	Chapter 2	15	547	15	565	In this respect the following publications are relevant in which a natural state baseline has been applied for biodiversity: Alkemade R., M. van Oorschot, L. Miles, C. Nellemann, M. Bakkenes, B. ten Brink (2009). GLOBIO3: Framework to assess global terrestrial biodiversity. Options to reduce Global Biodiversity Loss. Ecosystems. This approach has been applied in CBDs Global Biodiversity Outlooks and many other global outlooks such as from OECD and UBEP; For soil properties: Stoorvogel JJ, Bakkenes M, Temme AJAM, Batjes NH, ten Brink BJE, 2017a. S-World: a global soil map for environmental modelling. Land Degradation & Development 28: 22–33. doi: 10.1002/ldr.2656. and: Stoorvogel JJ, Bakkenes M, ten Brink BJE, Temme AJAM, 2017b. To what extent did we change our soils? A global comparison of natural land current conditions. Land Degradation & Development XXX: xx-xx. doi: 10.1002/ldr.2721. And: Ten Brink B, Bakkenes M, Stoorvogel J, Schut T, Van Beek R, Fleskens L, et al (forthcoming 2017). The potential impact of global land degradation and restoration on water, food, climate and biodiversity. This approach has been applied in the first Global Land Outlook of the UNCCD, published at the COP in 2017, as well as the report: Van der Esch S, ten Brink B, Stehfest E, Bakkenes M, Bouwman A, Sewell A, Van den Berg M (2017, forthcoming). Exploring the impact of changes in land use and land condition on food, water, climate change mitigation and biodiversity; Scenarios for the UNCCD Global Land Outlook. PBL Netherlands Environmental Assessment Agency Report. The Hague.	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
UNCCD SPI	Chapter 2	15	547			counterfactual may also be applied to consider alternative future	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment

Ben ten Brink	Chapter 2	15	547	15	565	In this respect the following publications are relevant in which a natural state baseline has been applied for biodiversity: Alkemade R., M. van Oorschot, L. Miles, C. Nellemann, M. Bakkenes, B. ten Brink (2009). GLOBIOS: Framework to assess global terrestrial biodiversity. Options to reduce Global Biodiversity Loss. Ecosystems. This approach has been applied in CBDs Global Biodiversity Outlooks and many other global outlooks such as from OECD and UNEP; For soil properties: Stoorvogel JJ, Bakkenes M, Temme AJAM, Batjes NH, ten Brink BJE, 2017a. S-World: a global soil map for environmental modelling. Land Degradation & Development 28: 22–33. doi: 10.1002/ldr.2656. and: Stoorvogel JJ, Bakkenes M, ten Brink BJE, Temme AJAM, 2017b. To what extent did we change our soils? A global comparison of natural land current conditions. Land Degradation & Development XXX: xx-xx. doi: 10.1002/ldr.2721. And: Ten Brink B, Bakkenes M, Stoorvogel J, Schut T, Van Beek R, Fleskens L, et al (forthcoming 2017). The potential impact of global land degradation and restoration on water, food, climate and biodiversity. This approach has been applied in the first Global Land Outlook of the UNCCD, published at the COP in 2017, as well as the report: Van der Esch S, ten Brink B, Stehfest E, Bakkenes M, Bouwman A, Sewell A, Van den Berg M (2017, forthcoming). Exploring the impact of changes in land use and land condition on food, water, climate change mitigation and biodiversity; Scenarios for the UNCCD Global Land Outlook. PBL Netherlands Environmental Assessment Agency Report. The Hague.	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment
Steve Prince	Chapter 2	15	549		550	(Caplo) The Abstract of this paper states "the counterfactual scenarios for establishing socioeconomic impacts are vague, unscientific, or omitted completely." Not a good example!	they can be yes but this is the critique.
Jun Wang	Chapter 2	15	550	15	550	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2	15	550		550	This reference uses "counterfactual" to mean simply the current state before a treatment (=degradation) occurred. Not a Natural State in the Holocene as used here.	yes but it is an example about how it can be used.
Steve Prince	Chapter 2	15	550		550	(Ferraro) As in the other references quoted, this one uses the term "counterfactual" to mean a valid treatment control ("the change that would have occurred without program"). There is no mention of "counterfactuals" that cannot be measured because they existed thousands of years ago. Also - "Counterfactual thinking is important in any evaluation seeking to identify program impacts. The best way to promote such thinking is through experimental or quasi-experimental designs that attempt to collect data so that an actual treatment effect would be visibly different from the most plausible hidden biases".	yes. I do not understand why the referee is quoting the papers for us?
Jun Wang	Chapter 2	15	551	15	551	There is missing comma in each reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2	15	552		552	(Andam.) Here, too, the counterfactual is simply an improved estimate of what the situation would be without the intervention (protection). The data are all observable ("along dimensions that are observable, measuring spatial spillovers, and testing the sensitivity of estimates to potential hidden biases.) - unlike the Holocene.	yes. I do not understand why the referee is quoting the papers for us?
Jun Wang	Chapter 2	15	553	15	553	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2	15	553		553	(Lucas) Here too, the techniques are simply intended to make valid comparisons of treatment and no treatment. "Counterfactuals" are not mentioned.	yes. I do not understand why the referee is quoting the papers for us?
Steve Prince	Chapter 2	15	553		553	(Kotiaho) Simply states the need for a pre-human reference - no discussion of how this might be obtained.	yes. I do not understand why the referee is quoting the papers for us?
Steve Prince	Chapter 2	15	553		553	(Robinson) Also uses "counterfactual" to mean the control condition, before a treatment is applied. ("what forest outcome would we observe if a different form of land tenure were in place?") The time period is years not millennia.	yes. I do not understand why the referee is quoting the papers for us?
Steve Prince	Chapter 2	15	553		554	(Urama) Counterfactual is simply the control without treatment ("rain-fed farm plots (i.e. the control) as the counterfactual". That is a measurable condition, not an imagined one as with guesses about the Holocene.	yes. I do not understand why the referee is quoting the papers for us?
Steve Prince	Chapter 2	15	554		556	Relevance of this to the Box is not clear.	The baseline discussion has now been mostly transferred to Chapter 1.
Steve Prince	Chapter 2	15	558		559	As far as I can determine, in the Finland report, the Natural State was assumed to be forests greater than 100yrs old (with greater ages used in some forest types). This seems a very practical method for forested regions (but could not be used in others). It is, in fact, a "Historical Baseline"! There is no way of knowing if it is also the pre-human state. Interestingly the report does recognize that a pre-human state is not always relevant ("semi-natural grasslands have no natural state that would be free of human intervention") Restoration of tree cover >100yrs old in semi-natural grasslands is not the desired condition. This is an example of the Target (or Desired) state discussed in Chs 1 and 4.	We do not quite understand where this comment is going and cannot address it.
Steve Prince	Chapter 2	15	562		565	This should at least be a separate paragraph if not with fuller treatment since it deals with important alternative methods.	edited
Jun Wang	Chapter 2	15	563	15	563	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2		566		566	See comment on line 465 on this term. A "Historical" baseline is a much more easily-understood term which means the same thing.	This issue has been clarified and added to the Summary for Policy Makers of the Land Degradation and Restoration Assessment

Emmanuelle Quillérou	Chapter 2	15	567	15	568	"On the other hand, more data are available the more recent past is chosen as the historical baseline. " Not sure what you mean by that	hard to see what is wrong.
UNCCD SPI	Chapter 2	15	570			historical baselines are always arbitrary; it is not arbitrariness that inhibits comparison but rather inconsistency, and perhaps historical differences may also be considered a drawback	This has been edited
Steve Prince	Chapter 2	15	570		570	I think you mean "different", not "arbitrary".	This has been edited
Steve Prince	Chapter 2	15	571		571	...historical time-series can be used to specify trends, and suggest the future trend if there are no subsequent changes in conditions.	This has been edited
Steve Prince	Chapter 2	15	571		571	Replace "contemporary" with "recent".	This has been edited
Steve Prince	Chapter 2	15	575		575	Replace "laborious" with "...is a more theoretical concept".	This has been edited
UNCCD SPI	Chapter 2	15	579			Clarify the statement: reference state is not easily manipulated	This has been edited
Steve Prince	Chapter 2	15	579		580	Meaning not clear	This has been edited
Steve Prince	Chapter 2	15	581		581	Is this another type of state, or do you mean "(time-bound) historical"?	This has been edited
Steve Prince	Chapter 2	15	583		583	This is the same text as in Chs 1 and 4. We need to decide where it should go and, elsewhere, simply reference it elsewhere.	This has been resolved.
Steve Prince	Chapter 2	15	606		606	"...from a theoretical ecological baseline..."	This has been edited
Douglas, Diane	Chapter 2	16	614	615	16	for Figure 2.6 - consider breaking each horizon of the triangle into a different colour or pattern so each stands out better. Font within the figure is almost unreadable; perhaps simply due to reproduction. Consider font colour and size, or Perhaps offset the descriptors to the side of the Triangle	Done
Jun Wang	Chapter 2	16	616	16	616	There is missing comma in each reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	17	627	17	627	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	17	640	17	640	There is no such reference 'Antonia Layard, 2004' in the Section 2.4 Reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	17	642	17	643	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Astrid Hilgers	Chapter 2	17	651	22	775	Please include the report of 'Van der Esch S, ten Brink B, Stehfest E, Bakkenes M, Bouwman A, Sewell A, Van den Berg M (2017, forthcoming). Exploring the impact of changes in land use and land condition on food, water, climate change mitigation and biodiversity; Scenarios for the UNCCD Global Land Outlook. PBL Netherlands Environmental Assessment Agency Report. The Hague' in this analysis	We now cite the PBL report in section 2.2.1.2. Note that some of the references and estimates of degradation in the PBL report were already included in the chapter, including in figures.
Javier Ernesto Cortés Suárez	Chapter 2	17	651	17	651	These should also include information from the Society for Ecological Restoration (SER).	We agree in theory, however, in practice, the Society for Ecological Restoration doesn't seem to have published a report on the extent of degradation, or on methods to assess it (See http://www.ser.org/page/SERDocuments). Could you provide us with a reference?
Ben ten Brink	Chapter 2	17	651	22	775	Please include in this analysis the report of 'Van der Esch S, ten Brink B, Stehfest E, Bakkenes M, Bouwman A, Sewell A, Van den Berg M (2017, forthcoming). Exploring the impact of changes in land use and land condition on food, water, climate change mitigation and biodiversity; Scenarios for the UNCCD Global Land Outlook. PBL Netherlands Environmental Assessment Agency Report. The Hague'	See response to comment #291: "We now cite the PBL report in section 2.2.1.2. Note that some of the references and estimates of degradation in the PBL report were already included in the chapter, including in figures."
UNCCD SPI	Chapter 2	17	652		653	Reword for clarity.	Thank you for pointing this out. The sentence now reads: "Although for a given ecosystem, at a given point in space and time, there is a unique estimate of the impact of human activities on biodiversity and ecosystem functions and services, the magnitude of degradation can be perceived differently by different actors/stakeholders."
UNCCD SPI	Chapter 2	17	657		658	Point not clear: while the uses of local ecological knowledge for assessments like the one at hand are becoming more common	The sentence now reads: "It is worth noting that while the uses of local ecological knowledge for regional and global assessments (such as the ones produced by IPBES) are becoming more common (Danielsen et al., 2003; Julia P. G. Jones et al., 2008; van der Hoeven et al., 2004), the existence of shifting baseline syndromes means that these sorts of data need to be used with caution (Papworth et al., 2009).
Jun Wang	Chapter 2	17	659	17	659	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	18	666		667	Point not clear. Reword	The sentence now reads: this is not consistent with the fact that there is only one possible value of deviation from the natural state baseline for biodiversity and ecosystem functions.

