

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1	36054	12	0	0	0	0	While I understand the text is largely constrained by what is available in peer-reviewed papers, I think some comment is justified (even a paragraph) on the effects on human security stemming from the anticipated differences in degree of climate change effects (CCE) between the northern vs southern hemispheres (eg warmer in the north because there is more land there), and on poleward shift in climate belts (ie within hemispheres). The text as it stands seems mainly concerned with CCE within countries and perhaps between countries, but not so much within the broad framework of anticipated change (eg between hemispheres). Discussion of migration associated with this should include a comment on the proportions of change, for example, if a mere 50M people were to migrate from Europe to the southern hemisphere then that would probably have little overall effect on Europe but might have a much bigger effect in the southern hemisphere where there is less land. e.g., 10 percent of 50M would double New Zealand's population, causing doubled demand there for food, water, electricity etc etc. Has anyone done scenario modelling based on percent bulk migration between hemispheres applied to existing migration paths? If not, can this be noted as a recommendation/gap? Also, there does not seem to be acknowledgement of the CCE of reduced rainfall/snowfall on hydroelectric power generation and hence the need for alternate fuels such as coal (cheap and easy if without CCS, but undesirable) or renewables, and the flow-on effects on human security. This might be particularly relevant in Egypt, China, western USA and New Zealand (and probably lots of other places where HEP is significant). Perhaps this could be addressed by just a comment, with a cross-reference to another chapter? A comment on likely timings of future HS impacts such as migration peaks (eg triggered by sunspot cycle and ENSO for extreme weather events) would be useful, even if imperfect. e.g., see Lean, J.L.; Rind, D.H. 2009. How will Earth's surface temperature change in future decades? Geophysical Research Letters vol 36, L15708, doi:10.1029/2009GL038932. (Brad Field, GNS Science)	High level impacts of 4C or more discussed in Section 7. There are no global scenarios of migration in the literature, though the work on observed migration patterns (de Sherbinin et al) discussed in Section 12.4
2	38884	12	0	0	0	0	The chapter is already addressing major and important issues, with sufficient number of references and case studies. One issue that the chapter may also include is climate change, human security and crime. Recently, frequent manifestations of the relationship between climate change and crime have been resonating, including human trafficking. Growing and trafficking illicit crops has also been one of the manifestation of climate change in drought stricken areas that the report may like to consider. (Mohamed Tawfic Ahmed, Suez Canal University)	Literature on violence and climate and weather now more systematically assessed in Section 12.5.
3	39759	12	0	0	0	0	This is generally a good, clear, chapter. There are a few editorial issues (mainly inconsistencies) which I have not flagged specifically, but the text needs checking for. Some references are in alphabetical order, others in chronological order, and others in a random order. In some 'and' is used and in others '&'. The italicisation of et al. is inconsistent. There is an annoying mixture of American and British English. (Peter Burt, University of Greenwich)	Attempted to redress this, but only partially completed in SOD.
4	40474	12	0	0	0	0	Journal of Peace Research, Vol. 49, No. 1. It's problematic to assume that climate change, through negative impact on well-being, will elevate the risk of internal war, when violent conflict often takes place at the behest of elites. In that sense low levels of human security and well-being may indicate concentration of resources in the hands of elites but not in and of themselves are they causes of violent conflict except in instances of popular struggles. Here "internal wars" could be usefully broken down into different kinds of wars. Can conflict sometimes lead to positive outcomes? And in that vein, in the case of natural disasters, can they act as a force for change? Missing in the chapter generally is much discussion of the violence perpetrated by state interests. From my own reading of the climate and conflict literature, I think it is not correct to say that "There are strong theoretical reasons to hypothesize that climate change impacts create unstable environments in which the risk of localized or wider conflicts within countries would be elevated." One could make a case for the opposite, e.g. opportunities for cooperation. Clearly, context matters a lot here, and there simply may not be enough evidence for "theoretical reasons" in either direction. Caution is in order. (Betsy Hartmann, Hampshire College)	The assessment has continued to attempt to reflect the divergent literature on violent conflict and climate, seeking points of convergence in the literature, as well as identifying areas of divergence and attempting to explain why these divergences persist.
5	42459	12	0	0	0	0	This chapter needs to be rewritten after the authors have reviewed the following material which are absent from the reference list: Slettebak (2012), Gartzke (2012), Goldstein (2011), Goklany (2009f), Zhang et al. (2010, 2011), and references therein. (Indur Goklany, Independent)	With only the authors referred to, it was difficult to access these. The systematic search methods used identified the core literature and evidence base for the major sections on livelihoods, migration, cultural impacts, conflict and state security.
6	42910	12	0	0	0	0	Please consider including discussion on the impact of climate change on fire risks. Reference: http://www.esajournals.org/doi/abs/10.1890/ES11-00345.1 (Sai-ming Lee, Hong Kong Observatory)	Fire risk evidence from Australia incorporated.
7	44515	12	0	0	0	0	Table 12.1: "Observed and projected impacts of climate variability and change..." tends to stray into WGI-type physical climate changes (e.g., Glaciers and Ice caps, Floods in NL). It will be essential to ensure consistency with relevant material in chapter 3 of the SREX, and from the observation and projection chapters of the WGI AR5 (i.e., Chapters 2, 4, 11 – 14). (Thomas Stocker, IPCC WGI TSU)	Amended to stick to the specific issues for human security
8	44897	12	0	0	0	0	Unfortunately I have had limited time to review this in depth, but I am very impressed by the tight focus on culture, migration and conflict and the quality of the assessment. My only comments are minor. (John Morton, Natural Resources Institute, University of Greenwich)	We have continued to cross-review cognate chapters such as Rural and Urban chapters.
9	46368	12	0	0	0	0	Significantly improved since ZOD - There still could be a more systematic coordination with other chapters of the report, especially regarding the mobility/migration issue (see for example chapter 22 (22.6) - chap. 19 (19.4.2) also chap. 14, p. 17). The whole structure could also be further improved to get a more continuous storyline : it is not always clear as to why a specific \$ is at a specific place in the chapter (ex. p. 15 line 19-24...). (Etienne Piguet, University of Neuchatel)	Sections re-ordered especially Section 4. Also greater liaison with other chapters, especially Chapter 19.
10	46375	12	0	0	0	0	Numerous bibliographic sources are not reported in the bibliography at the end of the chapter (ex. Figueiredo et al 2009, Julca 2011, Grey and Muller 2012, Renaud et al. 2011, etc.). (Etienne Piguet, University of Neuchatel)	References now much more accurate

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11	46695	12	0	0	0	0	The chapter has looked into some key issues of climate change and human security analyzing issues of livelihoods, migration, conflict etc. However, there are scopes organizing the chapter including: a) more concrete cases to portray human security and its drivers. For example, the SLR and human migration issues from Island countries or importance of wide-scaling already proven approaches of livelihoods adaptation (e.g. FAO-LACC approach in Bangladesh); b) systematic informaton from the SREX report to establish linkages between extreme events/hazards & human security issues. This is critically important that the issues of DRR and CCA are clearly elaborated in this chapter to better establish the linkages between climate change (more recent manifestations) and human security issues. The recent most examples of tropical cyclones in Asia, flood episodes in Russa, Pakistan, Thailand and very recent example of drought situation in US and many parts of the globe are now more articulatively associated to the climatic changes and the time human population is going through. I feel the linkages and evidences are more stronger now -- becoming more aparent -- than the current texts of the chapter has portrayed. (Atiq Kainan Ahmed, Asian Disaster Preparedness Center (ADPC))	Adaptatyion dimensions to each of the major issues now more systematically identified.
12	47975	12	0	0	0	0	Due to the imprecise reaching and possible risks this notion poses to norms and principles of international law, in particular, non-intervention, respect for sovereignty and abstention from threats or use of force, it is considered that this issue should not be covered by the report of IPCC. The debate on implications of human security is still under discussion in the United Nations General Assembly, where it is expected to build a consensus on the constituent elements of this approach. This is an issue that should be continue debating in the United Nations General Assembly, an universal and democratic body, where all Member States are in egalitarian conditions, therefore, an eventual settlement or consensus on the nature and reaching of this issue must be in full accordance with the purposes and principles of the Charter of the United Nations. The extension of the notion of human security dangerously implies the securitization of world economic, social and environmental issues. This could lead to the broader interpretation of the Charter of the United Nations article on threats to international peace and security, enabling the Security Council to openly act on matters falling outside its scope. The thesis on the multidimensional character of security and its extension to all fields of human activity dangerously leads to securitization of economic, social and environmental issues with a different dimension. This multidimensional approach (in essence, expression of security notion security), can lead to the implementation of armed interventionist policies, contrary to national sovereignty and political independence of States, under the allegation of systematic human rights violations and of the humanitarian international law. (Sergio Castellari, Centro Euro-Mediterraneo sui Cambiamenti Climatici)	Scope of the human security chapter approved by government plenary and assessed as appropriate for this report.
13	48137	12	0	0	0	0	There is need to balance the statements on climate change and violent conflict in Chapters 12 and 19. While Chapter 12 is more cautious regarding the results of empirical studies, Chapter 19 makes stronger claims which are partly based on a yet unpublished source (Hsiang & Burke 2012). In addition two peer reviewed publications (Scheffran et al. 2012 in Science and a comprehensive volume by the same authors) could be cited here that provide further results based on literature reviews (see references below). (Jürgen Scheffran, University of Hamburg)	Greater liaisdon and comparison between chapters 12 and 19 now results in more consistent assessment.
14	48743	12	0	0	0	0	The authors have done a nice job taking often disparate studies across multiple disciplines to develop a single cohesive assessment on a chapter new to the IPCC Assessment Reports; and, in what likely was a short deadline. The Chapter is well organized and structured. As expected, the writing style varies across the subsections and sometimes makes for a difficult read (an acknowledged consequence of multiple contributing authors across disciplines). The flow and clarity of the final draft Chapter would benefit from review by a single professional copy editor, who is not necessarily a subject matter expert on the topic. (Jonathan Davis, Science Applications International Corporation)	We have continued to work on the flow and style of the chapter and its consistency between sections.
15	50705	12	0	0	0	0	1) Overall -- In preparing the 2nd-order draft, the chapter team should prioritize making each section of the chapter a polished, comprehensive treatment of topics considered. From these sections, the chapter team is then encouraged to maximize the utility of its findings, ensuring that they are robust, compelling, and nuanced. Themes to consider informing in constructing findings include decisionmaking under uncertainty, risks of extreme events and disasters, avoided damages, and limits to adaptation. To these ends, the chapter team has prepared a strong 1st-order draft. In an effort to inform further chapter development, I provide some general and specific comments below. (Katharine Mach, IPCC WGII TSU)	Continued to try to improve the text and evidence base.
16	50706	12	0	0	0	0	2) Highlighting key findings -- In developing the 2nd-order draft, the chapter team should aim to present key findings across the sections of the chapter, using calibrated uncertainty language to characterize its degree of certainty in these conclusions. In this way, a reader of the chapter will be able to understand how the literature reviews and syntheses in the chapter sections--the traceable accounts--support the conclusions of the chapter, especially those presented in the executive summary. Additionally, identification of key findings throughout the chapter will enable the author team to increase, even further, specificity in characterizing key trends and determinants in the context of the executive summary. (Katharine Mach, IPCC WGII TSU)	Uncertainty language now included where appropriate.
17	50707	12	0	0	0	0	3) Usage conventions for calibrated uncertainty language -- Where used, calibrated uncertainty language, including summary terms for evidence and agreement, levels of confidence, and likelihood terms, should be italicized. In addition to incorporating these terms directly into sentences, the author team may continue to find it effective to present them parenthetically at the end of sentences or clauses. Casual usage of the reserved uncertainty terms should be avoided. (Katharine Mach, IPCC WGII TSU)	Uncertainty language now used in Exec Sum following methodical discussion and agreement with whole author team

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18	50708	12	0	0	0	0	4) Further explicit assignment of calibrated uncertainty language -- In a number of places throughout the chapter, the author team characterizes the overall state of knowledge through descriptors of available evidence and agreement among experts. In such places, the author team should consider explicit assignment of summary terms for evidence and agreement and/or levels of confidence, as a supplement to the evaluation of the knowledge base already present in the chapter text. (Katharine Mach, IPCC WGII TSU)	Uncertainty language now used in Exec Sum following methodical discussion and agreement with whole author team
19	50709	12	0	0	0	0	5) Specificity of described observations and projections -- In providing examples of impacts, vulnerabilities, determinants, etc. throughout the chapter, the author team is encouraged to ensure specificity in these examples, while still presenting information succinctly. The author team should accordingly consider the following: indicating relevant time periods, geographic areas, etc. for observations; indicating relevant time frames, scenarios for climate change or socio-economic development, geographic regions, or other assumptions for projections; and characterizing key driving factors where ranges of outcomes are presented. (Katharine Mach, IPCC WGII TSU)	Uncertainty language now used in Exec Sum following methodical discussion and agreement with whole author team
20	50710	12	0	0	0	0	6) Conditional constructions -- The chapter team has done a nice job of using conditional constructions that explicitly separate a given physical change from its corresponding conditional impact. (Katharine Mach, IPCC WGII TSU)	Uncertainty language now used in Exec Sum following methodical discussion and agreement with whole author team
21	50711	12	0	0	0	0	7) Figures -- Figures represent an important and effective vehicle for clear communication of assessment and corresponding key findings. The chapter team is strongly encouraged to further develop figures to complement the robust assessment in the chapter text. Options to consider include synthetic presentation of data, conceptual figures, and map-based depiction of trends. (Katharine Mach, IPCC WGII TSU)	Further figures incorporated into SOD
22	50712	12	0	0	0	0	8) Coordination across the Working Group 2 contribution -- In developing the next draft of the chapter, the author team should consider treatment of topics not only in this chapter, but also across the report as a whole. For each topic, the chapter team should ensure that treatment here is reduced to the essence of what is relevant to the chapter, with cross-references made to other chapters as appropriate, also minimizing overlap in this way. (Katharine Mach, IPCC WGII TSU)	Greater liaison undertaken
23	50713	12	0	0	0	0	9) Harmonization with the Working Group 1 contribution to the AR5 -- At this stage of chapter drafting, the author team should carefully consider the working group 1 contribution. Wherever climate, climate change, climate variability, and extreme events are discussed, the chapter team should ensure that their treatment is harmonized with the assessment findings of working group 1. (Katharine Mach, IPCC WGII TSU)	Less work on harmonization with WG1 than WG2 - but appropriate chapters of WG1 have been read in light of human security literature assessment.
24	52801	12	0	0	0	0	What you call evidence should be phrased in the attribution language. Please go through chapter 18, which has a section on human security and make sure that chapter 18 and chapter 12 use common concepts and confidence language. (this goes for 12.5.1. and 12.4.1. especially). (Maximilian Auffhammer, University of California, Berkeley)	Liaison with Chapter 18 undertaken
25	52802	12	0	0	0	0	Overall there is a significant amount of material on detection and some on attribution. The words do not appear in the document more than once. It is important to separate the two concepts throughout the chapter. Chapter 18 should be referenced. (Maximilian Auffhammer, University of California, Berkeley)	Assessed with this in mind.
26	52803	12	0	0	0	0	The degree of confidence in detection and attribution should be stated throughout. (Maximilian Auffhammer, University of California, Berkeley)	Assessed with this in mind.
27	54431	12	0	0	0	0	GENERAL COMMENTS: I would like to thank the authors for a very interesting and enjoyable FOD. Various general and specific comments follow. When considering the expert review comments received on your chapter and the next round of revisions, I suggest several overall priorities. (1) Keep in mind that the preparation of the SOD is the time to ensure that each section of the chapter presents a comprehensive treatment of relevant literature, and that the Executive Summary presents findings that capture the key insights that arise from the chapter assessment. (2) This is also the time to focus on distilling the chapter text, not just fine-tuning wording but editing with a critical eye to improving quality by making discussions succinct and synthetic, while still being comprehensive. (3) Cross-chapter coordination is also important at this stage, as it should now be possible to identify topics that overlap with other chapters and to coordinate with other chapter teams to minimize that overlap. (4) Cross-Working Group coordination is important as well, and relevant chapter sections should cross-reference chapters from the other Working Groups, particularly in the case of statements about changes in mean or extreme climate conditions that are assessed in the contribution of Working Group I. (5) Continue to look for opportunities for the creation of figures that synthesize across results from the literature and/or highlight conceptual themes. (Michael Mastrandrea, IPCC WGII TSU)	These points taken on board in preparing SOD
28	54432	12	0	0	0	0	GENERAL COMMENT 2: In addition, please check the usage of likelihood language throughout the chapter. In some cases "likely" is used in situations where it does not seem to be intended to imply its probabilistic definition, and an alternative word should be chosen to avoid confusion. In other cases, its probabilistic definition might be implied, but its basis is not clear and there is no link to the Executive Summary, as likelihood language is not employed there. (Michael Mastrandrea, IPCC WGII TSU)	Uncertainty language now included where appropriate.

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29	54433	12	0	0	0	0	TRACEABLE ACCOUNTS: The author team has made a very good start to providing traceable accounts for assessment findings and highlighting the location of those traceable accounts in the Executive Summary. In this context, I also very much like the approach to describing the nature of evidence about climate change and human security in the chapter. There are a few specific cases where improvements in traceable accounts could be made, which I have included in comments associated with specific findings. In general, I would recommend the author team consider ways to more clearly identify assessment findings in the chapter text to link with the Executive Summary. One approach would be providing some explanation of the calibrated uncertainty language used in the Executive Summary in the corresponding chapter section(s) where the traceable account appears for each finding. Currently, the confidence and agreement/evidence language in the Executive Summary is not mentioned explicitly in the corresponding sections, although in some sections there is discussion of the strength of evidence. In particular, in situations where confidence in a finding is not high (or evidence and/or agreement is not robust and/or high), it would be useful to understand why the author team has made this judgment (e.g., why is evidence not robust, why is agreement not high). In addition, it is not completely clear why the last three findings use confidence while the previous findings use agreement/evidence language. It is worth considering whether the agreement/evidence assignments could be used as a basis for confidence assignments for the rest of the findings (perhaps retaining the agreement/evidence language as well, e.g., high confidence based on high agreement, medium evidence). Doing so would allow greater comparability across chapter findings, given that some chapters are taking such an approach, and others are presenting only confidence assignments. Finally, the standard convention is for line of sight to chapter sections to appear after each Executive Summary paragraph as a whole. You may wish to additionally include reference to specific chapter sections after individual non-bold sentences (e.g., if the finding is synthesizing information in several chapter sections but certain points are from specific sections). But the general approach would avoid confusion in interpreting, for example, a paragraph where the only reference to a chapter section is after one non-bold sentence in the middle of the paragraph. (Michael Mastrandrea, IPCC WGII TSU)	Attempts made to ensure consistency between summary and main chapter text.
30	54885	12	0	0	0	0	Literature permitting, the chapter team is encouraged to add more cases to support their findings. Moreover, it would be useful if the enabling or deterring factors, drivers etc., are explicitly stated where ever possible. (Monalisa Chatterjee, IPCC WGII TSU)	More cases added, sometimes in Tables.
31	54886	12	0	0	0	0	The author team should update the reference list and remove citation inconsistencies between in text citations and full citations given in the reference list. Please see supplementary document named WG2AR5-Chap12_Reference Checks.doc at https://ipcc-wg2.gov/AR5/author/FOD/SuppMat (Monalisa Chatterjee, IPCC WGII TSU)	Reference list now significantly more accurate.
32	40272	12	1	0	0	0	There is no consistency in the chapter with respect to the importance of cultural issues. While in section 12.3. this is given much prominence - from a perspective focusing on small-scale traditional societies and indigenous people, this perspective is large ignored in other sections - for instance 12.5 and 12.6 (Michael Brzoska, University of Hamburg)	Attempts to smooth this across Sections and discussion of Figure 12.3.
33	38246	12	2	0	2	0	Executive Summary. "Indigenous and traditional knowledge is a major resource for dealing with the risks of climate change and for ensuring human security, but may be constrained if the changes are extreme (high agreement – medium to robust evidence)." Question: Is it possible to indicate which continent(s)/region(s) of the world where indigenous peoples will suffer the most from such extreme changes? In other words, "indigenous peoples have through history adapted to highly variable environmental and societal conditions, but less so to more recent globalization" in which regions of the world? (Abdalah Mokssit, Direction de la Météorologie Nationale (DMN))	Have kept Exec Summary statement general and universal. Detail provided in Section 12.3
34	50714	12	2	8	0	0	Executive Summary -- In subsequent work on the executive summary, the author team should ensure that all calibrated uncertainty language used is italicized. Additionally, as possible and appropriate, the author team might consider opportunities for enhancing specificity in the presentation and explanation of key findings in the executive summary. For instance, for trends identified, there could be options for indicating more specifically where, when, why (what specific drivers are relevant) the conclusion holds, illustrating with nuance where the current state of understanding lies. (Katharine Mach, IPCC WGII TSU)	Uncertainty language now included where appropriate.
35	52342	12	2	8	3	27	The executive summary lacks a clear definition of security and especially human security based on both the policy debates in the UN since 1994 (UNDP, UN General Assembly, two reports by the UN Secretary-General (2010, 2012) and in the UN Security Council (Dedring 2008) and also in the UN debates on climate change (Kurtz 2012). A narrow definition of human security as freedom from fear (violence, conflicts) that initially dominated the perspective of Canada and Norway in the Human Security Network (HSN), a body that is never even mentioned. (Fuentes Julio, Claudia F. et al., 2009: "The Human Security Network: A Global North-South Coalition", in: Brauch, H.G. (Eds.), 2009: Facing Global Environmental Change: Environmental, Human, Energy, Food, Health and Water Security Concepts. (Berlin – Heidelberg – New York: Springer-Verlag): 991-1002.) There is no reference as to how climate change impacts on the other three pillars of human security, especially on freedom from want, e.g. by the impact of the physical effects of climate change through extreme weather events, droughts or flood on food and health insecurity and how this may have had an impact on public protests (bread riots) in many parts of the world. This whole debate and body of literature seems to be lacking. (Hans Guenter Brauch, Free University of Berlin)	Definition of human security and scope of chapter now included at start of Section 1.
36	54081	12	2	10	2	15	The traceable account for this finding could be improved. Section 12.1.2 introduces what is assessed in the chapter, more than providing evidentiary support for the finding. 12.2 specifically supports the sentence after which is included, but it is not clear that it provides support for the more general finding. I suggest adding additional line of sight for the key finding a whole. In addition, I suggest using either both evidence and agreement language or confidence in this finding (instead of agreement only), following on my general comment on traceable accounts and calibrated language. Finally, this is an example where the line of sight could be included after the paragraph. (Michael Mastrandrea, IPCC WGII TSU)	Worked extensively on improving traceability of the account for Exec Sum

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37	42460	12	2	10	3	28	The Executive Summary is deficient. It excludes discussion of trends in the number, severity and causes of conflicts (which presumably should be going up if warming is supposed to lead to greater conflict); whether and how these trends are consistent with the premise implicit in this chapter, namely, global climate change could lead to more or more intense conflicts; the likelihood that vulnerabilities will increase to the point that they will result in conflict; and the likelihood that that will lead to conflict rather than cooperation. This should also discuss why, given that future generations are projected to be much better off in the future regardless of climate change, why this should increase vulnerability which, then might lead to greater conflict (see comments on Chapter 20, page 2, lines 29-32; and Goklany 2009f). This should also discuss the potential of mitigation to increase vulnerability (see comments on Chapter 7, page 2, line 42; Chapter 11, page 32, line 50 to page 33, line 52; Chapter 20, page 26, line 32). (Indur Goklany, Independent)	Exec Sum point on conflict now amended and greater evidence covering those points, including the impact of mitigation strategies and technologies on human security, are included in Section 12.5 and 12.6.
38	50715	12	2	12	2	12	Where this summary term for agreement is presented, the author team might consider additionally indicating a summary term for evidence OR instead providing a level of confidence. If the author team considers this conclusion largely definitional, a level of confidence or potentially a factual statement could be appropriate. (Katharine Mach, IPCC WGII TSU)	Uncertainty language now included where appropriate.
39	52334	12	2	12	2	15	There is no definition of the concept of human security and its 3 or 4 pillars as 'freedom from fear'(violence agenda), freedom from want (development agenda), freedom to live in dignity (Kofi Annan 2005: In larger Freedom, human rights and good governance agenda) and freedom from hazard impact (UNU-EHS 2005, environment and hazards agenda). There is no reference as to how the four physical impacts of climate change trigger multiple societal outcomes, not only the three listed but also multiple forms of crises and conflicts. (Possible peer-reviewed references: UNGA, Informal Thematic Debate on Human Security, 14 April 2011, at: <http://www.un.org/en/ga/president/65/initiatives/HumanSecurity.html> and the two reports by the UN Secretary Generals: UN, 2010: Human Security - Report of the Secretary-General. A/64/701 of 8 May 2010 (New York: United Nations). and UNSG [Secretary General], 2012: Follow-up to General Assembly resolution 64/291 on human security. Report of the Secretary-General A/66/763, 5 April 2012. (Hans Guenter Brauch, Free University of Berlin)	Defintion of human security now included at Section 12.1 following extensive reassessment of the literature that contributes to it, for the pusposes of this IPCC assessment.
40	54082	12	2	17	2	28	Regarding the traceable account for this finding, there is clear support in the sections cited. A small suggestion is to check the reference to 12.3.1 after the sentence on knowledge transfer, as this does not seem to be addressed explicitly in that section. (Michael Mastrandrea, IPCC WGII TSU)	Traceable accounts now clearer.
41	52335	12	2	22	2	28	"decrease human security", As this concept remains undefined it may be impossible to asses of human activities may increase or decrease human security as is claimed in this paragraph. (Hans Guenter Brauch, Free University of Berlin)	Defintion of human security now included at Section 12.1 following extensive reassessment of the literature that contributes to it, for the pusposes of this IPCC assessment.
42	50716	12	2	26	2	27	Given the description of evidence here, could a summary term for evidence (and potentially also a summary term for agreement) be assigned? (Katharine Mach, IPCC WGII TSU)	Evidence bases now made more clear.
43	47205	12	2	33	2	33	See as comment above (12.11.44-12.11.46) (Jennifer Rubis, United Nations Educational, Scientific and Cultural Organization (UNESCO))	Amended text to clarify
44	52336	12	2	42	2	44	Impacts of climate change and extreme events: is not precise, the other three physical effects of temperature increase, sealevel rise, precipitation change besides extreme eents are not listed here. However, they are also crucial causes of linear or potential chaotic effects of climate change, so-called tipping points (Lenton, Timothy; Held, Hermann; Kriegler, Elmar; Hall, Jim W.; Lucht, Wolfgang; Rams-torf, Stefan; Schellnhuber, Hans Joachim, 2008: "Tipping elements in the Earth's climate system", in: Proceedings of the National Academy of Science (PNAS), 105,6 (12 Fe-bruary): 1786-1793. (Hans Guenter Brauch, Free University of Berlin)	Discussion of high end impacts and non-linearity now in Section 12.7
45	54083	12	2	42	2	50	Regarding the traceable account for this finding, there is clear support in the sections cited. I suggest clarifying support for the sentence on amplification of some rural to urban migration flows, as a similar sentence in 12.4.1.2 mentions mixed evidence. (Michael Mastrandrea, IPCC WGII TSU)	Traceable accounts now clearer.
46	52337	12	2	44	2	45	Displacement migration is not only due to extreme weather events. Again a systematic analysis of environment and climate-induced migration and ist different outcomes, of which displacement is one, is lacking. (Hans Guenter Brauch, Free University of Berlin)	Executive Summary point amended to make consistent with revised 12.4.
47	54084	12	2	52	3	4	Please add line of sight to this finding. It appears that there is support in 12.4.1 and 12.4.2. (Michael Mastrandrea, IPCC WGII TSU)	Line of sight added to amended text.
48	50717	12	2	53	2	53	Given the description of evidence here, could a summary term for evidence (and potentially also a summary term for agreement) be assigned? (Katharine Mach, IPCC WGII TSU)	Executive Summary point amended to make consistent with underlying text.
49	40460	12	3	1	0	0	Define what is meant by "resource scarcity" in this context (Betsy Hartmann, Hampshire College)	Phrase now taken out in amended text.
50	52338	12	3	2	3	4	Only one impact: extreme events is noted what is systematically not correct. The rejection of the term "climate related migrants" requires an assessment of the controversial conceptual scientific debate and evidence. (Hans Guenter Brauch, Free University of Berlin)	Further assessment of the evidence base undertaken in Section 12.4.
51	47761	12	3	3	3	4	While climate change may not be an exclusive factor contributing to migration it can be a contributing factor. Suggest word change to "categorization of groups or individuals as 'exclusively' climate related migrants" (Marcus King, George Washington University)	Executive Summary point amended to make consistent with revised 12.4.