							You are correct. The Navarro et al. paper was submitted early in 2017 but unfortunately, the review process has been taking more time than expected. References to this paper have been removed, and replaced when appropriate by Pereira et al. 2014 (see full reference below). Pereira HM, Navarro LM, Ceausu S, Gonçalves B, Marques A, Carvalho-Ribeiro S, Alkemade R, ten Brink B (2014). Target 15 - Ecosystem restoration and resilience. In Progress towards the Aichi Biodiversity Targets: An Assessment of Biodiversity Trends, Policy Scenarios and Key Actions. Eds. Leadley, P.W., Krug, C.B., Alkemade, R., Pereira, H.M., Sumaila U.R., Walpole, M., Marques, A., Newbold, T., Teh, L.S.L van Kolck, J., Bellard, C., Januchowski-Hartley, S.R. and Mumby, P.J. . Secretariat of the Convention on Biological Diversity, Montreal, Canada. Technical Series 78, 500 pages.
Steve Prince	Chapter 2		666		666	Correct this reference, here and throughout the Chapter. There are two Navarro references, both suggest they are not actually published. (LDRA does not allow unpublished references to be used)	
Pedro Mendoza	Chapter 2	18	671	18	672	Use the attributes composition and structure	Apologies but we do not understand where "composition" and "structure" should be introduced in this paragraph.
RANDRIANTSIZAFY Ignela Sahond	Chapter 2	18	680	18	682	Table 2.1. Benefits and limitations of major approaches used to map and quantify degraded lands (Gibbs & Salmon 2015). - 1 - It would be more appropriate to rewrite the table, instead of making "copy-paste"	Agreed. This will be done by the design team of IPBES.
RANDRIANTSIZAFY Ignela Sahond	Chapter 2	18	683	19	684	Table 2.2. Synthesis of continental and global scale estimates of degradation (Gibbs & Salmon 2015). - 1 - It would be more appropriate to rewrite the table, instead of making "copy-paste"	Agreed. Note that this table will no longer be used in this chapter as the information was redundant to some extent with Figure 2.8
Steve Prince	Chapter 2		683		683	These estimates have been shown to be based on incorrect methods (Sonneveld, B. G., & Dent, D. L. (2009). How good is GLASOD? Journal of Environmental Management, 90(1), 274–283. http://doi.org/10.1016/j.jenvman.2007.09.008 and: Prince, S. D. (2016). Where does desertification occur? Mapping dryland degradation at regional to global scales. In R. Behnke & M. Mortimore (Eds.), In The End of Desertification? Disputing Environmental Change in the Drylands. Springer-Praxis Earth System Science Series.) Unless the authors of this Chapter can present evidence to refute these assessments, they should not be included in LDRA. Harmonization with the critique in Chapter 4 (Sect 4.1.4) is another consideration.	Unlike chapter 4, we discuss here the concepts, perceptions, and approaches to assess degradation (and restoration). In particular, the whole point of this section is precisely to show that there are many approaches to assess degradation, that lead to various estimates. We appreciate the suggestion of additional references to make our case, but do not consider that this warrants removing the estimates in question. For reference, we make the following point: "Furthermore, the lack of common definition means that there will be different monitoring approaches, different indicators, and different thresholds (e.g. (Vogt et al., 2011)) which will considerably limit interoperability and integration across temporal and spatial scales for meaningful assessments. An additional source of variation between assessments can arise from the use of different methods."
Eila Gendig	Chapter 2	19	685			Low resolution in both - Table 2.2 and Figure 2.7. Also bar diagram added to Figure 2.8	The final design and resolution of the figures will be improved for the final version of the assessment.
Emmanuelle Quillérou	Chapter 2	19	687	19	687	In addition, you could combine the land degradation maps with demography. This has been done by Barbier and Hochard: Barbier EB, Hochard JP (2016) Does Land Degradation Increase Poverty in Developing Countries? PLOS ONE 11(5): e0152973. doi:10.1371/journal.pone.0152973 More detailed maps and information available in report at eld-initiative.org > Publication by the same authors. These maps could potentially help target areas for land restoration/rehabilitation more effectively than the GLASOD ones. Maybe better placed on page 20 lines 724-735?	Thank you for suggesting this reference! The following text has been added to the paragraph that you mention: "Though the link between human pressure and degradation is limited by the scarcity of global and spatially explicit data, identifying those areas altered by human activities can be a first step towards assessing degradation and potential restoration (Geldmann et al., 2014). This type of assessment is all the more relevant considering the livelihood of the human populations relying on land as a resource. It was for instance estimated that 1.33 billion people lived on "degrading agricultural land" in 2000 (Barbier and Hochard, 2016, 95% of which were in developing countries, a number that increased by 13% by 2012. Similarly, Bai et al., (2008b) estimated that over 1.5 billion people (i.e. 24% of the world population at the time of their study) were affected by land degradation. This further suggests that even though some developing countries might experience economic growth, the proportion of their population living in degraded rural areas, particularly in remote areas, might not benefit from it (Barbier and Hochard, 2016)."
Steve Prince	Chapter 2		687		687	Delete in view of comment on line 683.	We kindly disagree as explained in our response to your comment on line 683
Steve Prince	Chapter 2		688		705	These data re no longer regarded as reliable. See comment on line 683.	We kindly disagree as explained in our response to your comment on line 683
Jun Wang	Chapter 2	20	708	20	708	There is missing comma in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.

Ela Gendig	Chapter 2	21	757		759	Can you give an example of a proxy for degree of land degradation?	The examples were given in the sentence (risk of, and susceptibility to a given driver). The sentence has been edited for clarity and now reads: " In some cases, the 'risk of', or 'susceptibility to' a given driver can be used as a proxy for the actual degree of degradation since they are easier to quantify and to map."
Steve Prince	Chapter 2	21	767		767	Some of these have been shown to be inappropriate, e.g. (2) & (4), (6) restates the same unfounded statements. There are much better sources available for some of these and other aspects (see Ch. 4).	We kindly disagree as explained in our response to your comment on line 683
Steve Prince	Chapter 2	21	773		773	See comment on line 666. Is this now published? If not, should be removed.	Unfortunately, the manuscript is still in revision while we approach the deadline for the final version of the chapter. References to Navarro et al., in review have been replaced when appropriate by Pereira et al., 2014 (see response to comment on line 298 of this excel file).
Javier Ernesto Cortés Suárez	Chapter 2	22	776	22	776	These title should also consider the following concepts: 1. Ecological sucesion. 2. Stochasticity. 3. Homeostasis y Homeorhesis. 4. Functional group. 5. Ecological trajectory. 6. Participatory Ecological Restoration.	The concepts discussed in this section have been selected as "Difficulty arises from the fact that these concepts are often invisible at the local scale and can occur over long periods of time. But ignoring these concepts may lead to erroneous conclusions about the state and responses of biodiversity and ecosystem functions and services." We have now added " ecological successions" explicetly in the timelag and timescales sections. "Homeostasis and Homeorhesis" are somehow addressed in the resilience part although not explicetly under those terms. Finally, we do not believe that the remaining terms should be discussed here. Not that they are not relevant to land degradation and restoration (they are) but we do not think that they belong this particular section.
Pedro Mendoza	Chapter 2	22	779	22	779	Include "secondary succession", damping; heterogeneity	Ecological successions have been explicetly added in this section (see our response to the previous comment). However, we do not agree that "damping" and "heterogeneity" should be discussed here as this section is dedicated to concepts that are "often invisible at the local scale and can occur over long periods of time", and that might be ignored as a result.
Steve Prince	Chapter 2	22	785		786	Delete. This is not an example of lags, simply a (cryptic) mention of the issue.	We are not sure to understand what the reviewer is refering to in these lines. In doubt, we have edited a sentence for clarity and it now reads: "For example, the IPBES plenary (IPBES, 2015) defined degraded land by observed loss of biodiversity, but it should ideally also account for time lags."
Steve Prince	Chapter 2	22	788		788	"..has sometimes been called..."	We kindly disagree for the reviewer's suggestion for edit. Time lags in species extinctions, in the ecological litterature are generally known as the extinction debt (as stated in the chapter). Saying that they are " sometimes called" extinction debt (as suggested) would imply that other concepts/names are also commonly used which would be erroneous.
Thomas Brooks	Chapter 2	22	789	22	790	See also Brooks, Pimm & Oyugi (1999) Time lag between deforestation and bird extinction in tropical forest fragments. Conservation Biology 13: 1140–1150.	Thank you for the suggestion. We now added the following sentences in the second paragraph discussing time lags: " For instance, using data on bird populations in a fragmented forest in Kenya, Brooks et al. (1999) estimated that 50 years after the isolation of forest fragments of 1000 ha, only half of the expected extinctions had already occurred. [...] Considering time lags such as extinction debts can lessen the impact of degradation by buying more time to land managers and conservation planners to improve the ecosystem condition by restoration or sufficient rehabilitation before the projected extinctions occur (Brooks et al., 1999)."
Jun Wang	Chapter 2	22	789	22	789	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Mahmood Yekeh Yazdandoost	Chapter 2	22	791	22	799	Please check.	We do not understand what the reviewer wants us to check. The content and syntax of the paragraph seems sound to us.
Steve Prince	Chapter 2		794		795	If the habitat is destroyed, how can there be a lag in extinction?	Unless you consider that the natural habitat is destroyed and replaced by a completely hostile matrix (e.g. remaining patches of natural habitats are like islands surrounded by water) affected species might still be able to survive in the degraded matrix and/or use the remaining fragments of natural habitats. In both cases, this will mean that those affected species will have access to less rressources, possibly leading to a decrease fitness, reduced population sized, and higher vulnerability to stochastic events.

Jun Wang	Chapter 2	22	795	22	795	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2		797		797	Why would one want to lessen the lag in effects of degradation? Could it not contribute to the restoration? Perhaps the idea of "extinction debt" needs more explanation?	You are correct. We have rephrased the sentence which now reads as follows: " Considering time lags such as extinction debts can lessen the impact of degradation by buying more time to land managers and conservation planners to improve the ecosystem condition by restoration or sufficient rehabilitation before the projected extinctions occur (Brooks et al., 1999). "
Eila Gendig	Chapter 2	22	800	22	801	Recolonization is only likely, when adequate populations of the extinct species exist within walking/flying or otherwise movement-distance. Otehrwise, humans will need to interfere (if wanted) and relocate	That is correct, which is also why we specify that we are talking about "local" extinctions. We believe that the fact that remnant populations must be within "dispersable" distances to allow recolonization to be implicit and prefer not to further detail an already long chapter, but added "natural" in front of recolonization nonetheless for clarity.
Jun Wang	Chapter 2	22	801	22	801	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2	22	805		805	Explanation of "wilding" would be useful.	You probably mean "rewilding" (wilding is not a term in this context). We have expanded the sentence to add a definition for rewilding, which now reads: "This land abandonment created an opportunity for restoration via ecological rewilding, i.e. the passive management of ecological succession with the goal of restoring natural ecosystem processes and reducing the human control of landscapes (Navarro & Pereira, 2012; Pereira & Navarro, 2015)."
Gardner	Chapter 2	22	813	22	815	What country has a 10-year statute of limitation? It would be helpful if this was presented as an example. The statement appears definitive, when such a timeframe is not universal.	France does. You're right, it's not universal, but it's more or less around 10 years. The point is that it's mostly not relevant to ecological damages. I have rephrased.
Steve Prince	Chapter 2		822		822	This topic is closely connected with typologies of "degradation" See Ch. 4 Sect 4.1.2.1). That section should be cited here. However, the whole issue of types of degradation should probably be in Chapter 2 - discuss with Ch. 4.	This is a good point. We have added a reference to Chapter 4 by editing a sentence in this section as follows: " Nonetheless, resilience is particularly relevant to degradation and restoration (see also Chapter 4 section 4.1.2.1 for further discussion on the role of ecological resilience in degradation processes)." Concerning the option of migrating some text from chapter 4 into chapter 2, this was, as far as I know, not discussed or formalised between the CLAs at the 2nd authors meeting.
Jun Wang	Chapter 2	23	825	23	826	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	23	844	23	844	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	23	846	23	846	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
U.S. government	Chapter 2	23	852	23	863	Invasive species (i.e. arthropods, reptiles and mammals - feral or wild animals and plants) are significant drivers of "regime shift" in many global settings. Given IS impacts globally it would be appropriate to highlight them as an agent of ecosystem "regime shift" . Arthropods are particular acute in tropical island settings...(i.e. cycas in the Marianas, Western Pacific).	Thank you for pointing this out. We have now added the following to the section on Regime shifts: " Regime shifts can also be caused by the overexploitation or introduction of species (Leadley et al., 2010). Invasive Alien Species have for instance changed biotic and abiotic conditions in island ecosystems (Burgiel 2010), caused shifts from submerged to floating plants in aquatic ecosystems (Henning et al., 2017). More generally, they can alter trophic cascades (Estes et al., 2011) which can result in collapses in ecosystems (e.g. predator invasion in Downing et al., 2012)."
Jun Wang	Chapter 2	23	854	23	855	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	23	860	23	860	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Mahmood Yekeh Yazdandoost	Chapter 2	24	873	24	878	Correct	Thank you.
Jun Wang	Chapter 2	24	880	24	881	Only the last name of the author should be cited in the reference, and unexpected bracket appears.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Royal Gardner	Chapter 2	24	896	24	897	India also has a Green Tribunal.	Yes, but we can't be exhaustive for all countries worldwide. I've added your example
Thomas Brooks	Chapter 2	24	906	24	906	Good use of Mittermeier et al. (2003) & Sanderson et al. (2002)	Thank you
Jun Wang	Chapter 2	24	906	24	906	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.