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52	47269	12	3	6	0	0	I object to the statement that there is empirical evidence that establishes, with "high confidence", that CC impacts could elevate conflict risk. The following sentence (line 8) does not represent the majority assessment of the literature (again, see reviews by Deligiannis and Bernauer et al, as well as Gleditsch 2012 (cited in chapter)). While SOME studies report statistically significant effects of drought and temperature and ENSO on conflict risk, these results are questioned by other studies and hence cannot be considered robust (unlike, for example results for low GDP capita, high population, recent history of conflict), and a proper understanding of what might be underlying causal mechanisms is also lacking. This paragraph reads like an NGO pamphlet or think tank report with a political agenda (or a paper surveying a biased selection of the literature based on a highly questionable sample selection design that only considers studies applying an unconventional research design) and not an objective assessment of the scientific literature. This paragraph, and the sentence highlighted in bold, really has to be rewritten. (Halvard Buhaug, Peace Research Institute Oslo, PRIO)	This Executive Summary point now amended in line with significantly revised text of Section 12.5 and in liaison with Chapter 19.
53	42069	12	3	6	3	7	This sentence is a bit confusing since it states that there is "evidence" with "high confidence", but it is only evidence that climate change COULD elevate the risk of violent political conflict. I would be a better idea to focus on the evidence that climate change is or will increase the risk of violent conflict (although it is unlikely that one can make statements with high confidence then). The scientific value of mere could-statements is small in this context. (Tobias Ide, Research Group Climate Change and Security)	Amended text to clarify
54	50718	12	3	6	3	7	The author team may wish to consider the formulation of this key finding and the corresponding implications for interpreting its assessed degree of certainty. That is, the combination of "there is evidence," "could," and "high confidence" is a bit challenging to interpret, in terms of determining the author team's intended degree of certainty for the finding. (Katharine Mach, IPCC WGII TSU)	Uncertainty language now used in Exec Sum following methodical discussion and agreement with whole author team
55	54085	12	3	6	3	7	Regarding the wording of the bold finding here, in my mind it would be preferable to avoid the use of "could," making a statement about the evidence that climate change impacts do elevate the risk of violent political conflict indirectly (and confidence in that statement), with appropriate qualifiers. Removing "could" might require a shift in the level of confidence in the revised finding. In addition, it might be preferable to indicate the strength of evidence (and level of agreement) using calibrated terms as a basis for the confidence assignment, as opposed to "there is evidence." (Michael Mastrandrea, IPCC WGII TSU)	This Executive Summary point now amended in line with significantly revised text of Section 12.5 and in liaison with Chapter 19.
56	42070	12	3	8	3	9	There are indeed studies associating drought and higher temperatures with increased risks of internal violent conflict. However, the temperature-conflict nexus is according to my knowledge only stated by Burke et al. (2009), but seriously challenged by Buhaug (2010). There are some quantitative studies supporting a drought-conflict link, but a roughly equal number of large-N studies is unable to detect such a connection (Buhaug 2010; Buhaug/Theisen 2012; Brückner/Ciccone 2010; Nel/Righarts 2008; Theisen et al. 2011). I warn against making this statement in such a strong manner in the synthesis. Literature cited: Brückner, M., & Ciccone, A. (2010). International Commodity Prices, Growth, and the Outbreak of Civil War in Sub-Saharan Africa. The Economic Journal, 120, 519-534 Buhaug, H. (2010). Climate not to blame for African civil wars. Proceedings of the National Academy of Sciences, 107, 16477-16482. Buhaug, H., & Theisen, O. M. (2012). On Environmental Change and Armed Conflict. In J. Scheffran, M. Brzoska, H. G. Brauch, P. M. Link & J. Schilling (Eds.), Climate Change, Human Security and Violent Conflict: Challenges for Societal Stability (pp. 43-55). Berlin: Springer. Nel, P., & Righarts, M. (2008). Natural Disasters and the Risk of Violent Civil Conflict. International Studies Quarterly, 52, 159-185. Theisen, O. M., Holtermann, H., & Buhaug, H. (2011). Climate Wars? Assessing the Claim That Drought Breeds Conflict. International Security, 36, 79-106. (Tobias Ide, Research Group Climate Change and Security)	This Executive Summary point now amended in line with significantly revised text of Section 12.5 and in liaison with Chapter 19.
57	40273	12	3	9	0	0	The statement here on the statistical association between climate indicators and internal war outbreak is quite different from the latter, more detailed statements on p. 17, line 46., as well as to the answer of FAQ 12.3 on p. 27. I find the statment here in the summary misleading in view of the mixed evidence reported later. (Michael Brzoska, University of Hamburg)	This Executive Summary point now amended in line with significantly revised text of Section 12.5 and in liaison with Chapter 19.
58	48139	12	3	9	3	10	"only some of which are directly affected by climate": replace "climate" by "climate change" (Jürgen Scheffran, University of Hamburg)	Amended as suggested.
59	52339	12	3	9	3	11	Conflicts are reduced to war outbreak in poor countries which does not reflect the latest per-reviewed scientific findings see: Scheffran et al. 2012, Gleditsch, 2012 (special issues of Journal of Peace Research). At least many quantitative researchers rejected the link between drought and war outbreak. (see Buhaug & Theisen, in Scheffran et al. 2012) (Hans Guenter Brauch, Free University of Berlin)	This Executive Summary point now amended in line with significantly revised text of Section 12.5 and in liaison with Chapter 19.
60	52340	12	3	13	3	14	These are called complex emergencies (Hans Guenter Brauch, Free University of Berlin)	Text amended to clarify.
61	54087	12	3	13	3	14	Even though it is not used in the context of a calibrated language term, this statement might avoid possible confusion with the deletion of "likely to be." (Michael Mastrandrea, IPCC WGII TSU)	Uncertainty language now included where appropriate.
62	52341	12	3	20	3	21	Here the text suddenly turns to state (or national and international) security without explaining the reasons. This is partly a result of the lack of conceptual precision due to a lacking assessment of the conceptual literature and debate on human security in the peer-reviewed literature but also in the political debate in the following text (see 12.1 following). (Hans Guenter Brauch, Free University of Berlin)	Scope of the chapter outlined in Section 1 to explain the inclusion of issues of state security insofar as they impact on human security.
63	54086	12	3	20	3	28	Regarding the traceable account for this finding, there is clear support in the sections cited, but sections 12.6.1 and 12.6.2 are also relevant to the aspects of the findings regarding the security of nations. (Michael Mastrandrea, IPCC WGII TSU)	Traceable accounts now clearer.
64	47769	12	3	23	3	23	National security threat assessments are not explained in section 12.5.3. Consider listing the U.S. National Intelligence Council's 2008 Assessment referenced at Dr. Thomas Fingar, National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030, Testimony before the House Permanent Select Committee on Energy Independence and Global Warming, 25 June 2008 or UK Development, Doctrine and Concepts Center: "Strategic Trends Program 2007-2036." both available online. (Marcus King, George Washington University)	National security dimensions are included insofar as they impact on ability of states to provide human security. Discussion of national assessments included in Section 12.6, but the Section largely concentrates on the risks and threats rather than different countries; assessment processes and methods.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
65	37072	12	3	24	0	0	Referenced subsection does not refer to small island states territorial integrity (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Now amended to be consistent
66	52343	12	3	35	3	35	Contrary to the last paragraph of the Executive summary, "individuals and communities" are correctly introduced as the referent objects of human security. However, section 12.6 below discusses at length the linkage between climate change and human security where solely the nation state and not the individuals, communities or humankind are reference objects of analysis. This indicates some contradiction due to a clear definition of the concept of human security as it will be used in this chapter. (Hans Guenter Brauch, Free University of Berlin)	Section now amended to make clear the rationale for examining impacts on states and their ability to provide human security for their citizens. State security not an issue in its own right, but only insofar as it impacts on human security.
67	54911	12	3	35	3	36	"Risks to livelihoods, culture and demographic and political stability has been mentioned. How about risk to geographic identity for the people who are likely to be displaced due to permanent loss of land as a consequence of SLR-induced inundation of low-lying coastal lands, erosion of coastal lands and riverbanks and landslide in mountains induced by various factors including excessive rainfall events?" (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Issues of place and identity covered explicitly in Section 3,
68	40461	12	3	36	0	0	What is meant by demographic stability? (Betsy Hartmann, Hampshire College)	Text amended to clarify.
69	52344	12	3	39	0	0	It is unclear why the Arctic is given such a high emphasis, where relatively few people are living, while the poor indigenous rural people in many other parts of the world who die of starvation or are confronted by a survival dilemma (Brauch 2008) are not given at least equal emphasis. (Hans Guenter Brauch, Free University of Berlin)	All regions are examined, while Arctic is highlighted because of high level of observed change and hence there is evidence on the impacts on human security for observational evidence. This is now explained in more detail.
70	39760	12	3	39	3	39	lower case 'l' for 'indigenous' (Peter Burt, University of Greenwich)	Amended.
71	52345	12	3	42	3	43	References to soil security (Brauch/Oswald, 2009 [UNCCD], 2011) and health security (Leaning 2009, Oswald, IHDP) Update, 2011) from a human security perspective are lacking. (Hans Guenter Brauch, Free University of Berlin)	The list of specific threats to human security are amended. Significant issues such as food security dealt with in detail in Section 12.2
72	44409	12	3	48	0	0	Human security was also treated in the SREX report chapter 8. (Linda Sygna, University of Oslo)	Amended text to reflect prior treatment in IPCC reports.
73	52346	12	3	50	3	52	The citation of the new research cites only authors from one country. The new peer reviewed literature, especially also by scholars from developing countries is not noted. (Hans Guenter Brauch, Free University of Berlin)	Amended - point made that the scholarship is widespread in every continent. The chapter used systematic review methods, with peer reviewed literature assessed for relevance irrespective of the institutional affiliation of the authors.
74	44898	12	4	1	4	2	I would add 9 (rural) and 10 (urban) (John Morton, Natural Resources Institute, University of Greenwich)	Cross referencing to cognate chapters now more refined throughout.
75	52350	12	4	5	4	41	This paragraph does not offer a clear definition of human security based on a systematic assessment of the the global political debate and scientific discourse on human security, it lacks clear criteria that link the physical effects of climate change to the possible societal outcomes that are to be assessed from a human security perspective or with scientific criteria to be derived from such a concept and to be used for an interpretation and assessment of primarily environmental literature on societal climate change impacts. The cited literature does not offer a systematic assessment based on the global peer-reviewed literature. The style is not systematic but often rather anecdotal lacking a clear and consistent scientific argumentation. Thus, the very criteria for an intersubjective assessment of the global scientific literature is lacking. The many models that link climate change to complex and partly violent societal outcomes are also lacking (Buhaug et al. 2012; Scheffran 2011, Scheffran et al. 2012; Brauch, H.G., 2009b: "Human Security Concepts in Policy and Science", in: Brauch, H.G. et al. (Eds.): Facing Global Environmental Change: Environmental, Human, Energy, Food, Health and Water Security Concepts (Berlin – Heidelberg – New York: Springer-Verlag): 965-990;) (Hans Guenter Brauch, Free University of Berlin)	New definition of human security and statement of scope of the chapter laid out clearly following discussion of whole author team.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
76	48744	12	4	7	0	0	Section 12.1.2: Definition and Scope of Human Security in this Assessment. The definition of Human Security in Chapter 12 addresses the "... fundamental needs and rights that people need in order to make informed choices and act on behalf of their interests". This makes for a very broad definition that seems to be narrowly applied when examining correlations to the impacts of climate change and making informed choices and taking action. For example, much of the material presented in the Chapter on vulnerability and risk is gathered at the community level and yet promotes informed choices and actions facing institutions or governments to protect human security based on the interests of those institutions or governments. There are few instances where information on vulnerability and risk gathered at the individual or community level is matched at the same scale with informed choice and action. Thus, the unstated problem of the Chapter seems to be how institutions or governments with vulnerable populations can make informed choices and actions to protect the interests of those institutions or governments. If this is the true problem, then it needs to be made explicit, and the definition of Human Security should be refined to reflect this problem. Otherwise, the scope of the Chapter needs to better address how vulnerable people or communities can make informed choices and actions when protecting their own interests against the risk of climate change impacts. Risk and vulnerability to the impacts of climate change will change spatially and temporally. Those currently not vulnerable, who can adapt and mitigate the impacts of climate change, today, may not be able to do so in the future, and likely may face new challenges of vulnerability not presently considered. It is not clear how the proposed definition of Human Security will stand the test of time and predicts accurately the conditions of those who will be vulnerable in the future, and how best those at risk will be able to make an informed choice in their best interest. While the current proposed definition does seem broad, it may not be collectively exhaustive to capture the possible ranges of conditions facing those who may be vulnerable in the future, and yet who are not already at risk. The hidden assumption is that the past, well understood conditions of vulnerability will predict the future impacts of climate change on Human Security. Alternative viewpoints of the conditions of Human Security may help with a more comprehensive and compelling definition of Human Security that can be used for succeeding Assessment Reports (Jonathan Davis, Science Applications International Corporation)	New definition of human security and statement of scope of the chapter laid out clearly following discussion of whole author team.
77	52105	12	4	7	4	10	The author team should reference the glossary entry for "human security" within the glossary for the report. If the current glossary entry needs revision to align with usage in this chapter, please contact the glossary co-chairs or the TSU. (Katharine Mach, IPCC WGII TSU)	Interaction with the glossary Editors have resulted in consistency across glossary and chapters.
78	52347	12	4	7	4	15	The definition and the scope of human security does not reflect the global debate on the human security concept, especially in Africa, Asia, Latin America and also in the Arab world. This rich body of global peer-reviewed scholarship is totally ignored as is the work of UNESCO (1996-2008) in initiating a global scientific discourse on human security. It may reflect the perspective of one of the lead authors only but both the content and the citations are not representative for the global peer reviewed literature not only in a few journals published in the North and listed in the database of one major publisher. (Hans Guenter Brauch, Free University of Berlin)	Amended - point made that the scholarship is widespread in every continent. The chapter used systematic review methods, with peer reviewed literature assessed for relevance irrespective of the institutional affiliation of the authors.
79	48140	12	4	8	4	10	"This assessment ... on behalf of their interests": Incomplete/incomprehensible sentence (Jürgen Scheffran, University of Hamburg)	Amended text to clarify
80	39761	12	4	11	4	14	this is a very cumbersome (and long) sentence. Can it be rewritten for clarity. Also, I am not sure what 'healthy food' means! (Peter Burt, University of Greenwich)	Reworded and amended
81	52348	12	4	14	4	15	Human rights seem to be limited to the Covenant on political rights and the second covenant on cultural, economic rights is lacking that has been endorsed by nearly all countries. Human rights remain undefined (Hans Guenter Brauch, Free University of Berlin)	Text box on rights based approaches to human security amended and reworded.
82	52349	12	4	21	4	30	Again the references to the human rights debate are limited nearly exclusively to scholars in the North and their often narrow conceptualization as political rights. (UN Covenant on Political Rights). This is neither balanced nor does it represent the global debate on human rights including on the UN Convention on cultural, social and economic rights that are pertinent for a discussion of human security referring to the freedom to live in dignity (Annan 2005). (Hans Guenter Brauch, Free University of Berlin)	Amended - point made that the scholarship is widespread in every continent. The chapter used systematic review methods, with peer reviewed literature assessed for relevance irrespective of the institutional affiliation of the authors.
83	40274	12	4	21	12	51	I don't think it is correct, nor in the quoted reference (CHS 2003) that human security is inclusive human rights. While there is a large degree of overlap, human rights extend to situations outside of the vital core of human rights while human security also covers threats outside of the realm of human rights (e.g. natural disasters). (Michael Brzoska, University of Hamburg)	Text box on rights based approaches to human security amended and reworded.
84	54912	12	4	26	4	27	"Right to live with family members is violated in Bangladesh, especially when the dominant male outmigrates to far away places temporarily in search of employment to cope with livelihoods and food insecurity (Ahmed et al., 2012; Ahmed, 2008.). Should we ignore that just because Caney (2010) did not highlight it along with life, health and material well-being?" Citation: Ahmed, A.U., Hassan, S.R., Etzold, B., and Neelormi, S., 2012. Where the Rain Falls: Climate Change, Hunger and Human Mobility, Bangladesh Case Study, United Nations University (UNU), Bonn (in press). Citation #2. Ahmed, A.U., 2008. Desakota Phenomenon Observed in Satkhira-Khulna-Jessore-Dhaka Corridor in the Southwestern Bangladesh, Part II F1 Case Study, in Desakota Study Team, Re-imagining the Rural-urban Continuum, Institute for Social and Environmental Transition (ISET), Kathmandu. Also available in www.dfid.gov.uk/r4d/pdf/outputs/envres/desakota-parti-f1casestudybangladesh.pdf (14 p.). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Text box on rights based approaches to human security amended and reworded.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
85	54913	12	4	46	4	48	"Increased sexual harrasments by males on women representing households where the dominant males have out-migrated to cope with climate change induced enhanced food insecurity has been reported by Ahmed et al., 2012. In such case dignity is often attacked. Such issues should be highlighted in the text." Citation: Ahmed, A.U., Hassan, S.R., Etzold, B., and Neelormi, S., 2012. Where the Rain Falls: Climate Change, Hunger and Human Mobility, Bangladesh Case Study, United Nations University (UNU), Bonn (in press) (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Text box on rights based approaches to human security amended and reworded.
86	54088	12	5	16	5	49	Box 12-2: This is a great explanation of the nature of evidence in the scope of this chapter. Well done. (Michael Mastrandrea, IPCC WGII TSU)	Thanks. Amended nonetheless. Added drescription of methods of systematic review.
87	42084	12	5	16	12	51	Very good section; it is important to provide some information about the nature of evidence cited. (Tobias Ide, Research Group Climate Change and Security)	Amdned to include methos of review used in the chapter.
88	52351	12	5	18	6	19	This text contains many generalities based on a very selective reading of only Northern peer-reviewed sources. Again no systematic criteria are offered why a few authors from the North are repeatedly cited but the peer-reviewed work of scholars from the global South whose countries and peoples will be affected most remain unnoted and uncited. This section lacks a logic and systdematic analysis based on clear criteria. There is no reference e.g. to peer-reviewed contributions on the human security debate by scholars from developing countries, eg.: Abdus Sabur, A. K. M., 2009: "Theoretical Perspective on Human Security: A South Asian View" (1003-1011); Ariyabandu, Madhavi Malalgoda; Fonseka, Dilrukshi, 2009: "Do Disasters Discriminate? A Human Security Analysis of the impact of the Tsunami in India, Sri Lanka and of the Kashmir Earthquake in Pakistan", (1215-1226); Bajpai, Kanti, 2004: "An Expression of Threats Versus Capabilities Across Time and Space", in: Security Dialogue, 35,3 (September): 360-361; Bonilla, Adrian, 2003: "Human Security in the Andean Region", in: Goucha, Moufida; Rojas Ara-ven-na, Francisco (Eds.), 2003: Human Security, Conflict Prevention and Peace (Pa-ris: UNESCO): 337-351; Chourou, Bechir, 2005: Promoting Human Security: Ethical, Normative and Educational Frameworks in the Arab States (Paris: UNESCO); at: <http://unesdoc.unesco.org/images/0014/001405/140513e.pdf>. Chourou, Béchir, 2009: "Human Security in the Arab World: A Perspective from the Maghreb", 1021-1035; De Lombaerde, Philippe; Norton, Matthew, 2009: "Human Security in Central America",1063ff.; Mlambo, Norman, 2005: "Perceptions of human security in democratic South Africa: Opinions of students from tertiary institutions", in: Mulongo, Keith; Kibasomba, Roger; Kariri, Jemina Njeri (Eds.): The many Faces of Human Security. Case Studies of Seven Countries in Southern Africa (Pretoria: Institute for Security Studies): 225-262; at: <http://www.relief-web.int/rw/RWFi-les2005.nsf/FilesByRWDocUNIDFileName/KKEE-6HZQQQ-iss-saf-10nov.pdf/\$File/iss-saf-10nov.pdf>.Mulongo, Keith; Kibasomba, Roger; Kariri, Jemina Njeri (Eds.): The many Faces of Human Security. Case Studies of Seven Countries in Southern Africa (Pretoria: Institute for Security Studies):Mutesa, Fredrick; Nchito, Wilma, 2005: "Human security, popular participation and poverty reduction in Zambia", in: Mulongo, Keith; Kibasomba, Roger; Kariri, Jemina Njeri (Eds.): The many Faces of Human Security. Case Studies of Seven Countries in Southern Africa (Pretoria: Institute for Security Studies): 7-38; at: < http://www.reliefweb.int/rw/RWFi-les2005.nsf/ FilesByRWDocUNIDFileName/KKEE-6HZQQQ-iss-saf-10nov.pdf/\$File/iss-saf-10nov.pdf>; Naidoo, Sagaren, 2001: "A Theoretical Conceptualization of Human Security", in: Goucha, Moufida; Cilliers, Jakkie (Eds.): Peace, Human Security and Conflict Prevention in Afri-ca (Paris: UNESCO): 1-9; Najam, Adil (Ed.), 2003: Environment, Development and Human Security: Perspectives from South Asia (Lanham, Md: University Press of America); Oswald Spring, Úrsula, 2001: "Sustainable Development with Peace Building and Human Security", in: Tolba, Mostafa K. (Ed.). Our Fragile World. Challenges and Opportunities for Sustainable Development, Forerunner to the Encyclopedia of Life Support System, vol. 1 (Oxford: EOLSS Publisher): 873-916.Oswald Spring, Úrsula, 2009: "A HUGE Gender Security Approach: Towards Human, Gender and Environmental Security": 1165-1190. Oswald Spring, Úrsula, 2009a: "Food as a new human and livelihood security issue": 471-500. Oswald Spring, Úrsula, 2011: "Towards a sustainable health policy in the anthropocene", in: IHDP-Update, 1,2011: 19-25. Poku, Nana; Sandkjaer, Bjorg, 2009: "Human Security in Sub-Saharan Africa": 1049-1062. Rahman, A., 1999: "Climate change and violent conflicts", in: Suliman, M. (Ed.): Ecology, Politics and Violent Conflict (London - New York: Zed): 181-210.Rojas Aravena, Francisco, 2009: " Human Security: a South American Perspective", 1077-1086. Singh, Joseph G., 2009: "Relevance of Human and Environmental Security Concepts for the Military Services: A Perspective of a Former Chief of Staff"; 1245-1252.Tadjbakhsh, Shahrbanou, 2009: "Failed Narco-state or a Human Security Failure? Ethical and Methodological Ruptures with a Traditional Read of the Afghan Quagmire": 1227-1243. Tadjbakhsh, Shahrbanou; Chenoy, Anuradha, 2006: Human Security: Concepts and Impli-cations (London: Routledge).Wun'Gaeo, Surichai, 2009: "Environment as an Element of Human Security in Southeast Asia: Case Study on the Thai Tsunami", 1131-1142. (Hans Guenter Brauch, Free University of Berlin)	Amended - point made that the scholarship is widespread in every continent. The chapter used systematic review methods, with peer reviewed literature assessed for relevance irrespective of the institutional affiliation of the authors.
88.2	52351	12	5	18	6	19		
89	48141	12	5	48	5	48	Correct "Scheffran et al. 2011" to "Scheffran et al. 2012" (Jürgen Scheffran, University of Hamburg)	References sorted and now hopefully more accurate
90	47768	12	5	48	5	49	While it appears in the executive summary, the language of uncertainty is not fully integrated into the text (Marcus King, George Washington University)	Deliberately use uncertainly language only where appropriate in the text.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
91	48142	12	5	48	5	49	The meaning of the following sentence is not clear: "There is strong evidence about some aspects of the links between climate change and human security, qualified using the language of uncertainty". (Jürgen Scheffran, University of Hamburg)	Amended to clarify
92	45242	12	5	53	6	1	This sentence is much too complicated; the second part of the sentence (after "yet") can be deleted, as the following is already implicitly included in the first part of the sentence; keep it concise! Start the next sentence with "However," (Marcus Kaplan, German Development Institute)	Amended to clarify
93	52799	12	6	0	6	0	There is a lot of good material on "evidence" in this chapter. It is important the we use consistent language regarding detection and attribution throughout AR5 WGII. You talk about evidence. Please refer to the guidance document circulated by Chapter 18 to phrase and classify the existing evidence consistent with our language. (Maximilian Auffhammer, University of California, Berkeley)	Attempted to be more systematic in use of such language throughout.
94	45243	12	6	6	6	6	sentence is incomplete (Marcus Kaplan, German Development Institute)	Amended text to clarify
95	54914	12	6	6	6	6	"Human security in the is the inverse ..." "something seems missing. Please check." (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Amended text to clarify
96	40462	12	6	6	6	10	It might be good to mention some of the definitional issues raised concerning human security, including critiques that it does not focus enough on the historical and current causes of poverty, inequality, etc and on politics and power relations. (Betsy Hartmann, Hampshire College)	Sentence in the new definition and statement of scope of the chapter makes this point.
97	47763	12	6	7	6	7	reference (CHS) is missing (Marcus King, George Washington University)	Amended to clarify
98	42072	12	6	12	6	15	I really like that you mentioned this. Maybe, it can be explained in greater detail. (Tobias Ide, Research Group Climate Change and Security)	Amended text to clarify
99	46369	12	6	12	6	19	The argument is difficult to follow here because of a shift from a discussion of "human security" toward a critique of the "security" framework without a previous presentation of the latter and of the difference between the concepts of "security" and "human security". (Etienne Pigué, University of Neuchâtel)	Issue of scope of chapter and reason for addressing security of nations in respect to human security now made clear in the scope of the chapter.
100	45244	12	6	18	6	19	Referring to the message of this sentence (this chapter takes a broader approach), would it then not be good to also broaden the title of the whole chapter (e.g., "National and Human Security")? (Marcus Kaplan, German Development Institute)	Issue of scope of chapter and reason for addressing security of nations in respect to human security now made clear in the scope of the chapter.
101	52352	12	6	18	6	19	It remains unclear what "a broader approach to security, as human security" really means where the global literature is reduced to three authors that have already been repeatedly cited. The peer reviewed scientific work of scholars from more than 190 other countries does not seem to matter much. This is not a representative and globally balanced, systematically structured and logically coherent presentation and assessment of the conceptual debate on human security. There are no criteria that explain and justify this extremely narrow reading of the peer-reviewed literature. (Hans Guenter Brauch, Free University of Berlin)	Amended - point made that the scholarship is widespread in every continent. The chapter used systematic review methods, with peer reviewed literature assessed for relevance irrespective of the institutional affiliation of the authors.
102	43324	12	6	22	0	0	Brazil has several thousands of initiatives aiming at adapting to climate change in poor communities while providing means for dealing with floods, droughts, heat waves, garbage reuse/recycling. They are being implemented by cooperatives, small municipalities, neighborhood associations and use the traditional knowledge. The leading organization is Fundacao Banco do Brasil, the social arm of Banco do Brasil. It published the book "Water and Climate Change". Launched during the UN's Rio+20 conference, the book shows 34 examples of how communities face and try to adapt to climate change; cisterns, water pits, tree plantation, agro intercropping for cattle and vegetables production, collection and reuse of city solid wastes, composting, small dams for saving water for cattle and gardening. (by Milton N Silva et al, published by Centro de Documentacao Eloy Ferreira da Silva and Fundacao Banco do Brasil, Belo Horizonte, 2012). Copy was sent via email. (Milton Nogueira da Silva, Climate Change Forum of Minas Gerais, Brazil)	Community based disaster risk reduction elaborated on in Section 12.2 and Section 12.3
103	50719	12	6	28	6	30	The author team might consider indicating its degree of certainty in the statement through use of calibrated uncertainty language, per the guidance for authors. (Katharine Mach, IPCC WGII TSU)	Amended text to clarify
104	38885	12	6	34	6	35	, the widely accepted definition of basic needs also includes sanitation, a minimum set of capital assets and mobility, and social provision such as access to education, healthcare and community infrastructure AND FREEDOM OF EXPRESSION. (Mohamed Tawfic Ahmed, Suez Canal University)	Comment no longer applies since the section/sentence has been revised
105	39762	12	6	37	6	37	delete 'such as' and replace with : (Peter Burt, University of Greenwich)	an en dash (--) instead of "such as" is used in the revised version, also to cut on the number of words
106	45245	12	6	37	6	37	write "asset categories" instead of "capital assets" (you are talking about the categories here, not about concrete assets); delete the "such as", as the following is not giving examples, but provides a complete list of the five assets categories (Marcus Kaplan, German Development Institute)	"capital assets" was retained since it is acceptable in the literature and more suitable to the revised sentence
107	54915	12	6	37	6	38	"It appears the five aspects of livelihood assets are the same proposed by Robert Chambers and Conway (Chambers and Conway, 1991). The basic citation seems missing." Citation: Chambers, R. and Conway, G.R., 1991. Sustainable Rural Livelihoods: Practical Concepts for the 21st Century, IDS Discussion Paper 296, IDS, Brighton. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Chambers and Conway, 1992 was cited in revised sentence
108	39763	12	6	40	6	40	replace 'like' with 'such as' (to avoid bad English) (Peter Burt, University of Greenwich)	Comment no longer applies since the section/sentence has been rewritten