Steve Prince	Chapter 2	24	906		906	Worth looking at: Potapov, P., Hansen, M. C., Laestadius, L., Turubanova, S., Yaroshenko, A., Thies, C., ... Esiyova, E. (2017). The last frontiers of wilderness: Tracking loss of intact forest landscapes from 2000 to 2013. <i>Science Advances</i> , 3(1). Retrieved from http://advances.sciencemag.org/content/3/1/e1600821.abstract	Indeed, thank you for the suggested reference! It has been added to the text, which now reads: "In fact, relatively little of the earth's land area can be considered natural or "wild" today (Mittermeier et al., 2003; Eric W. Sanderson et al., 2002), while "intact landscapes" such as forest continue to decrease in extent (Potapov et al., 2017)."
Steve Prince	Chapter 2	24	910		912	This is not a matter of a shifting baseline - it is simply another baseline. No one denies that Europe once had no terraces. However, the existing land use and how it can be used to maximize NCP is the issue, not some distant Holocene condition. See comment on lines 558-559 ("Interestingly the report does recognize that a pre-human state is not always relevant ("semi-natural grasslands have no natural state that would be free of human intervention") Restoration of tree cover >100yrs old in semi-natural grasslands is not the desired condition. This is an example of the Target (or Desired) state discussed in Chs 1 and 4.")	When considering restoration, there should be only one baseline, whereas there can be potentially several targets (see section 2.2.1.1). This is the approach that we used throughout the entire chapter, which also means that we kindly disagree with the fact that something can be "simply another baseline". We define the shifting baseline syndrome, which applies to this case in section 2.2.2.1 as follows: "shifting baseline syndrome, which refers to changing human perceptions of ecosystem (Pauly, 1995)"
Jun Wang	Chapter 2	25	915	25	915	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2		922		938	Note the contrary view which questions the reality of desertification (Behnke, R., & Mortimore, M. (2015). <i>The End of Desertification? Disputing Environmental Change in the Drylands</i> . Springer-Praxis Earth System Science Series.)	Thank you for the suggestion. We make mention of this reference in the paragraph, in a sentence which now reads: "Severe environmental disasters had, by then, accelerated the process, such as the Sahelian drought [but see Behnke and Baltimore (2015) for a discussion on the reality of this drought and desertification in general], and policy makers resorted to using a vocabulary of emergency (e.g. "disappearance of countries"), in order to accelerate actions (United nation conference on desertification (UNCODD 1976)." Note that the book is not in open access which limits a more detailed use of the chapters in this assessment.
Jun Wang	Chapter 2	25	925	25	925	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Marcus Zisenis	Chapter 2	25	939	25	949	There are no static ecosystems in landscape as they permanently change during succession and human influences, as well as species turnover. Thus, certain regional participative indicators are necessary to assess land degradation and recovery in a participatory decision-making process of the people directly and indirectly concerned. What can be achieved is mainly a similar vegetation structure as pointed out in the mentioned examples.	I am not sure to understand the comment, or what the reviewer is asking. There used to be a section discussing indicators (e.g. CBD indicators) in the FOD, but it is now gone.
Steve Prince	Chapter 2		940		940	The IPBES definition of degradation states that recovery is not possible.	The exact definition of the scoping document is : " For the purposes of this thematic assessment, "degraded land" is defined as land in a state that results from persistent decline or loss of biodiversity and ecosystem functions and services that cannot fully recover unaided within decadal time scales." The point made in this chapter refer to the " decadal time scale". Most ecosystems can recover, but the time needed can be much larger than what is considered "decadal time scales".
Jun Wang	Chapter 2	25	941	25	942	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	25	954	25	954	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Emmanuelle Quillérou	Chapter 2	25	957	26	972	Your definition of land degradation is based on a 10 year timeframe. This is the same for the Aichi targets (2011-2020 = 10 years). Why advocate for longer-term perspectives then? It is good, the discrepancy just needs to be acknowledged and discussed.	We do not define land degradation on a 10 year timeframe. The point of this paragraph is to present the discrepancy between conservation targets that are time bound (e.g. Aichi targets for 2020) and the fact that restoration should be considered with a long term perspective. We believe that this paragraph does acknowledge and discuss the discrepancy already.
Steve Prince	Chapter 2	25	957		957	Replace "time-bound" with "linked to a specific date"	"Time-bound" is more appropriate in this case. See for instance the definition of time-bound within the SMART framework for goals: "Goals should be linked to a timeframe that creates a practical sense of urgency, or results in tension between the current reality and the vision of the goal. Without such tension, the goal is unlikely to produce a relevant outcome."
Steve Prince	Chapter 2	25	971		972	Meaning unclear: what is a "blind Anthropocene"?	It refers to the paper by Sarrazin & Lecomte (2016). Blind Anthropocene means a geological period dominated by Humans who would not take into account the intrinsic right of other species to exist. See also "Human progress vs. Ethics", subsection 2.3.1.2
Jun Wang	Chapter 2	26	972	26	972	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	26	986	26	986	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.

						The statement 'investments on biofuels by the EU has caused indirect land use change in the countries where biofuels are produced (essentially in South America)' is difficult to ascertain. What we know is that the 'food versus fuel' debate, which reached its climax in 2008-09, has certainly led to the modification of previously ambitious EU biofuels targets to something more modest, especially regarding the use of first generation crop-based fuels (Bailis and Baka, 2011). In Brazil, biofuels cause indirect land use change, but the available evidence (Lapola et al., 2010; Andrade et al., 2013) usually does not link this to foreign demand (e.g., from outside Brazil) but to domestic demand (e.g., existence of biofuel blending mandates). I therefore suggest to substitute 'the EU has caused indirect land use change' with something like 'there are concerns that increasing EU demand for biofuels will increase indirect land use change in countries where...'	Thank you. We modified the sentence according to your suggestion. We do not discuss biofuels anymore.
Martin Obermaier	Chapter 2	26	989	27	994		
Jun Wang	Chapter 2	27	994	27	994	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	27	998	27	998	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	27	1000		1017	Have there been any discussions or concepts, or are there examples, that include "minimization of environmental impacts from outsourcing degradation" (e.g. By internalising externalities) at a large scale? In a global free market, one could assume that the region, whihc can produce product "A" with the best ratio of "Maximising return : minimising environmental cost" would focus on this branch of production for a supra-regional market. Whereas other products would be better produced in other areas and traded.	This is a good point, but the discussion on telecoupling and environmental effects might be too recent for decision making, in terms of "what is produced where", to include it, particularly in a transnational way.
Jun Wang	Chapter 2	27	1016	27	1016	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	27	1025	27	1025	There is missing comma in each reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	27	1032		1033	The sentence makes no sense. reword to clarify. If the assertion is that there is no conceptual basis for management of land degradation, then SPI strongly rejects this statement, and refers the authors to the Conceptual Framework for Land Degradation Neutrality (Orr et al, 2017).	Thank you, it is not what we meant. We have rephrased the sentence.
Jun Wang	Chapter 2	27	1036	27	1037	There is missing comma in each reference, and the brackets there must also be checked.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	27	1039			status with respect to what feature?	We do not understand the reviewer's comment and can thus not address it.
Jun Wang	Chapter 2	27	1040	27	1040	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	28	1042	28	1042	Only the first author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	28	1047	28	1047	Only the first author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	28	1061	28	1061	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	28	1063	28	1067	Can we elaborate on having multiple regional soil conventions instead of 1 global document; especially on its risks and benefits?	It's one of the option yes
UNCCD SPI	Chapter 2	28	1065		1066	is the intention of this statement to question the relevance of the UNCCD? Clarify.	Ok thank you. It's not what we meant. We rephrased.
Steve Prince	Chapter 2	28	1068		1068	Is "Progress in the recognition..." what is meant?	The sentence has been rephrased
Jun Wang	Chapter 2	28	1070	28	1070	There is missing comma in each reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Gardner	Chapter 2	28	1071	28	1071	"Ramsar Convention" needs to be added to the parenthetical.	Thank you, added.
Marcia Levaggi	Chapter 2	28	1074	29	1103	Líneas 1074-1103: Argentina prefiere no incluir en el documento final la noción de "global implementation the LDN" que podría suponer que "land degradation in one country could be compensated in another one" (líneas 1079-1080) y la aseveración de que "LDN needs territorial boundaries or to be led by the concept of ecological equivalence to be fully efficient" (líneas 1180-1181). A ello se suma la introducción del concepto de "soil security" con el alcance de "food and water security" y la idea de "maintenance and improvement of the global soil resource", conceptos que Argentina solicita no incluir.	Apologies but we do not understand what the reviewer means and could not address the comment.
Ben ten Brink	Chapter 2	29	1074	29	1103	Because it is difficult if not impossible to weigh different kinds of loss, it may be more promising to determine neutrality per land condition factor, for example, productivity, land cover, water holding capacity, and SOC. In that case the LDN target is evaluated in terms of the size (volume) of a land condition factor (area x loss) in stead of simply the 'area of degradation' which, as shown above, an immeasurable entity. This approach is also useful in assessing restoration results.	Thank you for your suggestion. I've added this point
Steve Prince	Chapter 2	29	1074		1074	Delete "under the authority".	Done
Steve Prince	Chapter 2	29	1075		1075	"...UNCCD are implementing a 15th Sustainable..."	Changed

						Regarding the implementation of the LDN, check the following scientific paper on the Conceptual Framework for LDN implementation at country level: 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 978-92-95110-42-7 (hard copy), 978-92-95110-41-0 (electronic copy).	This has been added, see response to comment 377.
Germany	Chapter 2	28	1079	28	1084		
UNCCD SPI	Chapter 2	28	1079		1080	please make it clear that there is no intention for this to be permitted	This has been added, see response to comment 377.
Jun Wang	Chapter 2	30	1080	30	1080	There is missing comma in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Yuko Kurauchi	Chapter 2	28	1082	28	1084	Under the Land Degradation Neutrality Target Setting Programme (LDN TSP), general LDN conceptual framework has been established and indicators to be utilized for of neutrality indicators were introduced by UNCCD/The Global Mechanism for baseline and target setting, using the combinations of land cover type, net primary productivity level and soil organic carbon level. It may be useful to reflect these progresses in the document.	This has been added, see response to comment 377.
UNCCD SPI	Chapter 2	28	1082			please recognise the development of the conceptual framework for land degradation neutrality led by the UNCCD's SPI (Orr et al.) and the work of the UNCCD secretariat in identification of indicators for LDN (Minelli, S . Erlewin and Castillo V 2016 Land Degradation Neutrality: from political vision to measurable targets. In Ginzky, H., Heuser, I.L., Qin, T., Ruppel, O.C., Wegerdt, P. (Eds.) International Yearbook on Soil Law and Policy 85-104; IAASS-Global Soil Forum 2015: grounding the Post-2015 Development Agenda: Options for the protection of our precious soil and land resources, CBD2016 Decision XIII/28)	This has been added, see response to comment 377.
UNCCD secretariat	Chapter 2	28	1082	28	1028	The sentence is incorrect . The author should recognize the development of a scientific conceptual framework developed by a group of scientist under the guidance of the UNCCD Science Policy Interface (orr et al., 2017) The concept was peer reviewed by external experts . The LDN conceptual framework include indicators for monitoring based on the work done by the UNCCD to identify and select indicators for LDN (Minelli, S . Erlewin and Castillo V 2016 Land Degradation Neutrality: from political vision to measurable targets. In Ginzky, H., Heuser, I.L., Qin, T., Ruppel, O.C., Wegerdt, P. (Eds.) International Yearbook on Soil Law and Policy 85-104; IAASS-Global Soil Forum 2015: grounding the Post-2015 Development Agenda: Options for the protection of our precious soil and land resources, CBD2016 Decision XIII/28)	This has been added, see response to comment 377.
Eila Gendig	Chapter 2	28	1085			Please provide the wording of the French policy on compensation measures. Without knowing what it entails and compares to other nation's policies, there is little value gain.	You're right; I've added an explanation.
Jun Wang	Chapter 2	29	1092	29	1092	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	29	1096	29	1096	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	29	1101		1103	More relevant to land and food security are the Voluntary Guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security.	Thank you for your suggestion. However, it's not in the law and this chapter is not about policy instruments.
Eila Gendig	Chapter 2	29	1103			"FAO 2016" is not included in the references	Done
Javier Ernesto Cortés Suárez	Chapter 2	29	1114	29	1114	These approach should be based also on information from the Society for Ecological Restoration (SER) .	We agree in theory, however, in practice, the Society for Ecological Restoration doesn't see to have published a report on the extent of degradation, or on methods to assess it (See http://www.ser.org/page/SERDocuments). Could you provide us with a reference?
Ben ten Brink	Chapter 2	29	1115	30	1147	See remark line 1074-1103	I've rephrased.
UNCCD SPI	Chapter 2	29	1117		1122	there is a pervasive theme that degradation must be assessed relative to the natural condition . This is a more strict definition of degradation than the definition articulated in Ch1.	This issue has been dealt with a major revisions in the chapter and in the SPM
Steve Prince	Chapter 2	29	1117		1117	Misuse of the term "scientifically". It means using the scientific method, Would "objectively" be better?	This has been added, see response to comment 377.
Steve Prince	Chapter 2	29	1120		1121	This is only true if the target state is known. If pre-human states are to be used, as you advocate, I suppose "success" will only be achieved by, among other things, removal of humans!	This issue has been dealt with a major revisions in the chapter and in the SPM
Steve Prince	Chapter 2	29	1123		1123	Same comment as on line 1117.	This issue has been dealt with a major revisions in the chapter and in the SPM
Steve Prince	Chapter 2	29	1125		1125	Surely statistical design is included in these publications? Replication is, of course, essential to measure significance of changes, but there are many other aspects of experiment design as well, so why mention this one only?	Respectfully, I do not understand the point being made.
Steve Prince	Chapter 2	29	1125		1135	This level of detail on methods seems inappropriate in an Assessment. Wouldn't a reference to a publication on landscape ecology experimental design be enough?	Thank you for your comment. The chapter overall has been shortened but we feel this was an important detail to keep.
Jun Wang	Chapter 2	29	1135	29	1135	Unexpected bracket appears.	Problem with referencing. This has been fixed for the final government draft of the chapter.

						Se explica que el colapso de los servicios ambientales no reconoce fronteras nacionales soberanas. Bajo esa perspectiva, se explica que para revertir la degradación de la tierra debe crearse un nuevo campo para las negociaciones internacionales, para lo cual propone adoptar el principio de "ecological solidarity". Se indica que ese principio permitiría "trascend the old environment / development dilemma and foster cooperation policies motivated by a common interest". Señala que a pesar de que el Derecho Ambiental ha evolucionado para considerar los avances científicos, "ancient and strongly established legal concepts and principles limit its integration". Argentina no concuerda en que se tomen como conceptos "ancient and strongly established legal concepts" la noción de "sovereign rights with limited sovereign duties". Argentina solicita no incluir declaraciones de este tenor en el documento final.	"the old environment/development dilemma" is further explained section 2.2.4.1, particularly in the ins and outs of Stockholm Conference, where environment and development were considered to be two different paths. As an historical fact, it has to be mentioned independently of all political considerations. A recent example is the so-called "Guerra del papel", following Uruguay's decision to build a polluting paper factory on Rio de la Plata; Argentina protested, but without a legal basis could not obtain the project to be abandoned. As for "ancient and strongly established...", we will rephrase.
Marcia Levaggi	Chapter 2	37	1135	37	1151		
Pedro Mendoza	Chapter 2	29	1136	29	1136	Journal of Tropical Ecology, 27(5): 477-489. [doi: 10.1017/S0266467411000253] [www.esajournals.org/doi/abs/10.1890/08-1449.1	Thank you. We have looked into this publication, but decided we had sufficient citations in this section.
Jun Wang	Chapter 2	29	1137	29	1137	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2		1139		1139	Does this mean plots untouched by humans directly or indirectly (your "Natural state" baseline)? Surely such sites are difficult to recognize, except in a few, rare situations.	This issue has been dealt with a major revisions in the chapter and in the SPM
UNCCD SPI	Chapter 2	30	1143	30	1143	No bracket before Aide et al.....	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	30	1143	30	1144	Only the last name of the author should be cited in the reference, and the brackets there must also be checked.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2		1144		1147	This is a major problem, especially if a "Natural State" baseline is used. As such it needs to be placed more prominently than the last sentence of the section.	This issue has been dealt with a major revisions in the chapter and in the SPM
Jun Wang	Chapter 2	30	1147	30	1147	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Virginia Meléndez Ramírez	Chapter 2	30	1148	30	1148	A paragraph on ecological economics can be included	We mention ecological economics in section 2,3,2.
Emmanuelle Quillérou	Chapter 2	30	1149	30	1150	I am not sure what the citation adds here, I would remove it.	We use this citation to begin the new section, and decided to keep it.
Emmanuelle Quillérou	Chapter 2	30	1155	30	1163	To me, consumption of biodiversity is rival and non excludable. Which means that biodiversity is not a public good as such but rather a common pool resource (low excludability and high substractability which is another way of saying rival non excludable). What you could say is that biodiversity display public good characteristics but you cannot say it is a public good.	Thank you. We inserted your suggestion.
Emmanuelle Quillérou	Chapter 2	30	1157	30	1159	The sentence with externalities is not quite accurate. Pigou is often referred to in relationship to (Pigouvian) taxes that aim to correct market externalities but not just in relationship to externalities. Externalities are not a gap that is filled. They are costs or benefits borne by a third party (i.e. other than consumer and producer involved in trading together) uncompensated for - definition by Hanley et al. is perfect!. Saying that the gap is filled by externalities is clumsy. Also, externalities are a form of market failure in economics. The previous sentence suggests that it is the perfect functioning of markets that leads to externalities which is not correct and needs revisions. Suggestion: Therefore, a market economy does not always provide them at desired levels (CHECK THIS REVISION IS CONSISTENT WITH ORIGINAL AUTHOR CITED Kolstad, 2000). This is a case of market failure with generation of externalities.	Thank you. We inserted your suggestion.
Emmanuelle Quillérou	Chapter 2	30	1171	30	1171	"An interesting path yet to be explored is to internalize the environmental cost into the price of a given product". Emission taxes are doing just that! They are internalising the externality into the market price. This sentence that I have quoted is therefore completely wrong as it is phrased. More generally speaking, getting an economist as a co-author on all chapters (at least 1 and 2) to check on the economic perspective and numbers could be good to make sure you are not instrumentalising this science and its results too much. I'd be happy to contribute in that capacity if you wish.	Thank you. We inserted your suggestion.
Eila Gendig	Chapter 2	30	1172		1174	Is there a real-life, recorded and analysed example of "internalizing environmental impact" (incl. Citation)?	Yes. A good example is the polluting emission tax, applied to heavy trucks in Germany, Austria and Switzerland, which is quite effective. See Saintry G. 2012. Plaidoyer pour l'écofiscalité. Paris. Buchet Chastel

Emmanuelle Quillérou	Chapter 2	30	1176	30	1179	<p>"For decision-makers, cost-benefit analysis provides a feedback mechanism which confronts the problem of market demand for commodities and lack of accounting for externalities with the same tools and language, i.e. value and costs."</p> <p>Cost-benefit analysis is no feedback mechanism. It merely formalises expected costs and benefits over a specific timeframe. Costs are values too! Non marketed goods and services and externalities can be accounted for in cost-benefit analysis after economic valuation. I am not sure what market demand for commodity does here.</p>	<p>We reformulated: "For decision makers, cost-benefit analysis provides a tool which helps to correct market prices by accounting for externalities and thus with same language, i.e. social benefits and social costs." However, this sentence will appear only in the final form of the assessment, because the suggestion came too late.</p>
Emmanuelle Quillérou	Chapter 2	30	1180	30	1180	<p>"Multi-criteria assessment (Munda, 2008; Rene Verburg et al., 2014) and deliberative approaches (Habermas, 1984; Raymond et al., 2014; Vatn, 2009) in turn go beyond the exclusive focus of environmental impact assessments on ecological structures and processes, OF COST-BENEFIT ANALYSIS ON MONETARY VALUES to consider the context-specific and often conflicting values held by human communities towards A COMMON GOAL (Langemeyer et al., 2016)."</p> <p>Additions in capital letters in the above. Please check (Langemeyer et al., 2016) is still valid a reference after these additions.</p>	<p>We inserted your suggestion.</p>
UNCCD SPI	Chapter 2	31	1186		1194	<p>this par seems to ignore the large literature from resource economics on measuring unpriced values. Some early examples are: Sinden, J.A., 1974. A utility approach to the valuation of recreational and aesthetic experiences. American Journal of Agricultural Economics, 56(1), pp.61-72. and Sinden, J.A. and Worrell, A.C., 1979. Unpriced values: decisions without market prices. New York: Wiley.</p>	<p>We kindly disagree and think that we have used a satisfactory number of references to measuring unpriced environmental values.</p>
Jun Wang	Chapter 2	31	1187	31	1189	<p>There is no corresponding reference in the Section 2.4 Reference, and the brackets there must also be checked.</p>	<p>Added: Manasi Kumar & Kumar, 1188 2008; Giulia Wegner et al., 2011b). These psycho-cultural benefits of nature are increasingly proven 1189 to be recognised by people (Chan, Guerry, et al., 2012; Hirons et al., n.d.)f</p>
UNCCD SPI	Chapter 2	31	1189	31	1189	<p>No bracket after n.d.</p>	<p>Problem with referencing. This has been fixed for the final government draft of the chapter.</p>
Jun Wang	Chapter 2	31	1190	31	1190	<p>Unexpected bracket appears.</p>	<p>Problem with referencing. This has been fixed for the final government draft of the chapter.</p>
UNCCD SPI	Chapter 2	31	1191	31	1191	<p>No bracket before Fankhauser</p>	<p>Problem with referencing. This has been fixed for the final government draft of the chapter.</p>
Jun Wang	Chapter 2	31	1191	31	1191	<p>Only the last name of the author should be cited in the reference.</p>	<p>Problem with referencing. This has been fixed for the final government draft of the chapter.</p>
Emmanuelle Quillérou	Chapter 2	31	1192	31	1194	<p>" recent survey (Laurans et al. 2013) showed that literature gives little attention to the issue and rarely reports cases where ecosystem services economic valuation has been put in actual use (i.e. ex-post examples). "</p> <p>Yet a survey of US decision-makers has shown that they value economic information to inform their decision (Avey and Desch (2013) What Do Policymakers Want From Us Results of a Survey of Current and Former Senior National Security Decision Maker. International Studies Quarterly. 1-20).</p>	<p>We inserted your suggestion.</p>
Jun Wang	Chapter 2	31	1192	31	1192	<p>There is missing comma in the reference.</p>	<p>Problem with referencing. This has been fixed for the final government draft of the chapter.</p>
Emmanuelle Quillérou	Chapter 2	31	1195	31	1196	<p>property rights on environmental resources are NOT ALWAYS well defined.</p> <p>You need to be more nuanced in your writing. Some forms of biodiversity have very clear ownership (if on a specific piece of land etc)</p>	<p>We inserted your suggestion.</p>
Jun Wang	Chapter 2	31	1197	31	1197	<p>There is missing comma in the reference.</p>	<p>Problem with referencing. This has been fixed for the final government draft of the chapter.</p>
Eila Gendig	Chapter 2	31	1199		1204	<p>Can you provide an example of where and how this approach was used?</p>	<p>Apologies but we could not find what you are alluding to and thus could not address your comment.</p>
UNCCD SPI	Chapter 2	31	1203	31	1203	<p>Not 2 full stops</p>	<p>Checked</p>
Jun Wang	Chapter 2	31	1203	31	1203	<p>Unexpected dot appears.</p>	<p>Checked</p>
Jun Wang	Chapter 2	31	1209	31	1209	<p>There is missing comma in the reference.</p>	<p>Problem with referencing. This has been fixed for the final government draft of the chapter.</p>
Jun Wang	Chapter 2	31	1214	31	1214	<p>There is missing comma in the first reference, and only the first author should be cited in the last reference.</p>	<p>Problem with referencing. This has been fixed for the final government draft of the chapter.</p>
Gardner	Chapter 2	31	1215	31	1217	<p>Two problems with this sentence: "Ecological compensations work only for ordinary habitats; areas with threatened species and rare habitats are irreplaceable, under strict regulation and must not be included in the market exchange (McGillivray, 2012)." First, it's more of a directive than a policy-relevant option. Second, conservation banking in the US (discussed in chapters 6 and 8) is a compensation program for threatened and rare habitats and species.</p>	<p>We inserted your suggestion.</p>
Thomas Brooks	Chapter 2	31	1215	31	1216	<p>Add citation to Pilgrim et al. (2013) Conserv Lett here</p>	<p>Reference added, thank you.</p>