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
109	43065	12	6	43	7	15	My comments are directed to two portions of section 12.2. This section discusses how climate change can impact human security and risk, particularly "the material aspect of human security" by the "deprivation of immediate basic needs; and ... erosion of livelihood assets and human capabilities" (line 48-50, p. 6) . This is certainly true, but it does not offer a complete explanation. Insights from other studies of global environmental change and security can provide a more comprehensive overview of how climate change can impact the material aspect of human livelihood security. There are two changes that I would like to suggest to this section: first, to more clearly point out that climate change affects livelihood vulnerability through its influences on both shocks and stressors/risks, as illustrated in the literature on the impacts of environmental change on household livelihoods; second, that climate change can trigger livelihood strategies leading to the transformation of household assets and capabilities (in addition to their erosion as discussed in this section) in ways that decrease human security and material well-being because adaptation can produce direct and indirect negative outcomes. These possible outcomes do not contradict or deny the possible positive adaptation outcomes discussed in this section. The breakdown of the discussion of the impacts of climate change on basic needs and livelihood assets and capabilities is somewhat artificial and inconsistent with a comprehensive view of household livelihoods. Basic needs are elements of household assets and capabilities (along with entitlements, which are not mentioned in section 12.2). It thus makes no sense to speak of climate change's impacts on either basic needs or assets and capabilities (and entitlements). They are one and the same thing. Instead, the impacts of climate change are temporally related to the risks being expressed: first, sudden shocks from natural hazards trigger livelihood coping strategies to mitigate unexpected disruptions to livelihoods; second, slow stresses and pressures on livelihood assets, capabilities, and entitlements that are often continuous, cumulative, and temporally protracted. The latter impacts trigger a variety of flexible and responsive adaptation strategies to manage climate change risks which can be distinguished from the ex-post crisis coping strategies that accompany climate shocks. Such an approach would offer a more fruitful way to organize the discussion of section 12.2 because it more clearly delineates the different ways in which livelihood assets, capabilities, and entitlements are impacted by climate change, the unique livelihood strategies that people employ to respond to climate change, and it allows researchers a more comprehensive way to assess the positive and negative outcomes of differing livelihood strategies. (See Deligiannis 2012, pp. 91-3) (Tom Deligiannis, University of Western Ontario)	We thank the reviewer for this comment. Section 12.2 has been revised to incorporate this suggestion. See specifically second paragraph of Section 12.2.1 and Section 12.2.2 for the revisions
110	54916	12	6	45	6	46	"The sentence could have been read as "... especially the poor communities and women therein across the world ...". The gender dimension could have been mentioned here." (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Comment no longer applies since the section/sentence has been rewritten; a text box on gender (Box 12-3 was added)
111	54917	12	6	50	6	54	"References could have been added here." (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Revised sentence refers specifically to Table 12-1 with appropriate references thus additional references are not necessary in this sentence
112	54089	12	6	51	6	54	Because it references both observations and projections, this statement does not clearly separate climate-related risks (e.g., extremes) from climate-change-related risks (e.g., changes in extremes). The related Table 12-1 distinguishes more clearly, and I suggest rephrasing to make the distinction clearer. (Michael Mastrandrea, IPCC WGII TSU)	These sentences are summary statements and not meant to provide details. Table 12-1 as pointed out in the comments is meant to provide such details.
113	39764	12	7	6	7	6	replace 'like' with 'such as' (to avoid bad English) (Peter Burt, University of Greenwich)	Original sentence retained otherwise the terms "such as" will be mentioned three times in the same sentence.
114	54918	12	7	6	7	7	"Citation may be added." Amir, Pervaiz (2005). Socioeconomic Aspects of Drought in Bahawalpur and Mirpur Khas Hydrological Units in Pakistan, Science and Culture, 71(7-8): 273-283. and Mirza, M.Q. and Ahmed, A.U., 2003. Climate Change and Water Resources in South Asia: Vulnerabilities and Coping Mechanisms - A Synthesis, in A. Muhammed (ed.), Climate Change and Water Resources in South Asia, Asianics Agro Dev International, Islamabad, pp. 202-228. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Additional citations not added since suggested references are quite old already.
115	52353	12	7	6	7	19	This section takes up the debate on livelihood security that is not systematically introduced in the previous section. The concept remains undefined and authors that made significant contributions to the debate on livelihood security, e.g. in India but also in Europe (e.g. Bohle 2009) remain unnoted. Again the style is more additive rather than analytic and systematic. In this part the work of one lead author is cited repeatedly but no peer-reviewed contribution by authors from developing countries is noted. This is no balanced account that takes the regional differentiation into account nor is it complete. (Hans Guenter Brauch, Free University of Berlin)	The revised section discussed the concept of livelihood security more clearly (see 12.2.1 especially the first two paragraphs) in a more analytical manner by examining two ways by which climate change impacts upon the material aspect of livelihood security (see sections 12.2.1 and 12.2.2). References to other related chapters, particularly chapter 13 on livelihoods and poverty, which provides more space on the significant contributions to the debate on livelihood, has also been made. It is not true however, that there is no peer-reviewed contribution from developing countries in these sentences. The works of the lead author that the reviewer is referring to are actually from developing countries. The other author cited (Peras et al. 2008) and the lead author himself both come from a developing country.
116	39765	12	7	8	7	8	change 'cut' to 'cuts' and 'reduce' to 'reduces' (Peter Burt, University of Greenwich)	Suggested revision made
117	39766	12	7	9	7	9	change 'deprived' to 'depriving' (Peter Burt, University of Greenwich)	Suggested revision made

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118	54919	12	7	10	7	11	"Please add citation. Ahmed et al., 2012." Citation: Ahmed, A.U., Hassan, S.R., Etzold, B., and Neelormi, S., 2012. Where the Rain Falls: Climate Change, Hunger and Human Mobility, Bangladesh Case Study, United Nations University (UNU), Bonn (in press). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Authors has to read the reference before it can be cited
119	54920	12	7	11	7	12	"Please add citation. Ahmed et al., 2012." Citation: Ahmed, A.U., Hassan, S.R., Etzold, B., and Neelormi, S., 2012. Where the Rain Falls: Climate Change, Hunger and Human Mobility, Bangladesh Case Study, United Nations University (UNU), Bonn (in press). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Authors has to read the reference before it can be cited
120	45246	12	7	12	7	15	Here, it would be interesting to have some more concrete information on the mentioned projections (e.g., describe projections for one or two countries as examples) (Marcus Kaplan, German Development Institute)	Can't do this due to space limitation
121	54090	12	7	12	7	15	Are there any more specific patterns across climate and socioeconomic scenarios that can be drawn out? (Michael Mastrandrea, IPCC WGII TSU)	The readers have to refer to the literature cited if they are interested with the specifics. Space limitation does not allow more elaboration in this section
122	45247	12	7	17	7	17	"range of disciplines" - which ones? This is important information (Marcus Kaplan, German Development Institute)	Sentence revised based on suggestion
123	45248	12	7	17	7	19	a) and b) are more or less the same or are very closely connected (they suffer most BECAUSE they have the least capacity to prepare), thus no need to divide it into two aspects. (Marcus Kaplan, German Development Institute)	Sentence revised based on suggestion
124	50720	12	7	17	7	24	For the statements on lines 17-20 and 22-24, the author team might consider assigning calibrated uncertainty language, especially summary terms for evidence and agreement or levels of confidence, to characterize further the conclusions presented. (Katharine Mach, IPCC WGII TSU)	Authors opt not do calibration especially since this section is not reflected in the Executive summary
125	52354	12	7	17	7	26	Here the debate on freedom from want by many developing countries but also the scientific discourse on the linkage between underdevelopment and human security in the development and human security literature is not representative either. (Hans Guenter Brauch, Free University of Berlin)	The revised paragraph have taken this into account by specifying that the review covers both the environment and development literature and hence established the linkage between development and human security particularly in many developing countries
126	54091	12	7	17	7	26	This is an example where the statements in this paragraph could be reframed to more explicitly link to the corresponding finding in the Executive Summary. (Michael Mastrandrea, IPCC WGII TSU)	The LAs have decided not to reflect livelihood more prominently in the Executive Summary since to minimize duplicaiton with Chapter 13 without necessarily downgrading the value of livelihood on human security
127	54921	12	7	17	7	26	"Women is mentioned along with many other groups. The gender dimension of vulnerability (i.e., gender differentiated vulnerability), often attributed largely to patriarchal norms and practices, deserve special mention and analysis. The following references may be chacked: Masika," R. (ed.) 2002. Gender Development and Climate Change, Oxfam Publication, Oxfam GB, Oxford, p. 104. Enarson, E. 2002. Environmental Management and Mitigation of Natural Disasters: A Gender Perspective, Panel II, Commission on the Status of Women, 46th Session, March 2002, United Nations, New York. Ahmed, A.U., Neelormi, S., and Adri, N., 2007. Climate Change in Bangladesh: Concerns regarding Women and Special Vulnerable Groups, Centre for Global Change (CGC), in association with UNDP, Climate Change Cell, DFID and Bastob, Dhaka. Neelormi, S. 2010, Addressing Gender Issues in Adaptation, in A.U. Ahmed (ed.), Reducing Vulnerability to Climate Change: The Pioneering Example of Community Based Adaptation in Bangladesh, centre for Global Change (CGC) and CARE Bangladesh, Dhaka, pp. 111-127 (ISBN 978-984-33-2234-0). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	A text box on the gender features of human insecurity (Box 12-3) has been added to highlighth the importance of gender issues in climate change and human security linkage
128	45249	12	7	25	7	26	This sentence can be deleted, as the facts mentioned here, have been stated already several times. (Marcus Kaplan, German Development Institute)	Sentence was retained since simiar sentences were deleted in the revised draft

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
129	43066	12	7	28	0	45	This last point speaks to my second general criticism of this section, that it provides a one-sided overview of the implications of livelihood strategies for adaptation to climate change. In particular, I am referring to the discussion on page 7, lines 28-45. The discussion of adaptation in this section could benefit from the distinction between “ex-ante risk management from ex-post coping with crisis” (Ellis 1998, 13–14) that I outline above and in more detail in Deligiannis 2012. In particular, however, this section offers an incomplete discussion of the implications of climate change adaptation for livelihood well-being and security. The authors are correct to note the beneficial consequences of the livelihood adaptation strategies outlined in this section; however, a more comprehensive overview would also outline the potential negative implications on livelihood security from some climate change coping and risk management strategies. For example, the degradation and depletion of natural capital assets as a result of climate change could trigger negative intensification on natural assets in ways that further undermine the natural assets. It could also trigger further extensification to marginal lands or to areas of high biological or biodiversity, putting additional assets at risk (See Deligiannis 2012, footnote 88). Similarly, migration sometimes results in unanticipated outcomes in the receiving areas, and sometimes negative impacts on natural assets in the areas of origin when labour shortages undermine the ability to manage natural assets sustainably (Deligiannis p. 94). Finally, and perhaps most importantly, a wide variety of transforming structures and processes – including levels of government, the private sector, markets, laws, policies, foreign investment and trade, civic institutions, and international organizations – can influence adaptation strategies in ways that undermine livelihood security. Research on the interactions between livelihoods and global environmental change indicate a variety of both beneficial and harmful adaptation strategies can result. The suggested corrections above would offer a more comprehensive accounting of risks and opportunities to livelihood security from climate change. Sources Cited Above: Deligiannis, Tom. 2012. The Evolution of Environment-Conflict Research: Toward a Livelihood Framework. <i>Global Environmental Politics</i> 12(1), Feb. 2012: 78-100. Ellis, Frank. 1998. Household Strategies and Rural Livelihood Diversification. <i>Journal of Development Studies</i> 35 (1): 1–38. (Tom Deligiannis, University of Western Ontario)	Lines 28-45 have been substantially revised following the comment. The subsection 12.2.3 on "Adaptation to climate change may have inadvertent negative consequences on human security" was added to emphasize that some adaptation options, may be double-edged and can decrease human security.
130	50721	12	7	28	7	28	The phrase "robust evidence," as calibrated uncertainty language, should be italicized. Additionally, the author team could consider providing a summary term for agreement as well. (Katharine Mach, IPCC WGII TSU)	The phrase "robust evidence" was italicised but not included in the summary due to reason already provided above
131	48681	12	7	28	8	5	Are these paragraphs really necessary? They are quite general and vague, and the fact that education, labour intensification, income diversification etc are plausible strategies for dealing with the impacts of climate change and/or securing livelihoods and/or improving well-being is not such a new finding per se. Moreover, these sections partially overlap with chapter 13. (Giovanni Bettini, Lund University)	Paragraphs substantially revised and shortened in response to comments but also to the new arguments being forwarded
132	44899	12	7	31	7	31	The second part of the sentence needs citations (John Morton, Natural Resources Institute, University of Greenwich)	Reference has been added
133	54922	12	7	33	7	35	"Please add citation, Ahmed, A.U. (ed.) 2010." Citation: Ahmed, A.U., 2010. Reducing Vulnerability to Climate Change: The Pioneering Example of Community Based Adaptation in Bangladesh, centre for Global Change (CGC) and CARE Bangladesh, Dhaka, pp. 154 (ISBN 978-984-33-2234-0). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	This comment may be more appropriate to the adaptation chapters since this section provides very limited space for adaptation discussion
134	45250	12	7	33	8	5	diversification, migration, insurance, and education are absolutely key strategies for adaptation and enhancing human security; however, you only spend one paragraph on each of these strategies, which is by far not enough; or is this dealt with in another chapter (in that case refer to this chapter) (Marcus Kaplan, German Development Institute)	In addition to the references provided, Chapter 13 was cited
135	52355	12	7	35	7	35	The term natural capital is used without any reference to the work of Sen or Bourdieu (Hans Guenter Brauch, Free University of Berlin)	Comment no longer applies due to revision of the text
136	54923	12	7	39	7	39	"Please add citation, Roy et al., 2010." Citation: Roy, K., Neelormi, S. and Adri, N., 2010. Setting-up the Primary Adaptation Goal: Towards Creating Alternative Income Opportunities, in A.U. Ahmed (ed.), Reducing Vulnerability to Climate Change: The Pioneering Example of Community Based Adaptation in Bangladesh, centre for Global Change (CGC) and CARE Bangladesh, Dhaka, pp. 37-61. Roy, K., Neelormi, S. and Rahman, M.M., 2010. Safeguarding Crop Agriculture: Changing Traditional Practices, in A.U. Ahmed (ed.), Reducing Vulnerability to Climate Change: The Pioneering Example of Community Based Adaptation in Bangladesh, Centre for Global Change (CGC) and CARE Bangladesh, Dhaka, pp. 63-77. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	This comment may be more appropriate to the adaptation chapters since this section provides very limited space for adaptation discussion
137	54924	12	7	43	7	44	"Following the sentence ending in line 44, please add citation Ahmed et al., 2012." Citation (Given earlier) (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Comment no longer applies due to revision of the text
138	40463	12	8	2	8	5	This paragraph, and the chapter in general, is short on gender analysis. Women's education is surely important but it is not a panacea for reducing poverty, maternal mortality and child nutrition. Patriarchal social relations within the household, community and country, and lack of access to resources (land, decent employment, food, health care) are a big part of the picture. Other chapters may cover gender in more depth, but it is important to have a deeper gender analysis in this one, even if it's short. There is excellent literature on gender and environment; for example the work of Bina Agarwal. Her latest book is Gender and Green Governance, NY: Oxford University Press, 2010. (Betsy Hartmann, Hampshire College)	A text box on the gender features of human insecurity (Box 12-3) has been added to highlight the importance of gender issues in this section/chapter
139	52356	12	8	2	8	5	This added on paragraph is rather isolated and does not flow from a lacking and consistent argumentation that structures the assessment of the literature. (Hans Guenter Brauch, Free University of Berlin)	Comment no longer applies due to revision of the text

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
140	54925	12	8	2	8	5	"By building gender-sensitive cyclone shelters the death toll due to cyclonic storm surges involving women in low lying coastal areas such as in Bangladesh can further be reduced (Ahmed et al., 2009; Ahmed, 2008)." Citation: Ahmed, A.U., Neelormi, S., Adri, N., Alam, M.S., and Nuruzzaman, K., 2009. Climate Change, gender and Vulnerable Groups in Bangladesh, Climate Change Cell, department of Environment, Dhaka, p. 88. Ahmed, A.U., 2008. Assessment of Vulnerability to Climate Change and Adaptation Options for the Coastal People of Bangladesh, Practical Action, Bangladesh, Dhaka, p. 40. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Comment no longer applies due to revision of the text
141	48682	12	8	8	12	50	Section 12.3 contradicts itself in that it states that a 'study of the complex nexus ... requires a culturally relativistic perspective' (page 8, line 13-14), but it does not offer a sufficient problematization of 'climate change' as a cultural construct, nor of 'the scientific knowledge base' as knowledge emerging within a certain cultural context. In absence of such a problematization, the section's tone reproduces a binary 'climate science' vs culture, in which science has an implicit epistemological primacy (that may be the case, but then the section should make explicit why and how). Given that much of the discussion refers to 'culture' and 'communities' in developing countries, such an opposition between science and culture also ends up reproducing (post)colonial views/stereotypes. This emerges for instance when the chapter discusses 'local and traditional knowledge' (section 12.3.3, page 10). Local knowledge (which refers mainly to developing countries and marginalized groups) is given relevance as a condition for successful adaptation and management, but is constructed in opposition to science and scientists (with science and scientists implicitly seen as culturally neutral), an opposition in which local knowledge or cultures inevitably figure as inferior. (Giovanni Bettini, Lund University)	Edits have been made to remove the unintended contradiction.
142	52357	12	8	8	12	50	This part on the cultural dimension of human security is far more consistent and wider in the scope of the literature and gives more visibility and voice to the peer reviewed scholarship of the global south. This is also the most innovative part of the whole text. It may be a bit too detailed and could be condensed and the lines of argumentation could be developed even more clearly. (Hans Guenter Brauch, Free University of Berlin)	Edits have been made
143	40280	12	8	11	0	0	This section 12.3. should contain a clear definition of "culture." As it stands it seems to equate cultural with indigenous, or local. (Michael Brzoska, University of Hamburg)	Culture as defined is not equated with indigenous or local, but is more general, and should be sufficient: "For the purpose of this chapter we define culture as holistic, dynamic, and encompassing and framing virtually all aspects of human life including worldviews, norms, beliefs, knowledge, values, practices, social relationships, networks, perceptions of risk, power relations, understanding and responses to the world we live in (Roncoli et al., 2009: 87; Strauss, 2009: 172; Crate, 2008; Heyd, 2008; King et al., 2008; Tingley et al., 2010; Crate and Nuttall, 2009; Crate, 2011; Rudiak-Gould, 2012; Sudmeier-Rieux, 2012)."
144	40464	12	8	15	0	0	This view of culture seems very static and circumscribed: "each culture has its own logic." Different cultures can exist within a dominant culture; more sense of dynamism and conflict would be good. (Betsy Hartmann, Hampshire College)	Corrected to illustrate the dynamic nature of culture -
145	50722	12	8	17	8	17	The phrase "high confidence," as calibrated uncertainty language, should be italicized. (Katharine Mach, IPCC WGII TSU)	done
146	50723	12	8	26	8	26	Given the description of evidence here, could a summary term for evidence (and potentially also a summary term for agreement) be assigned? (Katharine Mach, IPCC WGII TSU)	done
147	37066	12	8	28	8	31	While it is of course true that many environmental impacts potentially impact societies, and may exacerbate risk, a clear focus on climate change impacts (observed and/or projected) would be needed to justify a statement about climate risk (heading). It is not very helpful to lump all manifestations of weather, climate, climate variability and environmental degradation into one. (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Title of section has been changed and sentence has been edited for clarity
148	45251	12	8	31	8	37	mention land grabbing as another potential challenge (maybe together with mining and tourism) (Marcus Kaplan, German Development Institute)	Have been added
149	40465	12	8	36	0	0	It might be good to mention credit schemes here since they often represent and reinforce power inequalities. (Betsy Hartmann, Hampshire College)	Have not found relevant references for credit schemes and have therefore not added the concept
150	45252	12	8	42	8	42	"In drier regions, such as Africa..." there are dry regions in Africa, of course, but Africa as a whole is not dry! (Marcus Kaplan, German Development Institute)	A typo - has been fixed
151	37065	12	8	42	8	44	This statement is too general and can not be backed by the cited article alone. Also, not all of Africa is dryland (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Statement has been changed
152	44850	12	8	49	8	51	This was a key finding was also reported in Roman, C., & McEvoy, D. (2011). Kailash Sacred Landscape Conservation Initiative (KSLCI) Strengthening Project - Nepal. Climate Change and Tourism - Final Report. Melbourne: Climate Change Adaptation Program, Global Cities Research Institute, Royal Melbourne Institute of Technology (RMIT) University (available from http://global-cities.info/wp-content/uploads/2011/10/KSL_tourism-Nepal_FINAL_report.pdf). However, rather than seeing a 'breakdown' in existing institutions and networks, the case study in this report points to a situation where institutions and/or external support networks do not exist, making the prospect of diversification for livelihood options (and therefore human security) that much more difficult. (Carolina Adler, Swiss Federal Institute of Technology (ETH) Zurich)	Reference added.
153	43325	12	9	3	0	0	Instituto Polis, Brazil, has studied the interaction of culture, vulnerability, and environment in poor communities. Please contact Mr. S. Caccia Bava at scbava@diplomatie.org.br. (Milton Nogueira da Silva, Climate Change Forum of Minas Gerais, Brazil)	Mr Bava has been contacted 13 Nov. no response - have added new references on Brazilian cases

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
154	39153	12	9	3	11	52	It is laudable that this section of the report acknowledges the impact of climate change on culture and via culture on human security, but it is a real pity that the report does not look in significant detail at the reverse question: What is the impact of culture on climate change? The answer is, that anthropogenic climate change is entirely a product of not just human activity but of a specific recent cultural shift in how human beings live. In this context, I find it quite offensive that the people singled out in this section as "having culture" are indigenous people (though admittedly there is a need to point out that they do have special needs and contributions to make). This conceptual linking of indigeneity with "culture" is utter nonsense, and is extremely counter-productive (see also FAQ 12.1). That is because it conceals the fact that modern societies "have culture" too -- indeed, they have a late modern culture which is responsible for the entire CC problem in the first place because of the way it is "organised around a form of livelihood" that is unsustainable. By implying the modern western society and its livelihood pattern is cultureless, the report actively blocks the option of engaging in the kind of fundamental cultural (self-)critique that is absolutely essential if we wish to achieve a cultural change that will cause late modern societies to engage in substantial efforts to mitigate, recycle, reduce consumption, pay for waste etc etc. (Thomas Reuter, University of Melbourne)	This chapter is about human security and the impacts of risks - it may therefore not be the correct context to discuss the impact of culture on climate change although this is a significant question. I do not agree that we imply that the modern world is cultureless, but have edited text to make this even more clear.
155	40466	12	9	5	0	0	There is a need to unpack "community" here since power relations within communities based on class, gender, age, etc. have a big effect on the extent of real participation. The political interface between local elites and policymakers at the regional, national and even international levels come into play. Re gender, Agarwal's work shows just how complicated it is to ensure women's active participation in community environmental management -- lessons that should be incorporated into climate policy. (Betsy Hartmann, Hampshire College)	Text edited - readers are alerted to the contested concept of community
156	50724	12	9	5	9	5	Given the description of evidence here, could a summary term for evidence (and potentially also a summary term for agreement) be assigned? (Katharine Mach, IPCC WGII TSU)	?? Not sure
157	45253	12	9	5	9	14	the mentioned lines are not a good start of this section; the title pretends that the section describes how and why communities are at risk, but then you start talking immediately about which methods to use to deal with the problems, before you even described them; move the methodological aspects further back (Marcus Kaplan, German Development Institute)	Changes have been made
158	44851	12	9	7	9	16	Should consider reviewing other pertinent literature on this issue, such as: Roman, C., & McEvoy, D. (2011). Kailash Sacred Landscape Conservation Initiative (KSLCI) Strengthening Project - Nepal. Climate Change and Tourism - Final Report. Melbourne: Climate Change Adaptation Program, Global Cities Research Institute, Royal Melbourne Institute of Technology (RMIT) University (available from http://global-cities.info/wp-content/uploads/2011/10/KSL_tourism-Nepal_FINAL_report.pdf). Peer-reviewed publications from this report are currently being finalised. One of these has been accepted, pending reviews, in the journal of Policy Sciences and the other is under consideration for the Journal of Sustainable Tourism. (Carolina Adler, Swiss Federal Institute of Technology (ETH) Zurich)	Reference has been added
159	37067	12	9	24	8	27	Statement is literally repeating p 8 In 42-44, and misleading. Forestry and forest management in Africa is not exactly centered in the drylands. (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Repetitious sentence deleted.
160	45254	12	9	24	9	27	Exactly the same sentence was already on the previous regions (and the start "In drier regions, such as Africa..." is still wrong... (Marcus Kaplan, German Development Institute)	Repetitious sentence deleted.
161	48680	12	9	25	9	25	The expression "in drier regions, such as Africa" is way too vague and imprecise. Not the whole of Africa is dry.. (Giovanni Bettini, Lund University)	Sentences edited
162	37068	12	9	32	9	33	Kuhlicke seems an odd paper to cite in the context of hunter's and local knowledge (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Reference moved to relevant statement of the sentence
163	40467	12	9	44	0	0	What exactly is a "balanced society"? (Betsy Hartmann, Hampshire College)	Text edited
164	39767	12	9	49	9	49	insert , after 'systems' (Peter Burt, University of Greenwich)	done
165	45255	12	9	51	9	53	Please elaborate more on the important link between community responses and globalization (Marcus Kaplan, German Development Institute)	Have added more text
166	48298	12	10	0	10	0	Please focus on the regions that may have tendency to burst into conflicts, where regional& demographic imbalances may lead into conflict eg. Horn of Africa, North East India (Malini Nair, Indian Institute of Science)	Don't understand what is meant by this comment. Perhaps this comment is meant for another section of the chapter?
167	46370	12	10	5	10	5	It is a bit strange to mention an example (from Portugal) without giving any information about what it shows. Beside, the ref. is not in bibliography. (Etienne Piguet, University of Neuchatel)	reference to the portuguese study removed.
168	47762	12	10	6	10	6	reference (Figueiredo et al 2009) is not listed on reference page (Marcus King, George Washington University)	reference has been removed from text
169	40468	12	10	24	0	0	I think it makes more sense to speak of knowledge in the plural -- knowledges in order to get across that there is not one local or traditional knowledge, and that within communities there may be multiple, and sometimes competing knowledges. (Betsy Hartmann, Hampshire College)	Agreed - fixed throughout.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
170	47187	12	10	24	0	0	Section 12.3.3: Missing from this section is mention of the important role of local and indigenous knowledge in developing and maintaining domestic biodiversity i.e. the multitude of crop varieties and animal breeds. This genetic diversity is a valuable source of resilience in the face of an uncertain and changing climate, as small-holder farmers and pastoralists maintain in their fields and in their herds, a range of characteristics that guarantee production in times of drought or flood, or during outbreaks of pests or disease (Nazarea 1998; Hanazaki et al. 2000; Empeaire and Peroni 2007; Shava 2009). The erosion of this domestic biodiversity is serious concern, as it is often replaced with uniform hybrid varieties and breeds that only perform well under limited conditions and often require expensive artificial fertilizers and other external support. Empeaire, L. and Peroni, N. 2007. Traditional management of agrobiodiversity in Brazil: a case study of manioc. <i>Human Ecology</i> , 35: 761–68; Hanazaki, N., Tamashiro, J.Y., Leitao-Filho, H.F, and Begossi, A. 2000. Diversity of plants uses in two Caicara communities from the Atlantic Forest coast, Brazil. <i>Biodiversity and Conservation</i> , 9: 597–615; Nazarea, V.D. 1998. <i>Cultural Memory and Biodiversity</i> . Tucson, AZ, University of Arizona Press; Shava, S, O'Donoghue, R., Krasny, M.E. and Zazu, C. 2009. Traditional food crops as a source of community resilience in Zimbabwe. <i>International Journal of African Renaissance</i> , 4(1): 31–48. (Douglas Nakashima, UNESCO)	Text and reference on domestic biodiversity have been included in section on knowledge
171	54092	12	10	24	0	0	Sections 12.3.3 and 12.3.4: I suggest comparing information in these two sections to minimize redundancy and combine similar discussions. (Michael Mastrandrea, IPCC WGII TSU)	Redundancies removed
172	52358	12	10	24	11	32	This section is well written but should better contextualized within the framework of the human security discourse (see this peer-reviewed reference by Pietro Laureano: "Traditional Knowledge in Coping with Desertification" (2011): 893-900. (Hans Guenter Brauch, Free University of Berlin)	Reference noted not available, but efforts have been made to include relevant text in the human security discourse
173	50725	12	10	26	10	26	Given the description of agreement here, could a summary term for agreement (and potentially also a summary term for evidence) be assigned? (Katharine Mach, IPCC WGII TSU)	Fixed
174	47181	12	10	29	10	29	'Local knowledge' goes by many names in the scientific literature. In order to orient the reader who may have encountered certain terms and not others, it may be useful to mention some of the most common labels, including indigenous knowledge (term that appears on line 52), traditional ecological knowledge (TEK), farmers' knowledge, folk knowledge, indigenous science, ethnoecology, ethnoclimatology, etc. See Nakashima and Roué (2002) for a discussion of various terms. Nakashima, D. and Roué, M. 2002. Indigenous knowledge, peoples and sustainable practice. In: T. Munn. <i>Encyclopedia of Global Environmental Change</i> . Chichester, Wiley and Sons, pp. 314–24. (Douglas Nakashima, UNESCO)	Text edited accordingly. References included
175	47182	12	10	29	10	31	It may be useful to insert a definition of local, traditional or indigenous knowledge. The definition by Berkes (2012) is often cited: 'a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment' (2012: 7). Berkes, F. 2012. <i>Sacred Ecology</i> , Third Edition. New York, Routledge. (Douglas Nakashima, UNESCO)	added suggested reference
176	47183	12	10	32	10	32	Indigenous knowledge provides much more than just 'insights' into what to forecast. In virtually all cultures, weather forecasting is an important component of local and indigenous knowledge. The classic example, provided by Orlove et al. (2000; 2002), is the 400 year old tradition of indigenous farmers of the Peruvian and Bolivian Andes, who carry out a ritual observation of the Pleiades constellation immediately after the winter solstice. These observations enable villagers to identify El Niño years, which are characterised by diminished precipitation. They select crops and determine planting dates for the following year based upon this traditional forecasting. Orlove, B.S., Chiang, J.C.H. and Cane, M.A. 2000. Forecasting Andean rainfall and crop yield from the influence of El Niño on Pleiades visibility. <i>Nature</i> , 403: 69–71; Orlove, B., Chiang, S., John, C.H. and Cane, M.A. 2002. <i>Ethnoclimatology in the Andes</i> . <i>American Scientist</i> , 90: 428–35. (Douglas Nakashima, UNESCO)	Agreed. Text edited for clarity. References added
177	54093	12	10	40	10	42	"Mitigate" in line 40 seems to be used in the context of "reducing impacts" but not mitigation of greenhouse gas emissions. Suggest choosing a different word to avoid confusion. (Michael Mastrandrea, IPCC WGII TSU)	Agreed. - words changed to "reducing impact"
178	47184	12	10	42	10	42	When raising the issue of knowledge loss and protection, it may wise to be broaden the perspective beyond an exclusive focus on 'knowledge' as object (a western viewpoint) to recognition of 'indigenous knowledge holders' as key actors and 'knowledge transmission' as a key process. If indigenous knowledge is to retain its dynamism (line 30) and adaptability (a critical characteristic in the face of climate change), then knowledge protection cannot be limited to ex situ documentation or integration with science (line 42), but must emphasise the role of knowledge holders in ensuring intergenerational knowledge transmission so as to perpetuate knowledge as a living resource within local communities (Berkes 2012; Nakashima and Roué 2002). Berkes, F. 2012. <i>Sacred Ecology</i> , Third Edition. New York, Routledge; Nakashima, D. and Roué, M. 2002. Indigenous knowledge, peoples and sustainable practice. In: T. Munn. <i>Encyclopedia of Global Environmental Change</i> . Chichester, Wiley and Sons, pp. 314–24. (Douglas Nakashima, UNESCO)	having included the suggestion in the text

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
179	47185	12	10	48	11	9	This paragraph raises several times the issue of integration of diverse knowledge systems. The key concern, however, is which knowledge set is obliged to integrate into the other. From the text, it is apparent that the baseline assumption is science dominates, providing the frame and logic into which local knowledge must try to fit (cf. line 48 - 'local knowledge contributes to science' and lines 6-7 - local and indigenous knowledge is incorporated into climateology). This conventional unidirectional representation of 'integration' betrays an ethnocentric science bias that is out of place in a chapter that emphasises culture and relativity. In today's context where, in the face of climate change, both scientists and indigenous knowledge holders are confronting novel situations with high levels of uncertainty, it is perhaps best to underline the advantages of co-producing new knowledge together (rather than one-way integration into science). Research co-design and knowledge co-production are emerging paradigms that bring scientists and indigenous knowledge holders together on a more equitable basis and that allow full expression of the positive and complementary synergies of the two knowledge systems (Nakashima et al. 2012). Nakashima, D.J., Galloway McLean, K., Thulstrup, H.D., Ramos Castillo, A. and Rubis, J.T. 2012. Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation. Paris, UNESCO, and Darwin, UNU, 120 pp. (Douglas Nakashima, UNESCO)	I do not fully agree that this text represents an ethnocentric science bias, at least that was not the intention. Text has been edited for clarity.
180	50726	12	10	53	10	53	Given the description of evidence here, could a summary term for evidence (and potentially also a summary term for agreement) be assigned? (Katharine Mach, IPCC WGII TSU)	Fixed
181	47947	12	11	0	12	0	To improve flow consider inverting 12.3.4 with 12.3.3 - so that a summary of Indigenous Peoples comes before the discussion on Traditional Knowledge (Ameyali Ramos Castillo, United Nations University - Institute of Advanced Studies)	Good suggestion. Has been done.
182	47948	12	11	0	12	0	Text is descriptive and is lacking an analysis/assessment of current knowledge of adaptation, Ips and climate change (Ameyali Ramos Castillo, United Nations University - Institute of Advanced Studies)	Efforts made to clarify this.
183	39768	12	11	3	11	3	starting sentences with 'but' is bad English! (Peter Burt, University of Greenwich)	This is contested in modern English usage
184	47946	12	11	11	0	0	Insufficient inclusion of cases where TK and climate science have been successfully integrated (ie. agrobiodiversity and fire burning practices for climate mitigation to name a few). Consider inserting case study to highlight some of the successful instances where IPs have been included in decision-making and adaptation planning with positive results for climate/livelihoods. Important to highlight role of indigenous peoples as active participants rather than passive victims of climate change (Ameyali Ramos Castillo, United Nations University - Institute of Advanced Studies)	While case studies are illustrative and useful we do not have enough space in this section to develop these properly and give them the depth of description such cases deserve.
185	47944	12	11	12	0	0	Also relevant: Nakashima, D et al. (2012) "Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation" Paris, UNESCO and Darwin, UNU, 120p. (Ameyali Ramos Castillo, United Nations University - Institute of Advanced Studies)	Included
186	47186	12	11	20	11	21	Here it is argued that local and traditional knowledge may lose its utility as climate change will bypass lived experience. This frequent assumption is flawed because it focuses upon knowledge as a fixed set of information, rather than considering local and indigenous knowledge holders and their adaptive capacity in the face of change. Indeed, many indigenous people pride themselves on their ability to adapt in the face of new challenges (Fienup-Riordan and Rearden 2010). For Inuit living in a rapidly changing Arctic, transmission of core cultural attitudes and values such as patience, persistence, respect and inventiveness to overcome novel challenges, may be more important than knowledge per se (Ford et al. 2007; Fienup-Riordan and Rearden 2010). Fienup-Riordan, A. and Rearden, A. 2010. The ice is always changing: Yup'ik understandings of sea ice, past and present. In: I. Krupnik et al. (eds.) SIKU: Knowing Our Ice: Documenting Inuit Sea Ice Knowledge and Use. London, Springer, pp. 303–328; Ford, J.D., Pearce, T., Smit, B., Wandel, J., Allurut, M., Shappa, K., Ittusujurat, H., and Qrunnut, K. 2007. Reducing vulnerability to climate change in the Arctic: The case of Nunavut, Canada. Arctic, 60(2): 150–66. (Douglas Nakashima, UNESCO)	The statement had been edited to capture the nuances suggested by reviewer. However, the literature supports the statement that local communities and and indigenous peoples find their knowledge to be insufficient. One of the references has been included, but not all of them. This is because other reviewers point out that there is too much emphasis on the Arctic. adding more studies from the Arctic will increase the imbalance further. On the other hand, there has been more work done in the Arctic than elsewhere.
187	54094	12	11	20	11	24	The logical connection between these two sentences is not completely clear. The first sentence implies that in some cases local knowledge may indeed be less reliable, and it is unclear how this relates to the perceptions of unreliability mentioned in the second sentence. (Michael Mastrandrea, IPCC WGII TSU)	Sentences edited for clarity
188	47764	12	11	31	11	31	No citation for the 11% figure. It is therefore unclear under what legal system or regime the indigenous people own the forests and from the perspective of whom? (Marcus King, George Washington University)	Text removed - difficult to verify and not critical for the statements made.
189	39769	12	11	31	11	32	this is an important point and should be expanded, or at least supported with some references (Peter Burt, University of Greenwich)	there are two references included - will add more if possible - or is reviewer responding to the sentence before?
190	54095	12	11	31	11	32	The point being made in this sentence is unclear. Please clarify. (Michael Mastrandrea, IPCC WGII TSU)	Has been clarified
191	43326	12	11	35	0	0	With more than 200 indigineous ethnic groups, Brazil has a long history of studying, assisting and involving aboriginal tribes into modern ways of life. Results have been mixed, most tribes suffer from the approaching lifestyles coming from urbanised people and from agribusiness, especially in the Amazon. For further details contact: Fundacao Nacional do Indio. Conselho Indigenista Missionario, www.cimi.org.br. Centro de Documentacao Eloy Ferreira da Silva. Instituto Brasileiro de Geografia e Estatistica. (Milton Nogueira da Silva, Climate Change Forum of Minas Gerais, Brazil)	Literature from Brazil has been added