Eila Gendig	Chapter 2	31	1215		1217	In practice, protection of rare and threatened habitats or species outside of protected areas needs society's support for protection in order to be excluded from market considerations.	We mention this support in section 2.3.2
UNCCD SPI	Chapter 2	31	1215		1217	contradicts the par above, which refers to rare habitats and says that in an ideal offset market "no net loss" can be achieved.	No contradiction: offsetting system is not allowed for rare habitats
UNCCD SPI	Chapter 2	31	1217			How is monitoring and verification an important part of ecological competition?	Monitoring and verification is needed to make it sure that habitat restoration has been successfully made, so that the buyer of the offsets can be sure that compensation really has been made.
U.S. government	Chapter 2	31	1217	31	1217	What word is intended in this sentence: competition or compensation?	We mean competition
Germany	Chapter 2	31	1229	31	1229	Replace the following citation of the reference "Nations, 2015" with the correct citation: 'UNCCD. 2015. Report of the Conference of the Parties on its twelfth session'.	Done
UNCCD secretariat	Chapter 2	31	1230	31	1231	Please cite the most updated information on LDN. Barron et al., 2017	We couldn't find the exact reference suggested by the reviewer
Gardner	Chapter 2	31	1231	31	1231	With respect to the mitigation hierarchy, add something along the lines of "as does the Ramsar Convention through Resolution XI.9."	Done
Thomas Brooks	Chapter 2	31	1231	31	1231	Also worth mentioning the IUCN Biodiversity Offsets policy here, see https://portals.iucn.org/library/node/46476	Yes, indeed. This has been added.
UNCCD SPI	Chapter 2	31	1231			it would be helpful to the reader to reference the source of this statement ie Orr et al 2017	We couldn't find the exact reference suggested by the reviewer
U.S. government	Chapter 2	32	1232	32	1232	It is clear that ecological compensation can be an effective tool. However, the first hurdle to its use should be a determination if it is appropriate (and acceptable) in a given situation.	This is true. Ecological compensation is not meant for the cases where rare habitats (or species) are at stake. For the habitats for which compensations are allowed, one must define whether the compensation is restricted to a like-for-like or better-for-like principles.
Jun Wang	Chapter 2	32	1236	32	1238	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	32	1239	55	2285	Large parts of chapters 2.2.2 and 2.2.3 focus on land degradation in relation to reduced biodiversity and wellbeing (financial and cultural) impacts; though definition of land degradation is wider - including hydrological impacts, storm protection and other ecosystem services	The reviewer is right. However we do not consider that these sections suffer from this lack of reference. The point we want to make can be made without mentioning storms or tsunamis.
Javier Ernesto Cortés Suárez	Chapter 2	32	1239	33	1301	These should be articulated with the Indigenous and Tribal Peoples (ILO)Convention No 169.	We added a sentence explaining that IPBES and ILO definitions were not overlapping. We are supposed to stick to IPBES definition - see Glossary.
Suneetha Mazhenchery Subrama	Chapter 2	32	1263			this has been formalized in international treaty through the Nagoya Protocol on ABS, although it still needs to be reflected in national policies and production landscapes (see for instance https://www.cbd.int/doc/publications/cbd-ts-52-en.pdf) Bélair C., Ichikawa K., Wong B.Y. L., and Mulongoy K.J. (Editors) (2010). Sustainable use of biological diversity in socio-ecological production landscapes. Background to the 'Satoyama Initiative for the benefit of biodiversity and human well-being.' Secretariat of the Convention on Biological Diversity, Montreal. Technical Series no. 52, 184 pages.	I added the reference, thank you.
Jun Wang	Chapter 2	32	1263	32	1263	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	32	1269	32	1269	There is missing comma in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	32	1273		1276	There is no definition of "Indigenous people" in chapter 1. The definition presented here needs a bit of further exploration and explanation, especially around teh aspects of reliance, dependency and social reproduction. Else, the defintion is open to interpretation and may be understood as not inclusive of indigenous people 'living in 2 worlds' - working a 9 to 5 job and practising 'tradition and culture' on weekends or for special occasions only. Within this subset of indigenous populations, there is no direct reliance and dependency on local ecosystem services etc.	This is perfectly true. Indigenous and Local Knowledge are defined in IPBES Glossary. By extension, the Indigenous and Local peoples we focus on are those who still master and transmit traditional knowledge and practices. Your comment really deserves to be developed and deepened but the length allowed to each chapter does not permit it.
UNCCD SPI	Chapter 2	32	1275			what is meant here by social reproduction? Are you referring to social inequality? If not, use a different term.	We added this definition: social reproduction being, in parallel with individual reproduction, the phenomenon by which a society can perpetuate itself across time.
Mahmoud Awad Mekki	Chapter 2		1279		1279	The prpoer arabic word for taboo is "muharram" rather than "mana"	Actually Mana is a Melanesian word, not Arabic. It means "supernatural presence".
Sandhya Chandrasekharan	Chapter 2	33	1281	33	1283	also holds true for most communities in modern India	Thank you for the information. If you have any reference, we could mention it.
Gardner	Chapter 2	33	1293	33	1301	Note that NZ has given legal effect to traditional practices and beliefs, with its recognition of the legal status of the Whanganui River. In 2017, the New Zealand parliament granted legal personhood to the river, which the Maori iwi people consider sacred. The Maori community and the government will each appoint a member to represent the river's interests. ABC. (2017). New Zealand's Whanganui River granted legal status as a person after 170-year battle. http://www.abc.net.au/news/2017-03-16/nz-whanganui-river-gets-legal-status-as-person-after-170-years/8358434	The example is mentioned later in the chapter.
Eila Gendig	Chapter 2	33	1293		1294	Support using the New Zealand example	The example of New Zealand is mentioned in the section that follows the one in which this comment was made.

Dorothe Lütkemöller	Chapter 2	33	1296		1297	Maybe it could be useful in this chapter to give a hint on European spiritual concepts of land (especially soils), as well. The following literature might be interesting in this context: Patzel N. (2010): European Religious Cultivation of the Soil. In: Edward Landa and Christian Feller (Ed.): Soil and Culture, S. 261-276. Springer Verlag. (Script available as pdf): patzel_2010_european-religious-cultivat[...]	We included this reference, thank you, although it deals with Europe before 18th century.
Eila Gendig	Chapter 2	33	1297		1301	The example presented is not a government initiative. Please re-phrase for example to "In New Zealand, researchers, including Māori, have used indigenous knowledge (mātauranga Māori) – for example understandings of traditional Māori concepts such as taonga, mauri and kaitiakitanga – alongside science to develop an integrated inclusive approach to wetland classification, restoration, and management."	Thank you for the suggestion. We rephrased.
UNCCD SPI	Chapter 2	33	1304			what "things" got worse, and in comparison with what?	We rephrased by saying "the situation got out of control"
Australia NFP	Chapter 2	34	1328	34	1337	Line 1334 - reference should be Uluru-Kata Tjuṯa Line 1334 - reference should be (Ayers Rock-Mount Olga) Line 1334 date should be 1958 Line 1335 date should be 1994 Line 1337 the word spiritual is used twice but it also does not quite make sense. (its <i>spiritual</i> , but also <i>spiritual</i> value) Please note: When using Uluru-Kata Tjuṯa please include the language markers under the "r" in Uluru and second "t" in Tjuṯa if possible.	Checked. These characters were not easy to find!
UNCCD SPI	Chapter 2	34	1336		1337	Doesn't make sense: environment should be defended as such, thus acknowledging its spiritual, but also spiritual value.	We rephrased.
Eila Gendig	Chapter 2	34	1337		1345	Support using the New Zealand example	We did in the following paragraphs.
Eila Gendig	Chapter 2	34	1341			please correct spelling to "Urewera"	Checked. Sorry.
Emmanuelle Quillérou	Chapter 2	34	1351	34	1351	Remind what mana refers to.	we added "supernatural presence"
Jun Wang	Chapter 2	34	1352	34	1352	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	34	1362		1364	"Buen vivir" would translate to "living well" - where and how does teh phrase become broader, and becomes a substitute for wellbeing and fulfilment?	The definition is given right below: "Buen vivir" translates the Aymara concept of Sumak Kawsay, meaning "fulfilment". This ethics considers, for instance, that land is not only a means of production, but also a living territory with multiple, material and immaterial, dimensions." It is a specific spiritual and legal concept, and it is spelled in Spanish so that it is not reduced to the simple meaning of "living well". Law has many untranslated concepts, such as Habeas Corpus.
Eila Gendig	Chapter 2	34	1372			Is there a concrete example of indigenous viewpoints in policy developemtn creating issues? If ILK is to be part of assessments, restoration approaches, it needs to be acknowledged in policies or national directives.	There are very few examples of Indigenous knowledge actually taken seriously by decision makers. But there are, as mentioned in 2.2.2 (restoration of wetlands through Maori memory and knowledge). On the other hand, many restoration projects (or others like fairtrade projects) are carried out through participatory processes, by which Indigenous and Locals can express their point of view. But our subsection 2.2.2 insists on the fact that further progress should be made.
Jun Wang	Chapter 2	34	1372	34	1373	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	35	1381	35	1382	Only the last name of the author should be cited in the reference, and unexpected bracket appears.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	35	1385	35	1386	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Steve Prince	Chapter 2	35	1387		1388	"...Nevertheless, studies have shown that indigenous and local people's soil classification systems are based on their in-depth knowledge of soils...", better "...are sometimes based.."?	As the premise of the sentence refers to those I & L people that have a soil classification system, it doesn't apply to those who don't have a soil classification system. Nevertheless, I'll added "in many cases"
Jun Wang	Chapter 2	35	1390	35	1390	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	35	1398	35	1398	The reference must be cite as 'Trospser & Parrotta, 2012'.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Emmanuelle Quillérou	Chapter 2	35	1405	35	1405	Participation depends on whether it is made possible by organisations but also on resources available internally to NGOs and other types of contributors. See McCormick, H. (2014) Participation of NGOs in Land Degradation Policy-Making in Uganda: Is Opportunity to Participate Enough? Major Research Paper for the Master of Arts in Globalization Studies and the Water Without Borders Collaborative Graduate Program in Water, Environment and Health, McMaster University and United Nations University Institute for Water, Environment and Health (UNU-INWEH). Available from: http://inweh.unu.edu/reports It could be good to cite this paper to show that a good level of participation (from civil society) is not always easy to achieve in practice.	Thank you for the reference. We added it.

Jun Wang	Chapter 2	35	1406	35	1406	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	35	1414	36	1431	Zusammenarbeit	Corrected. Sorry.
Eila Gendig	Chapter 2	35	1416		1417		We edited the sentence according to your comment. It reads now: "Such a plan was successful thanks to a strong collective capacity to achieve common objectives, a capacity translated into the concept of "social capital""
UNCCD SPI	Chapter 2	36	1464	36	1464	In section 2.2.2.3 "Sub-Saharan Africa" are mentioned	Do you mean that the "s" of "sub" should be in capital letter? Both spelling are possible, but we will follow the advice.
Eila Gendig	Chapter 2	37	1480		1484	Explanation seems to have a narrow focus; how about including and mentioning "lack of control" and other aspects within	Isn't "lack of control" included in "lack of adapted public policies? Or do you mean a specific lack of control? Anyway, we added 'lack of adapted public policies and follow-up'".
Jun Wang	Chapter 2	37	1481	37	1483	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	37	1488			Can you please explain "social ecosystems"?	We corrected into "socioecosystems". This expression is used throughout the assessment to describe human societies deeply embedded in and relying on the ecosystems they live in. We added this definition in brackets.
Jun Wang	Chapter 2	37	1488	37	1488	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	37	1502	37	1502	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	37	1504		1508	Is there an updated meta-analysis/study on tragedy of the commons available?	We added two references to reviews on New Commons and their heuristic value: Lopez & Moran 2016, and Duraiappah et al. 2014., and two other references criticizing IAD for its lack of in-depth ecological analysis (Ostrom & Cox, 2010; Epstein et al. 2013)
Jun Wang	Chapter 2	37	1507	37	1507	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	37	1514	37	1514	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	37	1514	38	1517	The brackets there must be checked.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Suneetha Mazhenchery Subrama	Chapter 2	47	1517			and production landscapes (see for instance https://www.cbd.int/doc/publications/cbd-ts-52-en.pdf Bélaïr C., Ichikawa K., Wong B.Y. L., and Mulongoy K.J. (Editors) (2010). Sustainable use of biological diversity in socio-ecological production landscapes. Background to the 'Satoyama Initiative for the benefit of biodiversity and human well-being.' Secretariat of the Convention on Biological Diversity, Montreal. Technical Series no. 52, 184 pages	Thank you for the suggestion! We added it.
Jun Wang	Chapter 2	38	1521	38	1521	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	38	1530			maybe add "financial compensation for individual actors" as another factor to inhibit collective responses?	We added "lack of compensation".
Jun Wang	Chapter 2	38	1531	38	1532	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Eila Gendig	Chapter 2	38	1535			better resolution image	Higher resolution images were included in the final report
Germany	Chapter 2	38	1535			It is impossible to read the text in the Figure. Please improve the quality/resolution of this Figure.	Higher resolution images were included in the final report
U.S. government	Chapter 2	38	1535			Needs to be higher resolution - difficult to read (fuzzy).	Higher resolution images were included in the final report
Jun Wang	Chapter 2	39	1568	39	1569	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	39	1571	39	1572	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	39	1574	39	1574	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	40	1593	40	1593	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	40	1598	40	1598	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	40	1605	40	1606	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	40	1618		1619	Provide reference for the statement: existing legislation is often perceived as discriminatory and repressive, especially if it derives from international agreements...	We added Mermet & Benhammou 2005 and Kohler 2008, two papers that deal with that.
Mahmood Yekeh Yazdandoost	Chapter 2	40	1629	40	1636	Correct	Thank you.