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192	47201	12	11	35	0	0	12.3.4 Indigenous Peoples One issue that crops up in any treatment of indigenous peoples is _who_ are referred to when discussing indigenous peoples. While the section very correctly avoids defining indigenous peoples, it is important to note that there is a set of criteria that relate to the concept of indigenous peoples. These originate from from Cobo, M. 1986. Study of the Problem of Discrimination Against Indigenous Populations, Preliminary Report to the UN Sub-Commission on the Prevention of Discrimination of Minorities E/CN.4/Sub.2/1986/Add.4. - in particularly page 2, paragraph 2 (see related comment below) and the UN report on THE CONCEPT OF INDIGENOUS PEOPLES (PFI/2004/WS.1/3). The implications of these international concepts on this chapter subsection are that it could form a framework for assessing how the concept of indigenous peoples' human security in relation to climate change is treated in the section. This is especially important as it provides for a set of commonalities among the highly diverse cultures/livelihoods of indigenous peoples. For example, assessing the concept of the ability of IPs to continue to 'preserve, develop and transmit to future generations their - ancestral territories, and ethnic identity' . Also, how social institutions are implicated by climate change - with specific reference to this, in the UNESCO-UNU publication Weathering Uncertainty, we see that: "Indigenous socio-cultural institutions and governance structures are also exposed to the impacts of climate change. Indigenous peoples rely on complex socio-cultural governing systems and on their traditional knowledge to predict and prepare for seasonal and climate changes (Verner, 2010). But climate change is making it more difficult for indigenous peoples to accurately predict or adequately prepare for unforeseen changes, resulting in loss of social and political capital. For instance, traditional elders, considered local experts by their respective groups, may lose credibility when climatic conditions become increasingly difficult to predict. This may undermine traditional governance and political structures, sacred rituals, and the ability to maintain social order and cohesion (Adger, 2003; Kronik and Verner, 2010a)." (extracted from Nakashima et al., 2012 p 76. Full reference: Nakashima et al 2012. Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation. Paris, UNESCO, and Darwin, UNU (will be uploaded as supplementary material)) Understanding what is meant by indigenous peoples and having an international understanding on this concept put forward in the text is important as many countries do not recognize indigenous peoples within their boundaries. Other terms are used, for example ethnic minorities in Vietnam, masyarakat adat in Indonesia, hill tribes. In Africa the term local community may also refer to indigenous peoples - particularly for Africa, the REPORT OF THE AFRICAN COMMISSION'S WORKING GROUP OF EXPERTS ON INDIGENOUS POPULATIONS/COMMUNITIES.2005 Available at: http://www.iwgia.org/iwgia_files_publications_files/African_Commission_book.pdf , also gives an understanding of indigeneity in Africa at a regional government level. (Jennifer Rubis, United Nations Educational, Scientific and Cultural Organization (UNESCO))	Definition added to the main glossary- text has been edited to better incorporate the suggested nuances
193	47208	12	11	35	0	0	continues from first comment on same section: this is the Martinez Cobo 1986 treatment of the term indigenous peoples. "Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system. "This historical continuity may consist of the continuation, for an extended period reaching into the present of one or more of the following factors: a) Occupation of ancestral lands, or at least of part of them; b) Common ancestry with the original occupants of these lands; c) Culture in general, or in specific manifestations (such as religion, living under a tribal system, membership of an indigenous community, dress, means of livelihood, lifestyle, etc.); d) Language (whether used as the only language, as mother-tongue, as the habitual means of communication at home or in the family, or as the main, preferred, habitual, general or normal language); e) Residence on certain parts of the country, or in certain regions of the world; f) Other relevant factors. "On an individual basis, an indigenous person is one who belongs to these indigenous populations through self-identification as indigenous (group consciousness) and is recognized and accepted by these populations as one of its members (acceptance by the group)." (Cobo, M. 1986. Study of the Problem of Discrimination Against Indigenous Populations, Preliminary Report to the UN Sub-Commission on the Prevention of Discrimination of Minorities E/CN.4/Sub.2/1986/Add.4.) (Jennifer Rubis, United Nations Educational, Scientific and Cultural Organization (UNESCO))	Definition added to the main glossary- text has been edited to better incorporate the suggested nuances
194	52359	12	11	35	12	50	On indigenous people: this section could take up the argument of the impact of climate change on human security as freedom from want and with regard to their right to live in dignity or a human rights and security based approach to indigenous people. There is a rich literature on this rights based approach (e.g. Stavenhagen, 2013, 2013a, 2013b) on indigenous people also not necessarily always linked to human security. (Hans Guenter Brauch, Free University of Berlin)	This is an important comment, but questions of human rights has not been included in the assessment
195	45256	12	11	37	11	37	Do you give a definition of "indigenous people" somewhere? (Marcus Kaplan, German Development Institute)	Definition in glossary

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196	47202	12	11	37	11	37	In regards to the figure of 350 million indigenous peoples, the UN Permanent Forum on Indigenous Issues (PFII) puts the figure at 370 million (usually as a range of 370-500 million see: http://www.un.org/esa/socdev/unpfii/documents/E.C.19.2010.18EN.pdf). PFII use of this figure can be traced back to 2006 (see Bartlett, J., Madriaga-Vignudo, L., O'Neil, J., & Kuhnlein, H. (2007). "Identifying Indigenous peoples for health research in a global context: A Review of perspectives and challenges". International Journal of Circumpolar Health. 66(4): 287-306.) A recent publication by the Forest Peoples Programme cites a figure of 507 million and includes the breakdown of sources (cf. FOREST PEOPLES: Numbers across the world. Sophie Chao 2012.) (to be uploaded but also available here: http://www.forestpeoples.org/sites/fpp/files/publication/2012/05/forest-peoples-numbers-across-world-final_0.pdf). This is at the PFII indicative 'upper limit' of 370-500 million -- see for example http://www.un.org/esa/socdev/unpfii/documents/E.C.19.2010.18EN.pdf (Jennifer Rubis, United Nations Educational, Scientific and Cultural Organization (UNESCO))	Numbers have been rechecked and changed to reflect the range. Reference added
197	47203	12	11	37	11	37	In reference to the 'legally owning 11 percent of the world's forests', there is a recent article in Conservation and Society that quotes a slightly higher figure: 'In addition, the percentage of forests in the hands of communities in the developing world alone is much higher, at 22 per cent in 2002 and increasing to 27 per cent in 2008' (Larson AM, Dahal GR. Forest tenure reform: New resource rights for forest-based communities?. Conserv Soc 2012;10:77-90. Available from: http://www.conservationandsociety.org/text.asp?2012/10/2/77/97478) Further to this point, it is also important to consider that the percentage of the world's forest under community or non-formal tenure will be much higher. (Jennifer Rubis, United Nations Educational, Scientific and Cultural Organization (UNESCO))	have deleted reference to the 11% figure and have added a broad estimate of the number of indigenous people
198	44900	12	11	37	11	38	This should probably read 350 million indigenous people, not peoples. "Indigenous peoples" need defining, and the statistics need a citation. I am somewhat sceptical of the utility of the term globally, particularly given the difficulties of defining them in Africa: are Somalis in Somalia IPs but not Somalis in Kenya? Are any Bantu-speaking people IPs and what are the implication if they are not? (John Morton, Natural Resources Institute, University of Greenwich)	Efforts have been made to clarify what indigenous peoples are. Definition provided in main glossary.
199	46372	12	11	37	11	38	The sentence is essentialist. A source of the definition of "indigeneous people" should be given with the mention "according to... (The UN ?) there are about 350 million..." (Etienne Piguet, University of Neuchatel)	Done
200	45257	12	11	42	11	44	Give a source (or several sources) for these statements (Marcus Kaplan, German Development Institute)	Have added source
201	50727	12	11	44	11	44	Given the description of agreement here, could a summary term for agreement (and potentially also a summary term for evidence) be assigned? (Katharine Mach, IPCC WGII TSU)	Fixed
202	47204	12	11	44	11	46	This may be unintended but the phrasing seems to imply that indigenous peoples need to have adaptive capacity to social and economic marginalization and globalization; that perhaps the onus is on indigenous peoples and their cultures to 'adapt' to marginalization and globalization. If this is in fact intended, it is useful to note that it is this inability to adapt to marginalization and globalization that has resulted in indigenous peoples representing the larger share of the world's languages and cultures, that the places they live are the last remaining spaces of high biodiversity; and also that there is unanimous international agreement that indigenous peoples have the collective right to self determination of their cultures, identity and relationship to the environment (see UN Declaration on the Rights of Indigenous Peoples among others). (Jennifer Rubis, United Nations Educational, Scientific and Cultural Organization (UNESCO))	It is a good comment and interesting perspective -and the text have been altered accordingly
203	47945	12	11	48	0	0	Also relevant: Nakashima, D et al. (2012) "Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation" Paris, UNESCO and Darwin, UNU, 120p. (Ameyali Ramos Castillo, United Nations University - Institute of Advanced Studies)	have included
204	47189	12	12	16	12	17	Claims that current indigenous adaptive strategies may not suffice to meet projected climate-related challenges need to be questioned. This frequent assumption fails to consider local and indigenous knowledge holders and their adaptive capacity in the face of change. Indeed, many indigenous people pride themselves on their ability to adapt in the face of new challenges (Fienup-Riordan and Rearden 2010). For Inuit living in a rapidly changing Arctic, transmission of core cultural attitudes and values such as patience, persistence, respect and inventiveness to overcome novel challenges, may be more important than knowledge per se (Ford et al. 2007; Fienup-Riordan and Rearden 2010). Fienup-Riordan, A. and Rearden, A. 2010. The ice is always changing: Yup'ik understandings of sea ice, past and present. In: I. Krupnik et al. (eds.) SIKU: Knowing Our Ice: Documenting Inuit Sea Ice Knowledge and Use. London, Springer, pp. 303–328; Ford, J.D., Pearce, T., Smit, B., Wandel, J., Allurut, M., Shappa, K., Ittusujurat, H., and Qrunnut, K. 2007. Reducing vulnerability to climate change in the Arctic: The case of Nunavut, Canada. Arctic, 60(2): 150–66. (Douglas Nakashima, UNESCO)	This is an important addiiton, and the text have been edited to capture the nuances. There is not enough space however to fully develop the argument about which is most critical for adaptive capacity: cultural values or knowledge.
205	50728	12	12	22	12	22	It would be preferable to avoid casual usage of the word "likely" here, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	changed

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
206	47207	12	12	26	12	34	This paragraph which is a critique on historic colonialization is drawn from examples from developed countries, may need to be supplemented by examples from developing worlds to be largely representative of indigenous peoples' situation. Such a large treatment of the impacts of historic colonialism, should also be balanced with a discussion on present day marginalization of indigenous peoples' by the nation-state. The idea as well that indigenous 'self-portrayal as victims' as merely a leftover of colonialism seems to diminish the fact that many of the very serious problems that face indigenous peoples is a direct result of the externally imposed policies that have not been in favor of indigenous peoples' now-recognized rights to self-determination of culture and identity. Finally the statement that indigenous peoples are actors on the international arena (questioning the connection of indigenous peoples to the local, place-based) seems to be at odds then with the statement in 12.12.41 that there is a lack of participation of indigenous peoples in international negotiations. (Jennifer Rubis, United Nations Educational, Scientific and Cultural Organization (UNESCO))	have added text to clarify the questions raised - there is a difference between being international actors and participate in international negotiations
207	47188	12	12	32	12	33	The statement that science is gaining legitimacy amongst indigenous peoples and is increasingly used by them is somewhat misleading. The main point made by Huntington (2011) is that indigenous knowledge is increasingly recognised by scientists, and it is the collaboration between scientific and indigenous knowledge holders that is on the increase in the Arctic. Huntington makes a number of observations and recommendations to enhance these emerging collaborative arrangements. (Douglas Nakashima, UNESCO)	Agree with the comment that the sentence can be understood that way which was not the intention. Statement has been changed to avoid the misunderstanding.
208	47206	12	12	32	12	33	"In the current post-colonial situation science is gaining legitimacy" -- phrasing implies that indigenous peoples do not accept science - not sure in what context this is derived from. (Jennifer Rubis, United Nations Educational, Scientific and Cultural Organization (UNESCO))	Statement has been changed to avoid this unintended meaning.
209	44852	12	12	32	12	34	Key references that support as well as expand on the issues raised in this line, are to be published in a Special Issue of the journal Policy Sciences on indigenous knowledge, expected to be finalised and published in the last quarter of 2012 (all four papers submitted to this special issue have been accepted, some undergoing minor corrections). (Carolina Adler, Swiss Federal Institute of Technology (ETH) Zurich)	Papers arrived too late for inclusion in SOD - will add to the next version if possible
210	50729	12	12	38	12	38	The phrase "high agreement," as calibrated uncertainty language, should be italicized. (Katharine Mach, IPCC WGII TSU)	Done
211	44901	12	12	43	12	43	specify the hazardous substances - it reads very oddly otherwise (John Morton, Natural Resources Institute, University of Greenwich)	Changed to persistent organic pollutants
212	50730	12	12	47	12	47	Given the description of agreement here, could a summary term for agreement and potentially also a summary term for evidence be assigned? (Katharine Mach, IPCC WGII TSU)	Fixed
213	35104	12	13	0	0	0	Section "12.4.1.2 Do Climate Change Impacts Increase Displacement or Restrict Mobility?" comment: I suggest including data from the annual reports from the Internal Displacement Monitoring Centre since they have been monitoring global (internal and external) displacement due to natural hazard-induced disasters, including climate-related disasters, over the past 4 years. Numbers for 2011 show that around 14,9 million people were displaced. Around 90 percent is due to climate-related disasters, and around 90 percent is in Asia. A few mega-disasters often displace huge amounts of people such as the floods in China in 2010. So far the numbers exclude people displaced in slow-onset disasters, such as drought, due to the challenges related to determining causality and forced displacement (rather than voluntary migration) in such cases. The reports are all available at www.internal-displacement.org (Vikram Kolmannskog, Norwegian Refugee Council)	An important issue. Text amended, but specific numbers for specific years not included.
214	52360	12	13	2	17	10	While this part on migration and on the mobility dimension of human security reviews and tries to assess a huge primarily journal based literature by Northern scholars, as in the previous parts the criteria for the assessment of the migration literature from the dual perspective of climate change as a cause and human security as an interpretative framework for the interpretation and assessment of the literature should be developed more clearly to overcome the impression of an additive compilation of the literature with little assessment. (Hans Guenter Brauch, Free University of Berlin)	Reordered and re-written to improve structure. Literature assessed in this section based on systematic searches of globally-available peer-reviewed literature. These searches were not amended or biased by geographic location of authors.
215	40469	12	13	7	0	0	rural to rural migration missing from the list (Betsy Hartmann, Hampshire College)	Amended text
216	35103	12	13	7	0	10	I wonder where this definition of migration has been found (references). If it is a definition that the IPCC is creating, I question why temporary, cross-border displacement is not also included. Although most displacement is likely to be internal - at least in the near future - the main legal challenges concern cross-border displacement. I believe it would be important to include this kind of mobility in the definition. I also question whether migration has to be "for a long time and over a significant distance." Some internally displaced persons live very close to their original place of residence. And some are displaced for a short period - depending on how successful the recovery and rehabilitation efforts are. In a chapter on human security, I believe it is important to not exclude groups that are potentially highly vulnerable and in need of protection. (Vikram Kolmannskog, Norwegian Refugee Council)	New definition of migration and terms provided.
217	46373	12	13	7	13	10	The definition is contradictory : line 7 mention "for a long time" but subcategory b in line 8 is "temporary". (Etienne Piguat, University of Neuchatel)	New definition of migration and terms provided.
218	54926	12	13	7	13	10	"There can also be rural to rural migration induced by climate variability and change and related implications (Ahmed et al., 2012). If this aspect is covered by b) (line #8), then it should add ... displacements due to a natural hazard, loss of livelihoods or erosion of food security, conflict, or a complex emergency ...". Citation: Ahmed, A.U., Hassan, S.R., Etzold, B., and Neelormi, S., 2012. Where the Rain Falls: Climate Change, Hunger and Human Mobility, Bangladesh Case Study, United Nations University (UNU), Bonn (in press). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	New definition of migration and terms provided.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
219	35674	12	13	8	13	8	the text gives the impression that "urbanization" is synonymous with rural-urban migration when in fact urbanization can occur as a result of population growth, boundary changes, as well as migration (Craig Johnson , University of Guelph)	New definition of migration and terms provided.
220	52361	12	13	8	13	34	On the nature of the evidence of climate change and migration primarily the work of Northern scholars dominates. (Hans Guenter Brauch, Free University of Berlin)	Literature assessed in this section based on systematic searches of globally-available peer-reviewed literature. These searches were not amended or biased by geographic location of authors.
221	46374	12	13	16	13	17	There is probably a first-hand source for this (IOM ? UN ?). By the way, Julca 2011 is not in the bibliography. (Etienne Piguet, University of Neuchatel)	Amended text
222	35675	12	13	19	13	20	the text suggests that "the scientific literature on the interaction of migration with climate change is limited in terms of future predictive models." Can the authors be more specific about the terms on which we can assess this statement? What are the principal lacunae? (Craig Johnson , University of Guelph)	Amended text to clarify
223	54927	12	13	21	13	22	"Please add citation, Ahmed et al., 2012." Citation: (Given before) (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Grey literature not accessed. Not included.
224	35676	12	13	21	13	24	the authors need to provide sources using statistical inference, sample surveys and "other modelling techniques" (Craig Johnson , University of Guelph)	Amended text to clarify
225	48685	12	13	29	13	32	the question of making predictions and of understanding the causality linkages between the impacts of climate change and migration are connected but not the same. It is ambiguous whether Piguet 's conclusions are about causality, or about methods for estimates. (Giovanni Bettini, Lund University)	Amended text to clarify
226	36056	12	13	30	13	33	A method should be established, with scenario modelling, as was established for "forecasting" temperature rises due to climate change. e.g., what would percent population changes look like (colour coded) if 1 percent, 5 percent or 10 percent of the population in northern latitudes of say 20 to 50 degrees moved (using recent migration path data) to 20-50 deg south? What if the source areas were forecast hotspots, using recent migration path data? A refinement to partly address "trapped" populations could be a factor related to affluence/GDP. This type of modelling is crucial to anticipating effects on human security as security depends on both population density and its rate of change. (Brad Field, GNS Science)	Good point in theory. De Sherbimmin et al. observations of 1970-2010 global migration included. No global forecasts available in literature
227	48243	12	13	36	13	42	There is also evidence in the opposite way. After an examination of some studies in different areas of the world, Black (2001) concludes that it is problematic to say in each case that environmental decline should represent the main reason for their conflicts and therefore, migrations. Some of those findings are briefly summarized as follows: 1. Black describes one study in Mexico (Schwartz and Notini 1995, cited in Black 2001) in which after the analysis of relevant statistics data will likely confirm that desertification is one of many factors contributing to migration from this region' (Black 2001). 2. Another study of emigration from the Senegal River Valley in Mali shows that "during the drought of the mid-1980s, migration actually declined rather than increased. In turn, there was a clear reason for this, since to migrate requires an initial cash investment to pay for travel and associated expenses on arrival, and an economic downturn reduces the ability of families to make such an investment" (Findley 1994, cited in Black 2001 p.7). 3. Black also argues that "within the Sahel, and indeed in other semi-arid regions, there is a tradition of migration that extends back over decades, and often centuries, and which ranges from nomadic pastoralism to long-distance trade, as well as the permanent relocation of individuals and families. In turn, these migrations, though rooted certainly in the difficult environmental conditions of the region, and the need to diversify income earning opportunities, are not necessarily related to a decline in those conditions" (Cordell et al., 1996; Rain, 1999, cited in Black 2001 p. 6). (Jason Garcia-Portilla, University of Sussex)	Reworded discussion and see Table 12.3.
228	48683	12	13	36	16	2	The opening sentence of sub-section 12.4.1.2 (lines 38-40, page 13) is somehow misleading. It is apparently in contradiction with the mixed evidence and nuanced messages of most of section 12.4 (see e.g. table 12-3; lines 52-54, page 13; lines 2-3 page 17: 'environment as triggers and not causes for migration decisions'). Such evidence seems to indicate that there is no straightforward or generally valid answer to the question "Do climate change impacts increase displacement or restrict mobility?". Therefore it would be clearer to start the subsection by briefly but clearly stating that different forms of ecological stress in different context have different impacts on migration/mobility (as discussed in the following of the section). (Giovanni Bettini, Lund University)	Reworded and re-ordered text.
229	48684	12	13	36	16	2	Section 12.4.1.2 is very dense and condensed, but quite hard to follow since it touches upon a series of themes without providing a clear scheme for ordering them. For instance, it is confusing in the way it mixes studies that discuss estimates/scenarios of future impacts and studies on past impacts of climatic changes on migration. Moreover, the succession of paragraphs seems at times chaotic (for instance the paragraphs on perceptions (lines 36-43, page 15) is very relevant but is disconnected from the surrounding paragraphs). It could be an option to have split it into several sub-sections. The section could be made more accessible through an explicit, more orderly and schematic structure (for instance, it could be structured in relation to methodologies of assessment, type of ecological stress, temporal and spatial character of the movement, etc). (Giovanni Bettini, Lund University)	Amended text includes re-ordering to make these points clearer.
230	50731	12	13	38	13	38	Given the description of evidence here, could a summary term for evidence (and potentially also a summary term for agreement) be assigned? (Katharine Mach, IPCC WGII TSU)	Reassessed throughout the section.
231	54096	12	13	40	13	42	Table 12-1 provides a somewhat broader set of mechanisms than is listed here. It would be useful to harmonize these points. (Michael Mastrandrea, IPCC WGII TSU)	Hamrmonised throughout text.
232	52362	12	13	41	13	43	In this sentence: The direct mechanisms ...health risks" there is now logical sequence from causes to effects (Hans Guenter Brauch, Free University of Berlin)	Reworded and amended text.
233	52363	12	13	45	14	2	It is not explained why only one of the four physical effects of climate change (weathe extremes) are discussed and the other three are ignored. (Hans Guenter Brauch, Free University of Berlin)	Reowrded and amended text.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
234	54928	12	13	48	13	48	"Please add citations Ahmed et al., 2007 and Ahmed et al., 2009." Citations: Ahmed, A.U., Neelormi, S., and Adri, N., 2007. Climate Change in Bangladesh: Concerns regarding Women and Special Vulnerable Groups, Centre for Global Change (CGC), in association with UNDP, Climate Change Cell, DFID and Bastob, Dhaka. Ahmed, A.U., Neelormi, S., Adri, N., Alam, M.S., and Nuruzzaman, K., 2009. Climate Change, gender and Vulnerable Groups in Bangladesh, Climate Change Cell, department of Environment, Dhaka, p. 88. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Not appropriate for discussion here. Gender issues now included in Box in 12.2
235	54929	12	13	50	13	52	"Please add citation Foresight, 2011." Citation: Foresight, 2011. Migration and Global Environmental Change, Final Project report, The Government Office for Science, London, p. 237. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Foresight now cited but in the appropriate place. The scientific evidence base of Foresight included at appropriate place.
236	54097	12	13	52	13	52	I suggest considering the framing of the description of Table 12-3 expressed here, given that the table caption states that direct causality is difficult to detect or infer in many studies. (Michael Mastrandrea, IPCC WGII TSU)	Text on causality omitted.
237	48664	12	13	53	13	54	So one of the impacts of climate change is to push them to places where the impacts are worse? This is counterintuitive to me. (Dáithí Stone, University of Cape Town)	Examples provided and evidence assessed with new Figure. Not counter-intuitive if environmental risks only one factor in migration decision-making.
238	39770	12	13	54	13	54	mistyped reference? (Peter Burt, University of Greenwich)	Amended text
239	46376	12	13	54	13	54	"Black et al. 2011a" and not "Balck et a." (Etienne Piguet, University of Neuchatel)	Amended text
240	50732	12	13	54	13	54	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Avoided this term here and clarified.
241	52800	12	14	0	14	0	Please note that there was a major mistake in Feng et al in PNAS which was pointed out by Auffhammer and Vincent (PNAS 2012). (Maximilian Auffhammer, University of California, Berkeley)	Reference to this study included with others of the same modelling results with numbers not reported in detail. The response paper noted, but now does not affect the meaning of the sentence.
242	39771	12	14	3	14	3	delete , after 'immobility' (Peter Burt, University of Greenwich)	Amended text
243	52364	12	14	9	14	18	Here results of modelling studies are noted and this is followed in the next paragraph by an empirical analysis of 8 Australian settlements, followed by a sentence on the pastoralists in the Sudan. It does not offer a systematic assessment based on clear questions and using precise criteria for their assessment. Systematic studies on environmentally-induced migration based on a comparative research design, eg. by Baechler and Spillmann (1996, 1998) and Homer-Dixon (1991, 1994, 1999) are lacking. An uncritical compilation of summaries of peer reviewed journal articles primarily in scientific journals published in OECD countries prevails. Generalizable conclusions are lacking drawn from inductive case studies done with different methodologies and research interests. (Hans Guenter Brauch, Free University of Berlin)	Text re-ordered to provide logical flow. Literature assessed in this section based on systematic searches of globally-available peer-reviewed literature. These searches were not amended or biased by geographic location of authors.
244	54098	12	14	14	14	16	The previous sentence states that Henry et al. 2004 found rural to rural migration in dry years rather than out-migration from rural areas. Please reconcile these statements. (Michael Mastrandrea, IPCC WGII TSU)	Amended text to clarify
245	54099	12	14	18	14	19	The consistent theme expressed here seems to need reconciliation with the conflicting evidence mentioned in lines 41 and 42. (Michael Mastrandrea, IPCC WGII TSU)	Amended text to clarify
246	54930	12	14	24	14	27	"Please add: Ahmed and Neelormi (2008) showed that, while a significantly large number of people in Bangladesh will be at risk of different hazards, the likelihood of outmigration will be much lower per annum compared to total population at risk." Citation: Ahmed, A.U. and Neelormi, S., 2009. Climate Change, Loss of Livelihoods and Forced Displacements in Bangladesh: Whither Facilitated International Migration?, Jointly published by Campaign for Sustainable Rural Livelihoods (CSRL) and Centre for Global Change (CGC), Dhaka. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Grey literature not accessed. Wording amended.
247	35105	12	14	29	14	33	For more on drought, displacement and human security in Africa, see Kolmannskog 2010, Climate Change, Human Mobility, and Protection: Initial Evidence from Africa, Refugee Survey Quarterly (2010) 29 (3): 103-119. There is also an upcoming publication presenting and exploring some experiences of drought and cross-border displacement as well as policy responses in connection with the 2011 drought and famine in Somalia, see Kolmannskog and Ramstad, Experiences of drought and displacement: Case study of Somalis displaced to Kenya and Egypt due to the 2011 drought, in Climate Change Monitoring and Vulnerability Assessment in Africa (book commissioned by Haramaya University, Ethiopia, scheduled to be published in 2012 by the CAB International publishers). (Vikram Kolmannskog, Norwegian Refugee Council)	Not accessed. On list for assessment in next round of reviews.
248	54101	12	14	33	14	33	Can the causes of this liberalization of movement be explained? (Michael Mastrandrea, IPCC WGII TSU)	Amended text to clarify
249	50733	12	14	41	14	41	Given the description of conflicting evidence here, could summary terms for evidence and agreement be assigned? (Katharine Mach, IPCC WGII TSU)	Text amended to better assess direct conflicting evidence.
250	54100	12	14	41	14	42	Can the nature of this conflicting evidence be explained briefly? (Michael Mastrandrea, IPCC WGII TSU)	Amended text to clarify