Germany	Chapter 2	41	1638	41	1646	The Introduction is too long. Clear sentence that farmers with good integration into markets are addressed is sufficient. 7 lines saying who is not adressed is totally unnessary.	We agree with the reviewer. However, this chapter dealing with concepts, it is important to give a definition of "family farming". So we only deleted the sentence saying we would not deal with groups B & C.
UNCCD SPI	Chapter 2	41	1657		1658	Explain "the social reproduction of the production unit"	We added this: "(understood here as the will to transmit the farm to next family generation – see also 2.2.2)."
Diana Patricia Alvarado-Solano	Chapter 2	41	1661	41	1664	In Colombia for example, the traditional family farmers have a long-term relation and attachment with the landscape in which they live, is not only a representation of the place that produced food. In this sense, is important to noticed a trait that we recognize that it is known as "sentido de pertenencia" "sense of belonging"; in the countryside the inhabitants have a stronger one when compared with the urban citizens, the reason is because the farmers o peasants relates with the Nature as provider of good quality of life and all the goods they need.	We added "sense of belonging" but we need a reference to add the Colombian example.
Diana Patricia Alvarado-Solano	Chapter 2	41	1669	41	1669	How agribusiness is defined? Is important to present the background of the development of the Green Revolution which was the concept and scheme implemented and boost my many international organizations who later influenced and impelled public and governmental policies for the modernization of the countryside.	Agribusiness is defined in next subsection, 2.2.3.2.
Miguel Taboada	Chapter 2	41	1670	42	1787	The influence of the Green Revolution is generally considered fromthe point of view of crop yeild increases, the use oil based inputs and son on. However, it is probable that the use of N-fertilizers covered up soil degradation in ma ny places.	The reviewer is right, but should remember that this chapter deals with the perceptions and concepts of the stakeholders.
UNCCD SPI	Chapter 2	41	1671		1672	The Green revolution took place in Asia, not western countries.	This is incorrect.
Sandhya Chandrasekharan	Chapter 2	41	1672	41	1672	Green Revolution happened in India as well	We mentioned it.
Sandhya Chandrasekharan	Chapter 2	41	1673	41	1673	and capital accumulation. The basic tenet of economics relies on the creation of a surplus. And I am not sure about "centuries of family patrimony" . That, as Socialist and Marxist feminists show, also has its roots in capitalism, and was preceded by collective ownership of land (and more egalitarian social systems)	We added "and capital accumulation".
Sandhya Chandrasekharan	Chapter 2	41	1682	41	1683	It is not just about local or global. In the post WW II era, national level, and food security and self sufficiency concerns also drove the process. As also surplus for industrial raw material	We added this sentence at the beginning of 2.2.3.1: "During the dark years of the 30s and after World War 2, agriculture was considered a strategic issue for national food security. National States became major actors in orienting and improving agricultural policies to achieve self-sufficiency."
Jun Wang	Chapter 2	42	1691	42	1691	The brackets there must be checked.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Germany	Chapter 2	42	1704	42	1704	Spell out "WW2" (World War 2).	Done
UNCCD SPI	Chapter 2	42	1704	45	1860	Please provide full name sfor abbreviations WW2, GATT, WTO & GMO	Done
U.S. government	Chapter 2	42	1709	42	1722	This paragraph is unbalanced and biased. Recommend deletion.	We deleted the allusion to Indian farmers committing suicide in India. But the fact that farmers are the profession more likely to commit suicide, in several countries, is well established. Thus, we respectfully disagree with the suggestion to delete the whole paragraph.
Sandhya Chandrasekharan	Chapter 2	42	1711	42	1714	But it has been made a business. The drivers of that business are usually importing countries. What can be (tangibly?) proposed to fix it, if the "business" aspect of it is the problem? Normative language/ moral posturing in academic forums certainly does not help	For export crops, obviously, the drivers are importing countries. But may we ask the reviewer a suggestion so we do not adopt this moral/academic posturing? Our point here - as our chapter leads with perceptions and concepts - is to expose the point of view of several actors, among which the president of the African Bank for Development.
Arora	Chapter 2	42	1720	42	1722	The text "In India, for instance, 25,000 indebted small farmers committed suicide between 1997 and 2004, many of them through herbicide ingestion after they adopted market-driven productions based on herbicide resistant seeds, (Heeter, 2005)." cites Heeter 2005 which is a reference to an article published in Frontline/World available at http://www.pbs.org/frontlineworld/rough/2005/07/seeds_of_suicid.html This is based on a single reference from a media source and no other sources are given. The information cannot be included in the chapter as such and needs to be validated with a scientific reference, failing which it should be deleted.	True. We deleted this sentence and the reference.
Jun Wang	Chapter 2	42	1720	42	1720	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.

Sandhya Chandrasekharan	Chapter 2	43	1734	43	1738	Hard data is very important to make statements like this. Where in the world? What profile of farmer and consumer?	Thank you for this comment. We edited quite heavily the paragraph and added references. It goes like this: "Although a shift towards conservation agriculture entails negative aspects (such as an increased labour when herbicide is not used – Giller et al. 2009 – or lower yields in the years following the conversion - Brouder & Gomez-Macpherson 2014), an increasing number of farmers are opting for new practices, based on consumers' willingness to pay for high-quality, low production footprint and locally produced food, in developed as well as in emerging countries. In Sub-Saharan Africa and South Asia (Stevenson et al. 2014), conversion to conservation agriculture is mostly meant to avoid land degradation and empower small farmers, when firmly accompanied by government agencies or NGOs – which is not always the case (Sato 2000). For higher income countries, and provided they are correctly embedded in rural/urban social networks, farmers can escape from the debt spiral and assume a social role more fulfilling than being an anonymous link in the supply chain, along with resolving moral dilemmas regarding human and environmental health (Knowler & Bradshaw 2007 ; Strohlic & Sierra 2007 ; Vogl et al. 2017 ; Padel 2002)."
U.S. government	Chapter 2	43	1734	43	1744	This paragraph is unbalanced and biased. Recommend deletion.	We understand the fact that the paragraph might seem unbalanced. Nonetheless, what we are asserting is well established, as the new references provided tend to prove. Taking into account your comment, we added also references explaining that conservation agriculture entails more labor and lower yields in the first years, especially in Sub-Saharan Africa and South Asia.
UNCCD SPI	Chapter 2	43	1740			acknowledge that conversion to organic farming will increase land area needed for food production, as yields are generally lower.	This subject is dealt with in section 2.3.2. Actually recent surveys and experiments show that yields in conservation agriculture is 17 to 8% lower - and in certain cases higher - than conventional farming, besides offering ecosystem and carbon sequestration services. See ECAF report http://www.ecaf.org/inaction/news/item/60-a-major-new-research-study-in-favour-of-conservation-agriculture . See also Altieri & Toledo 2011 or Rey Benayas & Bullock 2012 and especially Poniso et al. 2015 published in the Proceedings of the Royal Academy.
Germany	Chapter 2	43	1745	43	1748	However this concept has not slowed down the rate of biodiversity loss or even reversed a negative trend. In The EU, many bird populations are under threat (e.g grey partridge (<i>Perdix perdix</i>) in central Europe) and ground water is more polluted and the soil conditions are weak and need permanent input of fertilizers.	Do you have a reference showing that the process has not at least slowed down? One might guess that the situation will improve after glyphosate and neonicotinoids are banned? In all cases we are supposed to focus on concepts, not on the success of their enforcement.
U.S. government	Chapter 2	43	1745	44	1787	Recommend further elaboration of the concepts of "Land Sparing" and "Land sharing".	We put these terms in the glossary, and add the definitions in our chapter.
Suneetha Mazhanchery Subrama	Chapter 2	53	1745			it would also be useful to touch upon traditional utilitarian production landscapes that are multifunctional and continue in many contexts to contribute to national economies- through aggregation of small producers . for eg., viticulture or olive gardens in Spain translated to specialty wines and olive oils. see for instance https://www.ecologyandsociety.org/vol19/iss1/art41/ Gu, H., and S. M. Subramanian. 2014. Drivers of change in socio-ecological production landscapes: Implications for better management. Ecology and Society 19(1): 41. http://dx.doi.org/10.5751/ES-06283-190141	We added the reference, thank you.
Jun Wang	Chapter 2	43	1752	43	1752	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	43	1754		1755	the fact that intensification leads to a relative reduction in cropland area is covered in the previous sentence, so the point being made here is not clear.	The sentence was inconsistent, we deleted it.
Jun Wang	Chapter 2	43	1760	43	1760	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	43	1766	43	1766	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	43	1769			unless intensification leads to over-production, logic dictates that higher yield per ha means that less land is required to meet demand for agricultural produce.	We qualified by saying: "However, land sparing presents several limitations: intensification seldom hinders agricultural expansion as it attracts other producers or grows because of an increasing demand;" - this phenomenon has been observed inter alia with soy production in Brazil.
UNCCD SPI	Chapter 2	43	1770			this is not a limitation - it is the exact purpose of the approach. A possible limitation is that the farmed land may have increased risk of degradation under more intensive practices.	We don't understand the comment as the reviewer answered the question.

UNCCD SPI	Chapter 2	43	1778			Point not clear: maintaining hedges to fix the predators' guild	hedges or hedgerows help to maintain insects, birds, amphibians, reptiles and mammals in the proximity of the cropland so one can obtain a natural regulation of parasites, be them insects or small rodents.
r	Chapter 2	44	1781	44	1787	What should also be mentioned is that the respective shares of each type will probably be minimized "spared for biodiversity" at least in Europe this can be seen as a result of the CAP.	We added the reference to 2013 Common Agricultural Policy reform, thank you for pointing at it.
Jun Wang	Chapter 2	44	1786	44	1786	Only the last name of the author should be cited in the reference, and unexpected bracket appears.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Sandhya Chandrasekharan	Chapter 2	44	1802	44	1803	and what action followed the "talk"?	It is explained just below, with the inclusion of social responsibility in agricultural development projects.
Germany	Chapter 2	44	1807	44	1809	Mentioning deforestation free supply chain initiatives could be helpful here, even though these are usually only voluntary commitments.	Thank you, we mentioned it.
Diana Patricia Alvarado-Solano	Chapter 2	45	1829	45	1829	What about the basic needs for farmers. In Colombia, the family farms are rated as one of the most poorest sector in the country.	Low income farmers are the focus of 2.2.2.3
U.S. government	Chapter 2	45	1839	45	1842	This is a value judgement, not based in fact. Recommend deletion.	We don't understand the comment. Mentioning Monsanto Tribunal is not a value judgement, it is a fact that actually happened. We added: "This initiative was supported by 1200 organisations from the five continents and by 90.000 petitioners. This initiative shows a profound distrust of agribusiness corporations, that could be mitigated thanks to more transparency and ethics." The list of organizations can be found here: http://en.monsantotribunal.org/signers-organisations
Suneetha Mazhenchery Subrama	Chapter 2	45	1843			it might be useful to cover here the role of certifications in having ensure sustainable production	We added a reference to deforestation-free supply chains, which is a corporation initiative, but most of labels are created by NGOs.
UNCCD SPI	Chapter 2	45	1845	45	1845	No bracket after n.d.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	45	1849	45	1849	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	45	1851	45	1851	The brackets there must be checked.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	45	1855	45	1855	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
U.S. government	Chapter 2	45	1860	45	1864	This text is not balanced and seems to selectively use references. Recommend deletion.	The problem raised by this comment is hard to solve. There are actually plenty of references mentioning conflicts of interest in private research, mainly about GMOs or agrochemicals. As this is an assessment, we have to base ourselves not only on articles, but also on review articles as those we quoted, both published in PLOS, a highly-rated journal. We added two other references going in the same direction. The reviewer will remember that this chapter deals with perceptions. We spoke just above of public opinion's perception, now we mention public researchers' perception about the literature regarding GMO's and agrochemical. To be more balanced, we emphasized the fact that this was a perception. I goes like this: "Conflict of interest doesn't systematically mean bias; but the references cited above suggest that scientists involved in public research perceive agribusiness companies as defending their own interests through non-objective articles without engaging in full public information."
UNCCD SPI	Chapter 2	45	1865			which strategy?	We deleted the first part of the sentence.
U.S. government	Chapter 2	45	1871	46	1875	This paragraph is unbalanced and biased. Recommend deletion.	We edited the sentence: "Moreover, technical skills and understanding necessary for a proper use are extremely complex for illiterate farmers". The rest of the sentence consolidates this assertion by scientific references, hence we don't understand how it can be biased. Maybe the reviewer could give us other references?
NFP of China	Chapter 2	46	1871	46	1874	The problem is a common phenomenon around the world,we recommend to delete "in China"	The papers mentioned China, but we changed for "Eastern Asia".
Jun Wang	Chapter 2	46	1875	46	1875	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
U.S. government	Chapter 2	46	1876	46	1880	This is a mis-representation. Please revise or remove.	We developed the acronym: United Nations Conference on Trade and Development's report "Tracking the trend towards market concentration : the case of the agricultural input industry" (UNCTAD, 2006). Is there a reason why this report should be discarded?

UNCCD SPI	Chapter 2	46	1886		1895	much of this is irrelevant to land management.	It is indirectly relevant as 1) agribusiness and agrifood companies tend to merge or at least converge and 2) because selling cheap products means a pressure exerted on producers, as mentioned in the paragraph. We added this sentence to turn it more relevant for our assessment: "it tends to create a misperception of the origins and impacts of the food consumed, thus hampering consumers' awareness (e.g. for the impact of meat consumption on climate change – Bailey et al. 2014; see also 2.2.1.3 for the land degradation due to the soy/pork connection)". We also inverted 2 paragraphs so the continuity is easier to understand.
Germany	Chapter 2	46	1894	46	1895	The idea is clear but it should be better phrased. Cheap food = obesity is not valid as such but the low quality and high amounts of industrial sugars. Finally it is too complex to bring it down to such a short sentence.	The important point is that we talk about social discrimination when it comes to affordable food. We added "low quality food".
U.S. government	Chapter 2	46	1901	46	1906	This paragraph discounts the fact that agrochemical and biotechnology have actually lessened land degradation, by enabling conservation agriculture practices in numerous countries, as articulated in Chapter 1 of this IPBES report on page 26.	True, and we added this point. But on the same page 26 of Chapter 1 the conclusion is: "Concerns continue to be raised, however, about the continuing use of 810 glyphosate to suppress weeds and its possible effects on soil biota and aquatic ecosystems (AAFC, 2013; 811 Awada et al., 2014; Clearwater et al., 2016) (Statistics Canada, 2015; VandenBygaert & Gregorich, 2003) 812 (Hempel et al, 2015)." Anyway we will mention the pros of using glyphosate. However, this comment raises a crucial issue: sometimes solutions for carbon sequestration are damageable to the environment, or, like here, solutions to fight land degradation can affect aquatic biota and soils' microfauna.
Virginia Meléndez Ramírez	Chapter 2	46	1907	46	1910	You can include a graph with areas in the world with transgenic crops, e.g. https://www.statista.com/statistics/271897/leading-countries-by-acreage-of-genetically-modified-crops/	It is a good idea but many comments suggest we are biased and focus too much on GMOs.
Jun Wang	Chapter 2	46	1915	46	1915	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter. Thank you anyway.
Germany	Chapter 2	47	1921	47	1923	While personally I mostly agree with the statement it is highly questionable if there should be room for such a comment in an IPBES report. Proposal: Rewording or deletion.	True. We rephrased.
UNCCD SPI	Chapter 2	47	1922			Inappropriate expression in scientific literature: civil society consider these companies as Evil on Earth. If it is retained, put it in quotation marks.	True. We rephrased.
Germany	Chapter 2	47	1931	47	1931	As long as no financial institution in their cooperate vision clearly state that the target is maximizing profits such a statement ist questionable. Proposal substitute "maximized" with "high". Above all the return of investment should be the overall goal of financial institutions and the dividen is an add on.	Done.
Joanne Perry NZ focal point	Chapter 2	47	1941			please use a more appropriate set of images than woman in either bathing suits or underwear. This is likely to be offensive to some cultures in the AP and is somewhat disrespectful to woman. I am sure there are more appropriate examples of distribution networks in food industries and or consumers.	We deleted the figure, although women in bathing suits symbolize exactly what we mean by hampering consumers' awareness about the ins and outs of the products they consume.
Germany	Chapter 2	47	1942			This Figure needs to be modified. Reason: It is not appropriate that an IPBES report highlights the brands of products in its assessments. Misunderstandings should be avoided that IPBES is advertising / lobbying for any organisation/firm etc... Furthermore, pictures should be used that are acceptable for all cultural backgrounds.	We deleted the figure.
Ben ten Brink	Chapter 2	48	1951	55	2285	Interesting, valuable and policy relevant analysis on policies and demographics and their relationship with the environment	Thank you.
NFP of China	Chapter 2	48	1971	48	1974	"Communist countries (except China)" is wrong	We replaced by "Eastern Block".
Jun Wang	Chapter 2	48	1981	48	1982	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter. Thank you anyway.
	Chapter 2	48	1994	48	1994	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter. Thank you anyway.
Jun Wang	Chapter 2	49	1996	49	1996	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter. Thank you anyway.
Jun Wang	Chapter 2	49	2000	49	2000	Only the last name of the author should be cited in the reference, and the brackets there must be checked.	Problem with referencing. This has been fixed for the final government draft of the chapter. Thank you anyway.
Jun Wang	Chapter 2	49	2003	49	2003	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter. Thank you anyway.

Marcia Levaggi	Chapter 2	49	2009	49	2028	En las líneas 2016-2017 se afirma que "The CBD acknowledged National [sic] sovereignty on genetic patrimony, which proved to be a severe obstacle for further global policies", al respecto, Argentina no coincide con la referida afirmación por considerar fundamental el mantenimiento de la soberanía nacional sobre los recursos. Por otra parte, en las líneas 2021-2023 se lee: "Unfortunately, genetic diversity did not become the financial manna expected, and the collective intellectual property of indigenous and traditional population has not been, until today, clearly conceptualized (Görg & Brand, 2006) nor defined by Law [sic]" Y "The reluctance of corporations to invest in and pay for indigenous or local knowledge about diversity is partially due to the complexity of negotiating rights to access and benefit sharing (Rosendal, 2011). North/South trade continued to rely mainly on exchanging raw materials (minerals, oil, gas and timber) for processed products (Hufty, 2006)" (líneas 2025-2028). Esta postura podría resultar en desmedro de los de los países y sus comunidades indígenas y tradicionales. Esta idea se refuerza en el párrafo comprendido entre las líneas 2058-2063 donde se utiliza el concepto de "ecological solidarity" en lugar de la noción de desarrollo sustentable ya consensuada en la Conferencia de Río, donde se definió el principio de "common but differentiated responsibilities" (2009-2010).	We don't see what exactly is the problem here. The whole chapter (and the assessment) points at the limits of the concept of sovereignty when it comes to climate change and ecosystem collapses, especially when, as seen above, sovereignty is associated exclusively with rights and not with responsibilities. Regarding the equitable sharing of benefits, we would appreciate references showing success stories in retributing indigenous knowledge.
Mahmoud Awad Mekki	Chapter 2		2021		2021	What is meant by manna?	Definition of manna: "the meaning of manna comes from the Old Testament of the Bible. It can be used to describe something unexpected, especially if it feels like a miracle."
Otávio Gadiani Ferrarini and Carlo	Chapter 2	49	2023	49	2025	Update the information in this paragraph since in Brazil were approved Law No. 13,123 of May 20, 2015 and Decree No. 8.772, May 11, 2016, regarding this topic.	Thank you, we did.
Sandhya Chandrasekharan	Chapter 2	50	2050	50	2051	interesting. Needs to be examined in detail	Thank you. This should be examined at the level of Governments, though.
Yuko Kurauchi	Chapter 2	50	2052	52	2161	I recommend the document to recognize the two-sided issue of demography. Some countries face challenges with uncontrolled population growth, while others face population decrease. It (together with other socio-cultural-religious issues) partly accounts for the difficulty in making a simple argument of slowing down demographic growth or birth limitation/control prominently in some of the global documents as universal matter, Rather more the abstract terms like "demographic change" are utilized.	Thank you for this comment. The reviewer will kindly consider that this is a global assessment and have to consider global trends. In this aspect, the decrease of population in Japan or Germany are extremely marginal.
Sandhya Chandrasekharan	Chapter 2	50	2064	50	2064	The colonial hangover and non-engagement with ecological footprint data, of this entire section, needs to be set right	We kindly disagree. Many sections of this chapter mention the ecological footprint of high income countries. Here the reviewer is focusing on one (out of many) paragraph, that is dedicated to population growth.
Mahmoud Awad Mekki	Chapter 2		2066		2066	Human population will be To a word is missing	Corrected
Jun Wang	Chapter 2	50	2071	50	2072	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	50	2074	50	2075	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	50	2081	50	2082	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	50	2086	50	2086	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Sandhya Chandrasekharan	Chapter 2	50	2089	51	2092	not borne out by reality and the possibilities of technological advancements, so it would be interesting to know the consumption basket of their "chosen" 2 billion, and the rationale behind choosing to include this in this draft report	True. We deleted the reference to Ehrlich's assertion that Earth's carrying capacity would be 2 billion people.
Jun Wang	Chapter 2	51	2094	51	2094	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Sandhya Chandrasekharan	Chapter 2	51	2119	51	2120	Can education reach the overconsuming Global North instead? And especially their very educated political elite?	We kindly disagree with the reviewer on that aspect.
Sandhya Chandrasekharan	Chapter 2	52	2141	52	2144	'social evolution' ? Would the world turning vegetarian count as social evolution, I am wondering? Objectionable Social Darwinism in this writing. All religions that have issues with family planning need to be addressed in the same way, including Christianity.	Regarding population growth in the Arabic world and the political instability entailed by this growth, we cite several references making that point.
Sandhya Chandrasekharan	Chapter 2	52	2157	52	2159	It would be insightful to have a table showing the allowance and the planetary resources consumed that accompany that "allowance" by country	We don't understand this comment.

Marcia Levaggi	Chapter 2	52	2162	55	2285	El documento construye la posibilidad de adoptar sanciones comerciales internacionales por motivos ambientales, equiparándolas a las que se aplican por motivos ideológicos, éticos o de seguridad (líneas 2236-2239). Asimismo lanza la necesidad de usar "new policy instruments" para "facilitate international negotiations by fostering transnational and [sic] agreements" tras lo cual introduce, el concepto de "ecological solidarity" (líneas 2253-2256). Tras colocar la definición de Thompson et al (2011), indica que "It is highly interesting from a legal point of view and moreover regarding land restoration, because it relies on the paradigm of a collective duty of humans towards the environment. Hence, it enlightens the intrinsic limits of private property rights, as a balance to the sovereignty principle" (líneas 2272-2275). No se comprende el alcance que se le quiere dar al llamado "deber colectivo de la humanidad", como también se reitera el pedido de omitir la inclusión de la noción de "ecological solidarity" en el documento final. La posibilidad de instaurar un sistema transnacional de compensaciones en materia de degradación de la tierra abriría la posibilidad de imponer a los países embargos y sanciones comerciales por motivos ambientales ante los cuales Argentina considera inadmisibles su inclusión en el documento.	We perfectly understand Argentina's point of view. However, the reviewer might remember that Argentina was one of the few countries to impose sanctions for ecological reasons, by closing the bridges between Argentina and Uruguay during the "paper war". Moreover, we find it difficult to understand how "the collective duty of Humanity" to prevent a global collapse should be questioned. This includes of course countries which consumption patterns are unsustainable and affect the possibility for other countries to adopt ecologically sustainable policies.
U.S. government	Chapter 2	53	2172	53	2219	This sections is unbalanced, as it only criticizes the AGRA program. Please provide examples of this program's success in order to balance the text, or delete the example entirely. We also note that multiple studies have shown that biotech crops pose no unique risks to the environment or human health. (Source: National Academy of Sciences, Engineering, and Medicine (NASEM). Genetically Engineered Crops: Experiences and Prospects (2016)).	We edited the box, turning it more balanced and insisting on the diverging perceptions as perceptions, not facts. We also checked the mentioned "Genetically engineered crops", but found only references to human health, not to the environment. It also does not mention the concentration of the sector, one corporation being owner of more than 90% of the GMO put in the market.
UNCCD SPI	Chapter 2	53	2172		2172	this box seems to be more about agroecology, GMO crops and agribusiness, rather than perceptions of AGRA per se.	We heavily edited edited the box, turning it more balanced and insisting on the diverging perceptions as perceptions, not facts.
UNCCD SPI	Chapter 2	53	2177		2178	"insist" implies a criticism. Why should agriculture not be a business? To achieve food security, and multiple societal goals, it makes sense that some member of the community undertake commercial agriculture. It is not clear why this is a problem.	We replaced by "declares"
UNCCD SPI	Chapter 2	53	2179		2180	the cited document makes no mention of GMO varieties, and the AGRA website states: "AGRA does not fund any projects that involve genetically modified crops." Therefore, this statement that AGRA "sets out to adopt (encourage adoption of?) GMO varieties tolerant to herbicides" appears to be incorrect.	True, our mistake. The program mentions hybrid seeds, not GMO.
Jun Wang	Chapter 2	53	2193	53	2194	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	53	2200	53	2200	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	53	2210	53	2210	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Sandhya Chandrasekharan	Chapter 2	53	2218	53	2219	Same can be said for India's Green Revolution in the 1960s. The problem is, the development paradigm is not being unequivocally remodelled for meaningful SD (ie: environment FOR development as against environment v/s development). The inertia of business as usual needs the "demand" (not just for certain quantum of output, but also for inputs like GM crops, fertilizers/ pesticides to be deployed) from the global north to stop being a pull factor for continuing unsustainability. In this case, the funders of the African model...how can they do this and get away with it?	We tried to be more balanced while mentioning the AGRA program, so we will not insist on the disparities between North and South.
UNCCD SPI	Chapter 2	53	2218		2219	AGRAs main aim is to enhance income of small-holders, and it works across the supply chain. This includes action to improve post-harvest storage to reduce crop losses. Closing the yield gaps in Africa, and intensification of production, are well-recognised opportunities to enhance global food security. Van Ittersum, M.K., Vet al., 2016. Can sub-Saharan Africa feed itself? Proceedings of the National Academy of Sciences, 113(52), pp.14964-14969.	We tried to be more balanced while mentioning the AGRA program, and added your reference.
Sandhya Chandrasekharan	Chapter 2	54	2224	54	2226	because economics, and not politics, really rules the world?	We are not supposed to express so openly our opinions
Jun Wang	Chapter 2	54	2225	54	2225	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
UNCCD SPI	Chapter 2	54	2226			it is totally inaccurate to allege that "solutions other than market-regulated options that rely on trade an economic growth" are not explored at national and international levels. Such solutions are the major interventions funded by the GEF land degradation focal area, and promoted by the LDN initiative of the UNCCD.	We would appreciate some examples of institutional alternative solutions.
Sandhya Chandrasekharan	Chapter 2	54	2229	54	2230	be a little more alive to that fact that the "local inhabitant" is not a unqualified entity - there are first, second and third class, or maybe even non-entities among the "local" within countries, as mentioned elsewhere in the chapter. Increasingly "national" boundary informed international relations proves inadequate to address issues that need more humanism/ earth-scale problem solving.	We feel that, as you say, we expose different approaches to who "local inhabitants" are, and also mention the alternative humanism needed to confront ecological problems (section 2.3.1.2: "human progress vs ethics")
UNCCD SPI	Chapter 2	54	2231		2232	Point not clear: change, the negotiators privileged geopolitical approach of a planetary crisis	We added "geopolitical, and secondarily ecological, approach to planetary crisis. But honestly "geopolitical" was clear enough.
Jun Wang	Chapter 2	54	2255	54	2255	Only the first author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.

Jun Wang	Chapter 2	54	2256	54	2256	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Mahmood Yekeh Yazdandoost	Chapter 2	54	2257	55	2275	Ecological solidarity needs further elaboration, since it is a very important term.	We defined this concept when first mentioned and added it to the glossary.
Jun Wang	Chapter 2	54	2265	54	2265	Only the first author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Germany	Chapter 2	55	2302	55	2305	You wish to expand on the different roles/functions that policy-makers and civil society have in societal and governance processes, as these different but important roles/functions are displayed in the way and in the time decisions/actions are taken.	This is the introduction of 2.3 section. This aspect is developed in 2.3.2 subsection.
Ben ten Brink	Chapter 2	56	2318	60	2463	Interesting, valuable and policy relevant analysis on policies and demographics and their relationship with the environment	Thank you!
Javier Ernesto Cortés Suárez	Chapter 2	56	2329	56	2329	It is also known that Sustainable development has its ambiguities considering its synonyms. These should be consider in a profound way. It is also important to visualize Sustainable development in terms of a social, economic and environmental perspective.	The section defines SD in the first paragraph. The problem is not its definition, but its vagueness and the fact that, as explained later when we mention "green growth", economic development is considered the pillar of the two other pillars, i.e.economic development is the precondition for social or environmental policies (according to many world leaders).
Sandhya Chandrasekharan	Chapter 2	56	2338	56	2347	SD is clearly defined. It is development within the natural regeneration/ restoration capacity of earths resources. Advances in technology can facilitate getting "more from less", but a "limits to growth" discourse is equally vital. And decentering economics and the politics that supports it is even more vital. SD is impotent as a political agenda - not because we don't know what it is, but because it is too multidimensional to operationalise within systems set up in other centuries, when SD was not a concern	The section defines SD in the first paragraph. The problem is not its definition, but its vagueness and the fact that, as explained later when we mention "green growth", economic development is considered the pillar of the two other pillars, i.e.economic development is the precondition for social or environmental policies (according to many world leaders).
Jun Wang	Chapter 2	56	2340	56	2340	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	56	2345	56	2345	There is missing comma in each reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Sandhya Chandrasekharan	Chapter 2	56	2348	56	2350	it is even easier to argue that in the example given, hydroelectricity is unsustainable for destroying forest, and nuclear energy would be a better option. But are any environmentalists pro-nuclear energy? France gets more than 70% of its domestic energy from nuclear sources.	We deleted the paragraph.
Virginia Meléndez Ramírez	Chapter 2	56	2348	56	2350	An image could be added	We deleted the paragraph.
Martin Obermaier	Chapter 2	56	2348	56	2349	It is easy to argue that destroying thousand...' - substitute 'easy' for 'questionable'	We deleted the paragraph.
Virginia Meléndez Ramírez	Chapter 2	56	2350	56	2356	An image could be added	We deleted the paragraph.
Martin Obermaier	Chapter 2	56	2350	56	2352	The statement 'failed to mention that, as a result, sugar would accelerate land concentration' is a bit simplistic; concentration is principally due to the effects of the 2008 global economic crisis which heavily hit Brazil's ethanol sector. The fact that oil majors (BP, Shell, other) are investing in Brazil's ethanol fuel sector as a part of a strategy to fulfill E10 blending mandates in the EU (Oberling et al., 2012) can also contribute to this. I suggest to either clarify these relationships better, or to use a phrase such as 'failed to mention that, as a result, increasing demand for sugarcane ethanol/biofuels would contribute to accelerate land concentration'.	We deleted the paragraph.
UNCCD SPI	Chapter 2	56	2352		2353	Adami study does not show that sugarcane expansion pushed the soy and cattle frontier northward. Instead, it concludes:"More than 99% of the recent sugarcane expansion for ethanol and sugar production was either on pasture or agricultural land. The loss of pasture land to sugarcane was largely compensated by the growing livestock production efficiency in Brazil."	We deleted the paragraph. Regarding Adami et al. (not referenced anymore), their paper asserts that sugar plantations occurred in former pastures and soy plantations, and thus did not affect new ecosystems. But what they don't say is that the soy and cattle did affect other ecosystems by being displaced.
UNCCD SPI	Chapter 2	56	2354			Same as what? Implies "pushed the soy and cattle frontier northward to the Cerrado and Amazon"??	We deleted this paragraph.
Germany	Chapter 2	57	2364			This Figure has a low resolution quality. Please improve.	We deleted the figure.
UNCCD SPI	Chapter 2	57	2367			sustainable development is NOT conceived as a mainly economic issue	The section defines SD in the first paragraph. The problem is not its definition, but its vagueness and the fact that, as explained later when we mention "green growth", economic development is considered the pillar of the two other pillars, i.e.economic development is the precondition for social or environmental policies (according to many world leaders).
Jun Wang	Chapter 2	58	2402	58	2402	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	58	2414	58	2414	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.

						Implicitly suggesting that solving the underlying problems of food waste and food loss is not a viable alternative solution to the feeding-9B-by-2050 crisis. Very briefly, as you attempt to "glean" more food from any of your colored elements that comprise a bar (Fig 2.14, any region), the marginal cost within that color will go up until it overwhelms the benefit. That's for each separate color, in every bar, often with little synergistic effect across colors from interventions -- an implicit structural resistance to ridding the total bar of any one color in any region. So even "success" in reducing waste/loss will be partial/fractional. The solution to the 9B by 2050 problem will require some element of both "acceptable tech" and "reducing waste/loss," along with no fewer than three other factors that are not mentioned at all. We recommend that you revise this section to reflect this range.	We edited the text to mention the panel of solutions suggested, including the fact that food waste/loss are not totally avoidable. The whole range of solutions is developed in chapter 7, as the reviewer will kindly remind that this section is about "fuzzy concepts", and no one can deny that "food security" is too often reduced to "produce more".
U.S. government	Chapter 2	58	2415	60	2462		
Mahmoud Awad Mekki	Chapter 2		2417		2417	It would be better to sue the UN definition for food security	No opinion.
Jun Wang	Chapter 2	59	2433	59	2433	There is missing comma in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	59	2436	59	2436	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Jun Wang	Chapter 2	59	2440	59	2441	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Germany	Chapter 2	59	2443			This Figure has a low resolution quality. Please improve.	The resolution of all figures has been improved with the help of the graphics designer
						Global scenarios with on average low intensification show, obviously, large differences with respect to land use change, i.e. conversion of natural land and related loss of biodiversity and ES (PBL, 2010; PBL, 2014; PBL, forthcoming see above). Key issue here is whether intensification is not degrading the land and/or surrounding land and water. Next, according to the analysis in PBL (2010), reducing food loss by for example 30% has secondary impacts that reduce food price and reduce farmer's investments leading to reduced productivity and more agricultural expansion (if possible). It concerns a complex process that certainly not results in a simple less food waste - less land conversion - more food outcome. An approach directed on less waste, food security for all and protection of B-ES requires integrated policies on farmers skills, production technologies, land tenure, access to capital, improved infrastructure, transport and food conservation, access to markets, consumer behaviour, and environmental and nature conservation policies. 'PBL (2010). Rethinking Global Biodiversity Strategies: Exploring structural changes in production and consumption to reduce biodiversity loss. Netherlands Environmental Assessment Agency (PBL), The Hague/Bilthoven'; 'PBL (2014) How sectors can contribute to sustainable use and conservation of biodiversity. CDB Technical Series No 79'; 'UNCCD (2017) Global Land Outlook. (forthcoming)'; PBL (2017). Exploring the impact of changes in land use and land condition on food, water, climate change mitigation and biodiversity; Scenarios for the UNCCD Global Land Outlook. PBL-Netherlands Environmental Assessment Agency. Report xx. The Hague' (forthcoming); See Chapter 7 of the LDRA ; 'Burney, J. A., Davis, S. J., & Lobell, D. B. (2010). Greenhouse gas mitigation by agricultural intensification. PNAS, 107(26)'; 'Alkemade, R., van Oorschot, M., Miles, L., Nellemann, C., Bakkenes, M., & ten Brink, B. (2009). GLOBIO3: A Framework to Investigate Options for Reducing Global Terrestrial Biodiversity Loss. Ecosystems, 12(3).'	As the reviewer suggests, these references can be found in chapter 7. We edited the text to mention the ins and outs of intensification, but it should be remembered that this section is about fuzzy concepts, and is meant to show that "food security" is too often reduced to "producing more". As we deal with perceptions and concepts, it is important for us to underline how food security can be submitted to voluntary disinformation.
Ben ten Brink	Chapter 2	59	2445	59	2454		
U.S. government	Chapter 2	59	2447	59	2450	Please remove the word "populist" as it can often be accompanied by misleading connotations.	Indeed. The word populist has been removed.
Jun Wang	Chapter 2	59	2456	59	2456	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Sandhya Chandrasekharan	Chapter 2	60	2495	61	2509	Good to know. It is important to highlight Global-North solidarities for SD and their impact (if any)	Thank you!
Jun Wang	Chapter 2	61	2503	61	2503	Unexpected bracket appears.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Pedro Mendoza	Chapter 2	61	2519	61	2519	Include articles of agroecology in Latin America	Please suggest references.
Sandhya Chandrasekharan	Chapter 2	61	2525	61	2529	excellent. Food sovereignty is indeed what we need.	Thank you
Sandhya Chandrasekharan	Chapter 2	61	2532	62	2535	the best, most hope-giving lines in the chapter	Thank you
Sandhya Chandrasekharan	Chapter 2	62	2549	62	2565	as above	Thank you
Jun Wang	Chapter 2	62	2554	62	2554	Only the last name of the author should be cited in the reference.	Problem with referencing. This has been fixed for the final government draft of the chapter.

UNCCD SPI	Chapter 2	62	2574		2575	The cited paper does not study the impact of transport distance on carbon footprint of agricultural production. Studies that do (eg) find that the contribution of transport is very small, unless produce is freighted long distances by plane. Food-Miles and the Relative Climate Impacts of Food Choices in the United States. Christopher L. Weber and H. Scott Matthews Environmental Science & Technology 2008 42 (10), 3508-3513 DOI: 10.1021/es702969f Coley, D., Howard, M. and Winter, M., 2009. Local food, food miles and carbon emissions: A comparison of farm shop and mass distribution approaches. Food policy, 34(2), pp.150-155. And Saunders, Caroline, Andrew Barber, and Greg Taylor. "Food miles-comparative energy/emissions performance of New Zealand's agriculture industry." (2006). Nijdam, D., Rood, T. and Westhoek, H., 2012. The price of protein: Review of land use and carbon footprints from life cycle assessments of animal food products and their substitutes. Food policy, 37(6), pp.760-770	Thank you for pointing this out and for the suggested references. Given the lack of support for our previous statement, we have chosen to remove the sentence that you are pointing to while editing the previous sentence as follows: ""Producing locally, consuming locally" is a new concept which is gaining influence in number of developed countries, including the US, Canada, Germany, Italy, Spain or France (Deléage, 2011; Willer et al., 2010), although the contribution of food transportation on the carbon footprint remains relatively low compared to food production (Weber and Matthews 2008), particularly for animal sources of proteins (Nijdam et al., 2012)."
Jun Wang	Chapter 2	63	2596	63	2596	Unexpected comma appears.	Problem with referencing. This has been fixed for the final government draft of the chapter.
Sandhya Chandrasekharan	Chapter 2	63	2599	63	2600	At long last, WTO is in the picture. Perhaps it needs to be a more substantial and analytical discussion in the main body of the chapter, as against a cursory mention in the concluding part though.	We agree. We developed this part about WTO.
UNCCD SPI	Chapter 2	63	2599		2600	explain what aspects of WTO agreements will have to be revisited to promote sustainable consumption.	We specified the parts of the agreement that were problematic in section 2,2,3: an indiscriminated market access (Part III, article 4), discarding strategic subsidies along with export subsidies (Part IV, articles 6 and 7, and Part V, articles 9 and 10) and adjustments through specific custom duties (Part V article 8 and annex 5, section A, paragraph 6), creation of a supranational Committee on Agriculture (Part XI, Articles 17 &18)
Mahmoud Awad Mekki	Chapter 2		2610		2613	Policy should focus on changing people attitude instead of prompting new social norms	Promoting new social norms is an euphemism for changing people attitude.
Pedro Mendoza	Chapter 2	63	2611	63	2611	The education is fundamental	True.
UNCCD SPI	Chapter 2	63	2612		2613	illogical: shifting from one system of value to another cannot be delayed, unless environmental reality imposes itself on human beings.	We corrected the sentence
UNCCD SPI	Chapter 2	63	2626		2628	taxation policies can also help to achieve a more egalitarian society eg Swedish policy, that imposes heavy taxes but generous social welfare.	We added a mention to targeted taxes but the reviewer will remind that our focus is land degradation, not equality.
Martin Obermaier	Chapter 2	64	2635	64	2637	Please correct the full reference for Adami et al (2011), which should be 'Remote Sensing Time Series to Evaluate Direct Land Use Change of Recent Expanded Sugarcane Crop in Brazil'.	This reference has been deleted.
Steve Prince	Chapter 2		2693		2700	Reference repeated.	Corrected.
Jun Wang	Chapter 2	92	4100	92	4100	Unexpected '(1932).' appears.	Problem with referencing. This has been fixed for the final government draft of the chapter.