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
251	54931	12	14	53	15	0	"There should be a paragraph on gender dimensions of migration. - Due to uncertainties in destination areas, fear of loss of dignity, and lack of 'start up' financial capital, women are significantly less likely to migrate, though their male counterparts often migrate to avoid food insecurity (Ahmed et al., 2012). - Women only tend to move when 'kinship' at the destination provides assurance that they will be duly relocated with dignity in destination areas (Begum, 1999). - Male alone migrating from an impacted household leads to aggravated social vulnerability for women, who are left at home (Ahmed et al., 2009; Ahmed et al., 2012). - Kinship at the origin of migration assists women in a major way along with other family members when a male out-migrates to cope with food insecurity and livelihoods failure (Ahmed et al., 2012)." Citations used: Ahmed, A.U., Neelormi, S., Adri, N., Alam, M.S., and Nuruzzaman, K., 2009. Climate Change, gender and Vulnerable Groups in Bangladesh, Climate Change Cell, department of Environment, Dhaka, p. 88. Begum, A., 1999. Destination Dhaka: Urban Migration: Expectations and Reality, University Press Limited, Dhaka, 194 p. Citation: Ahmed, A.U., Hassan, S.R., Etzold, B., and Neelormi, S., 2012. Where the Rain Falls: Climate Change, Hunger and Human Mobility, Bangladesh Case Study, United Nations University (UNU), Bonn (in press). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Grey literature not accessed. Gender dimensions included in a new box in Section 12.2
252	35106	12	15	1	15	9	Regarding internal displacement and human security (incl Hurricane Katrina as a case), see Kolmannskog 2012. Dignity in disasters and displacement: Exploring law and policy on internal displacement in the context of climate change. In The Changing Environment for Human Security: New Agendas for Research, Policy, and Action. Earthscan. To be published. (Vikram Kolmannskog, Norwegian Refugee Council)	Book not yet published. Will access in next round of revision.
253	54103	12	15	1	15	9	It may be useful to coordinate with Chapter 19 for the discussion of structural causes of vulnerability, as Chapter 19 has a section that covers this in some detail. (Michael Mastrandrea, IPCC WGII TSU)	Discussion and liaison with Chapter 19 has led to better assessment of wider literature.
254	35677	12	15	2	15	2	is "livelihood of displacement" a typo? Is it meant to be "likelihood of displacement?" (Craig Johnson, University of Guelph)	Amended text
255	50734	12	15	6	15	32	"likely" on lines 23, 27, and 32; "unlikely" on line 6; "very likely" on line 31 -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Amended text to clarify
256	46377	12	15	8	15	9	The last point is surprising (overemphasized ?) : is it a consistent result that women are more affected by mental health problem in refugee camp ? (Etienne Piguet, University of Neuchatel)	Example omitted. Gender dimensions included in box in Section 12.2
257	50735	12	15	11	15	11	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Amended text
258	39772	12	15	11	15	12	why? (Peter Burt, University of Greenwich)	Amended text to clarify
259	35881	12	15	11	15	17	Reference could usefully be made to the study by Monalisa Chatterjee ("Case study: floods in Mumbai") of the impacts of te Mumbai monsoon flood of 2005. The case study provides empirical evidence about the effect of climate related events on the production of vulnerability and identifies the factors that are vital in disseminating losses among mrginal communities. Among these are the informal networks of migrants which can be of crucial importance to resilience and which vary with length of residence and region of origin. Monalisa Chatterjee, 'Case study: floods in Mumbai,' Chapter 9 in Lever-Tracy, C. (ed), 2010. Routledge Handbook of Climate Change and Society, Abingdon, UK and New York: Routledge. mi.chatterjee@yahoo.co.in (Constance Lever-Tracy, Flinders University of South Australia)	Example included at appropriate place.
260	50736	12	15	20	15	24	For these statements, the author team could consider further specifying the relevant climate/socio-economic scenarios considered and the time frames for projected changes. (Katharine Mach, IPCC WGII TSU)	Amended text
261	52365	12	15	20	15	25	Suddenly studies on the impact of sea-level rise and coastal erosion and agricultural productivity are linked in an additive manner . This combination of theoretical and empirical studies does not result in a systematic literature assessment where there are generalizable results. (Hans Guenter Brauch, Free University of Berlin)	Section re-ordered and reworded to give logical flow.
262	39773	12	15	26	15	26	space required between number and units (Peter Burt, University of Greenwich)	Amended text
263	39774	12	15	34	15	34	which cities (or where in the US)? (Peter Burt, University of Greenwich)	Amended text
264	54102	12	15	34	15	34	Affected because they live in areas that will be inundated? Please specify. (Michael Mastrandrea, IPCC WGII TSU)	Amended text to clarify
265	50737	12	15	47	15	52	If possible, it would be helpful to specify the relevant climate/socio-economic scenarios used for the 2080 projections. (Katharine Mach, IPCC WGII TSU)	Discussion of scenario studies amended to clarify.
266	40470	12	15	48	0	0	Important to acknowledge pull factors re Mexican migration; the 2008 economic crisis has led to a decrease in Mexican migration since unemployment rates are high in the US. (Betsy Hartmann, Hampshire College)	Discussion of US Mexico migration placed in context of other migration flows.
267	39775	12	16	7	16	15	four references is hardly 'much literature' and you only cite one reference to support the four areas (Peter Burt, University of Greenwich)	Amended text
268	54932	12	16	8	16	9	"Please add reference Foresight, 2011." Citation: (Given above). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Foresight now cited but in the appropriate place. The scientific evidence base of Foresight included at appropriate place.
269	52366	12	16	8	16	16	From a human security perspective migration and mobility are introduced as adaptation strategies. But it remains unclear from which human security perspective. Adaptation strategies also remain undefined. (Hans Guenter Brauch, Free University of Berlin)	Adaptation not required to be defined here - refer to IPCC glossary. Evidence base for this section has many strands.
270	54933	12	16	14	16	15	"Please ass citation Ahmed and Neelormi, 2008." Citation: (Given above). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Grey literature not accessed. Not included.
271	54934	12	16	15	16	15	"Please add reference Ahmed 2008." Citation: Ahmed, A.U., 2008. Assessment of Vulnerability to Climate Change and Adaptation Options for the Coastal People of Bangladesh, Practical Action, Bangladesh, Dhaka, p. 40. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Grey literature not accessed. Not included.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
272	46378	12	16	17	16	18	One could mention that experiences of relocations are also most often failures... (see Hugo 2011) (Etienne Piguet, University of Neuchatel)	Discussion of resettlement reworded and amended.
273	35678	12	16	17	16	25	This paragraph highlights the risks of relocating human populations in the context of climate change. I wonder whether it's worth incorporating some of the literature on "successful" resettlement, documented by Cernea and in a recent book by Peter Penz et al, "Displacement by Development." The paragraph also highlights the important threats posed to culture and tradition. Here it might be worth incorporating the work of Jane MacAdam and a recent article by Craig A. Johnson (2012) "Governing climate displacement: The ethics and politics of human resettlement," Environmental Politics Vol. 21, No. 2, March 2012, 308–328, which uses Nussbaum's capabilities approach to outline a resettlement model that recognizes and protects the cultural traditions of affected communities. (Craig Johnson , University of Guelph)	Literature on this topic widened including Johnson study cited.
274	46379	12	16	25	16	25	This § ends very abruptly : a syntesis is needed. (Etienne Piguet, University of Neuchatel)	Section re-ordered and reworded to give logical flow.
275	35107	12	16	29	0	0	"Box 12-3. The Evidence on the Existence of Environmental Migrants and International Policy to Protect Them". See the comment on 12.4.1.2. The displacement data could be included in this or another box of course. In addition to McAdam, other authorities in the field of climate change, displacement and international law include Kälin and Kolmannskog. Of Kälin's papers, I suggest reading and considering the following: Kälin and Schrepfer 2012, Protecting People Crossing Borders in the Context of Climate Change – Normative Gaps and Possible Approaches, Legal and Protection Policy Research Series, UNHCR. On cross-border displacement and international protection, see also Kolmannskog 2009, The Point of No Return, Refugee Watch, issue no 34. Arguing against changing the refugee definition or creating a new legal instrument, and for a multi-track approach, see Kolmannskog and Trebbi 2010, Climate Change, Natural Disasters, and Displacement: A Multi-Track Approach to Filling the Protection Gap, International Review of the Red Cross, issue no 879. On cross-border environmental displacement and European asylum law, see Kolmannskog and Myrstad 2009, Environmental Displacement in European Asylum Law, EJML 11(2009), p. 313; and Kolmannskog 2011, Finding Refuge from Wilder Weather: How Does European Asylum Law Meet the Challenge of Climate Change and Environmental Displacement, Note d'analyse d'Observatoire no 4, available at http://www.france-terre-asile.org/index.php?page=shop.product_details&flypage=flypage.tpl&product_id=150&category_id=6&option=com_virtuemart&Itemid=11&vmcchk=1&Itemid=11 There is also an upcoming publication: Kolmannskog 2012, Climate Change, Environmental Displacement and Int'l Law: Controversies, Consensus and Cosmopolitan Legality, Journal of International Development. In this paper there is some information about a recent initiative: The Nansen Initiative. Norway and Switzerland have given state pledges in the UN to start a state-driven consultation process to arrive at a consensus about some principles to protect people displaced by natural disasters across across borders. In this paper there is also some discussion of the role of the climate agreement: Paragraph 14(f) of the Cancun Agreements invites parties to enhance adaptation by undertaking "[m]easures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at the national, regional and international levels." (Vikram Kolmannskog, Norwegian Refugee Council)	The evidence base for the box on the debate on refugees has been updated. Some of the sources recommended here checked and are in line with the thrust of the existing peer reviewed literature. The forthcoming papers from Journal Int Development that come to the same conclusions as MacAdam and others will be accessed in next round of revision.
276	40471	12	16	32	0	0	Myers also enumerated so-called climate refugees. There should be an acknowledgement here of how the climate refugee concept gained such international cache despite the lack of substantive evidence. It's a cautionary tale that bears repeating since it is still very much in circulation. (Betsy Hartmann, Hampshire College)	Text makes clear that Myers numbers are heavily criticised but does not repeat the numbers. Reference to litature that discusses how the numbers remain in circulation (e.g. Gemenne) given.
277	48143	12	16	45	16	45	Biermann and Boas 2012 is missing in reference list. Most likely it is the following: F. Biermann, I. Boas, Climate Change and Human Migration: Towards a Global Governance System to Protect Climate Refugees, in: Scheffran et al., Climate Change, Human Security and Violent Conflict, Springer, 2012, pp. 291-300. (Jürgen Scheffran, University of Hamburg)	References now more accurate and complete.
278	52367	12	16	48	16	54	Climate induced migrants vs refugess is taken up here that should be moved to a definitional part to structure the argument in an analytic way. (Hans Guenter Brauch, Free University of Berlin)	Defintion of migration now opens the section 4. The defintion of refugee issue is largely political and legal issue (as reflected in literature) and posed here in a specific box.
279	52368	12	17	2	17	10	The legal and governance dimension is well taken but it is limited to "international displacement" which is one of several subcategories of international migration. (Hans Guenter Brauch, Free University of Berlin)	Defintion and opening section now makes clear domestic migration is largest proportion of all migration, while international migration has specific evidence base.
280	42071	12	17	14	17	18	Although is it not very common in the research on climate change and violent conflict, most social scientists distinguish between conflicts (clashes of somehow incompatible expectations, norms, interests etc.) and violent conflicts (those subset of conflicts which is resolved by violent means). Since the chapter is primarily concerend with climate change and violent conflict, I recommend to use the term "violent conflict" in the headline and the following paragraphs. (Tobias Ide, Research Group Climate Change and Security)	The text has been revised to incorporate this perspective, see para 1, section 12.5.1
281	52369	12	17	15	22	53	The linkage between climate change and conflict to the most extreme case of war is too limited. A typology of outcomes offered by Baechler and Homer-Dixon during the 1990s could have helped to structure the analysis but both authors are not cited. (Hans Guenter Brauch, Free University of Berlin)	The text has been revised to incorporate this perspective. These sources are dated, more recent studies advance the findings of these studies.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
282	35108	12	17	16	0	0	"12.5.1. Evidence on Conflict Associations with Climate Variability and Change" For some findings and reflections on natural disasters, human mobility and conflict on the Horn of Africa, see Kolmannskog 2010, Climate Change, Human Mobility, and Protection: Initial Evidence from Africa, Refugee Survey Quarterly (2010) 29 (3): 103-119. There is also an upcoming publication presenting and exploring some experiences of drought and cross-border displacement as well as policy responses in connection with the 2011 drought and famine in Somalia, see Kolmannskog and Ramstad, Experiences of drought and displacement: Case study of Somalis displaced to Kenya and Egypt due to the 2011 drought, in Climate Change Monitoring and Vulnerability Assessment in Africa (book commissioned by Haramaya University, Ethiopia, scheduled to be published in 2012 by the CAB International publishers). (Vikram Kolmannskog, Norwegian Refugee Council)	The first of these sources has been cited in the revised text, the latter was not available at the time of revision.
283	37074	12	17	16	18	44	12.5.1 is a very interesting and comprehensive compilation of the state of the discussion. It could profit from caving out the attribution of observed climate or weather related conflicts to climate change, or the role that climate change may have played in observed changes in climate variability. Coordination with Chapter 18 may be helpful, to ensure consistency (please refer to 18.4.4 for comparison) (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Coordination with chapter 18 has occurred. The issue of attribution to climate change has not been discussed as it is not mentioned in any study, the existing research uses evidence of past changes in climate, or to climate variability, none of which is attributed to human-induced climate change.
284	48144	12	17	18	17	19	add reference: "...is contested (Gleditsch, 2012, Scheffran et al. 2012b)": Scheffran, J., Brzoska, M., Kominek, J., Link, P.M. & Schilling, J. (2012): Climate change and violent conflict, Science, 336, pp. 869-871. (Jürgen Scheffran, University of Hamburg)	Suggested citation has been added.
285	40277	12	17	18	18	45	I was surprised not to see in this section a discussion of the difference between variables effected by long-term climate change, such as temperature, and quick change elements such as extreme events. The conflict theories that can be linked to these effects of climate change are very different. Also, in my view, this section grossly underestimates the importance of cultural and governance factors partially outlined in section 12.3 and 12.5.2.3. The emergence of open conflict from potential conflict depends on many factors, which are as of now poorly understood in the conflict literature. But at least the fact that there are intervening factors is clear and should be discussed in this section. For an indication of the potential linkages see e.g. Scheffran, J., Brzoska, M., Kominek, J., Link, P.M. & Schilling, J. (2012): Climate change and violent conflict, Science, 336, pp. 869-871. The way that this section is now composed it is both delinked from section 12.3 and does not correspond well with the conclusion on p. 25, line 36 that institutions are of integral importance. I agree with that statement but don't find it reflected in this section. The main reason for this is, in my view, that the quantitative literature on conflict has not yet come to grips with institutions. (Michael Brzoska, University of Hamburg)	The revised text in 12.5.1 distinguishes between short-term variables and longer term variables. There are few studies that discuss longer-term changes, but see paras 2 and 3 of 12.5.1 which discuss the relevant literature. Cultural and governance factors are now referred to as important variables in most paragraphs in 12.5.1. Suggested reference is cited.
286	42073	12	17	18	22	52	You should think about mentioning some criticism of discussing climate change as a source of violent conflict as articulated by e.g. Brzoska (2009), Hartmann (2010) or Salehyan (2008). Literature: Brzoska, Michael (2009): The securitization of climate change and the power of conceptions of security. In: Sicherheit und Frieden, 3/2009, 137-145. Hartmann, Betsy (2010): Rethinking Climate Refugees and Climate Conflict: Rhetoric, Reality and the Politics of Policy Discourse. In: Journal of International Development 22(2), 233-246. Salehyan, Idean (2008): From Climate Change to Conflict? No Consensus Yet. In: Journal of Peace Research 45(3), 315-326. (Tobias Ide, Research Group Climate Change and Security)	The issue of securitisation is discussed in section 12.1, section 12.5.1 begins by acknowledging many of the concerns raised by critics.
287	42074	12	17	18	22	52	You are right that violent conflict associated with climatic change is much more likely to occur in the global South and within (rather than between) states. Maybe you should also mention more explicitly that there is an increasing consensus in the literature that climate change is more likely to lead to small-scale, intercommunal violence rather than to full-blown civil wars (e.g. Melander/Sundberg 2011; Theisen et al. 2011 as well as the contributions to the Journal of Peace Research 49(1) in 2012). Literature: Melander, Erik/Sundberg, Ralph (2011): Climate Change, Environmental Stress, and Violent Conflict - Tests introducing the UCDP Georeferenced Event Dataset. Presented at 51. ISA annual convention, Montreal. Theisen, Ole Magnus/Holtermann, Helge/Buhaug, Halvard (2011): Climate Wars? Assessing the Claim That Drought Breeds Conflict. In: International Security 36(3), 79-106. (Tobias Ide, Research Group Climate Change and Security)	The text has been revised to include this perspective more explicitly, see para 7 of section 12.5.1.
288	54104	12	17	19	17	19	Check the use of the word "between" here. While just one word, the alternative "among" would imply something different. Is the point that there are differences in results among different models and among different non-model-based research approaches? (Michael Mastrandrea, IPCC WGII TSU)	The text has been revised to include this perspective.
289	40275	12	17	25	0	0	Contrary to what is said here, the analysis of the causes of civil conflict and war is not well established. The literature does not agree on much. For instance, regime type is not strongly established. The low degree of consent in the academic literature is clearly spelt out in the quoted review (Blattman and Miguel). as well as in other recent work by Sambanis, Fearon, Hegre and others. (Michael Brzoska, University of Hamburg)	The text has been revised to include this perspective, areas of agreement are discussed in para 8 of section 12.5.1.
290	42075	12	17	25	12	30	To my knowledge, the most consensual studies on the drivers of civil war are those of Hegre/Sambanis (2006) and Dixon (2009), also due to their meta-study-character. I wonder why they are not cited here. Including them would, for instance, imply that you add "history of violence" as a risk factor for civil war onset (this is nearly consensual in the literature but remains unmentioned in the report) and rethink your reference to "youth bulge" as a driver of violent conflict. (Tobias Ide, Research Group Climate Change and Security)	The text has been revised to include this perspective, these and others are cited, see para 8 of section 12.5.1.
291	50738	12	17	25	17	25	Given the description of "well-established" analysis, the author team should consider assigning calibrated uncertainty language to characterize its degree of certainty in associated conclusions. (Katharine Mach, IPCC WGII TSU)	The text has been revised to include this perspective.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
292	52370	12	17	26	17	45	The lack of definitional precision and systematization results that one paragraph on climate change and civil war is followed by another on archaeological literature on the climate-induced collapse of civilizations. The fundamental difference between climate variability during the Holocene and the human-induced or anthropogenic climate change in the Anthropocene (Crutzen 2000, 2011) is not even noted. (Hans Guenter Brauch, Free University of Berlin)	The text has been revised to accommodate a more logical flow in the argument - see section 12.5.1. Crutzen reference is not pertinent to the discussion.
293	40472	12	17	29	0	0	The relationship between youth bulges and security is contested; it's certainly not a given as this sentence suggests. (Betsy Hartmann, Hampshire College)	The text has been revised to include this perspective, youth bulges are not a generally agreed cause of violence and are now not referred to.
294	47262	12	17	30	0	0	I suggest replacing "will" with "may" in the sentence starting with "In effect, climate variability and change..." or the reference to Buhaug et al. should be removed. (Halvard Buhaug, Peace Research Institute Oslo, PRIO)	The text has been revised to include this perspective.
295	43100	12	17	30	17	32	Add reference to Koubi et al. (2012) who empirically test for interactions of climatic conditions and institutions/regime type. In particular they examine the causal pathway linking climatic conditions to economic growth and to armed conflict, and argue that the growth–conflict part of this pathway is contingent on the political system. While their empirical analysis does not produce evidence for the claim that climate variability affects economic growth, still they find some support for the hypothesis that non-democratic countries are more likely to experience civil conflict when economic conditions deteriorate. Koubi, Vally, Thomas Bernauer, Anna Kalbhenn and Gabriele Spilker. "Climate variability, economic growth, and conflict," Journal of Peace Research 49(1): 113-127, 2012. (Vally Koubi, University of Bern)	We have added the suggested citation in the chapter.
296	48686	12	17	30	17	32	the sentence "In effect, ... conflict" is too strong. There are many studies that make problematic such a straightforward formulation. For instance, several point to the need for appreciating the multi-scalar mechanisms at play, as well as the need to articulate more the chains through which environmental stresses lead to institutional disruption. The chapter's author are of course aware of these aspects, and could therefore avoid such a strong formulation that seems to allude to an existing consensus on a straightforward linkage of the kind 'climate change will cause conflict' – there are almost no voices in the literature denying that the impacts of climate change can have detrimental impacts on institutional solidity, but the step from such detrimental effects to conflict depends on many variables that are not determined by climate change (Giovanni Bettini, Lund University)	The text has been revised to include this perspective.
297	37073	12	17	34	17	42	For the analogous evidence approach, It would be interesting to mention how and if human actions (such as land use change) have contributed to those shifts in weather patterns, and if they were comparable to any a) observations/expected impacts from climate change; b) societal conditions that can still be found (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	The text has not been revised to include this perspective, there is no explanation of this in the literature on climate change and violent conflict.
298	37306	12	17	34	17	49	While I welcome the authors' discussion of historical examples of climate change and conflict, I would question the decision to focus on ancient examples with poor evidence, especially when we have much more closely analyzed case studies from the early modern "Little Ice Age." I would point in particular to the following highly respectable peer-reviewed history publications: Parker, Geoffrey. "Crisis and Catastrophe: The Global Crisis of the Seventeenth Century Reconsidered." American Historical Review 113 (2008): 1053–79; Brook, Timothy. The Troubled Empire: China in the Yuan and Ming Dynasties. Cambridge: Harvard Belknap, 2010; and White, Sam. The Climate of Rebellion in the Early Modern Ottoman Empire. New York: Cambridge University Press, 2011. The last of these, in particular, demonstrates specific links between historical climate change and internal conflict under conditions of rural poverty. (Samuel White, Oberlin College)	The text has been revised to include this perspective, these studies are referred to in para 3 of section 12.5.1.
299	43101	12	17	35	17	36	Reference to Buckley et al 2010 is missing (Vally Koubi, University of Bern)	The text has been revised to include this perspective.
300	39776	12	17	40	17	40	where were these civilisations located? (Peter Burt, University of Greenwich)	The text has not been revised to include this perspective, this is unnecessary supplementary information.
301	48687	12	17	42	17	42	the sentence "The precise causal ... , owing to data limitations" is problematic. As acknowledged elsewhere in the chapter, statistical methods have an inherently limited ability to shed light on causal relationships. So that if such studies cannot elucidate on causality, it is not only because of data limitations, but also for the inherent limitations of the methodologies they employ – to try explaining an historical process only by statistical correlations is in any case quite a desperate enterprise. (Giovanni Bettini, Lund University)	The text has been revised to include this perspective.
302	48145	12	17	42	17	43	After "owing to data limitations" add: "(Scheffran et al. 2012b). New research is on the way as new databases on low-level violence, nonstate conflicts, and geo-referenced spatiotemporal patterns become available." (Jürgen Scheffran, University of Hamburg)	The text has been revised to include this perspective.
303	40276	12	17	46	0	0	The statement here are quite different from the earlier statements on page 3, line 9. The statistical evidence is mixed. In addition to the literature on droughts and internal war quoted here, I think that Theisen, Holermann and Buhaug in International Security is an important work that should be cited. Theisen, Ole Magnus; Helge Holtermann & Halvard Buhaug, 2012. 'Climate Wars? Assessing the Claim that Drought Breeds Conflict', International Security 36(3): 79–106. (Michael Brzoska, University of Hamburg)	The text has been revised to include this perspective, the suggested citation has been added.
304	43102	12	17	46	17	46	Add reference to Gartzke (2012) who explores the relationship between climate change, liberal processes fueled by industrialization (development, democracy, international institutions), and interstate conflict. Gartzke argues and finds evidence that economic development, which drives climate change, also lowers the risk of interstate conflict. Gartzke, Erik (2012) Could climate change precipitate peace? Journal of Peace Research 49(1): 177–191. (Vally Koubi, University of Bern)	The text has been revised to include this perspective, the suggested citation has been added.
305	50739	12	17	46	17	46	Given the description of evidence here, could a summary term for evidence (and potentially also a summary term for agreement) be assigned? (Katharine Mach, IPCC WGII TSU)	The text has been revised to include this perspective.
306	42076	12	17	46	17	49	I do not understand why Hsiang et al. (2011) are mentioned in a paragraph about international war and climatic factors, since they refer to internal wars. (Tobias Ide, Research Group Climate Change and Security)	The text has been revised to include this perspective.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
307	47263	12	17	48	0	0	The reference to Hsiang et al. does not fit well here; it concerns intrastate conflict, not wars between states. (Halvard Buhaug, Peace Research Institute Oslo, PRIO)	The text has been revised to include this perspective.
308	43103	12	17	48	17	48	Spell out ENSO: the El Niño/Southern Oscillation. Note that the link to global warming is tenuous and questions have been raised about the robustness of this finding. (Vally Koubi, University of Bern)	ENSO not spelled out, this should be included in the acronyms to the report. The text has been revised to include reference to studies that contest this finding.
309	36057	12	17	48	17	49	Since ENSO affects human security, and is predictable (roughly, in the short term) then this provides a way of predicting when migration might peak. (Brad Field, GNS Science)	The text has not been revised to include this perspective, there is no explanation of this in the literature on climate change and violent conflict / migration.
310	48665	12	17	48	17	49	I can't parse the second half of the sentence here. Note that the effect was during the El Niño (event) phase of ENSO, and not all ENSO events. (Dáithí Stone, University of Cape Town)	The text has been revised to include this perspective.
311	42077	12	17	51	18	9	There are other studies on the link between environmental/climate change and violent conflict using not only lower rainfall (or higher temperatures), but also reduced freshwater availability, increased rainfall variability, land degradation or natural disasters as the independent variable. Furthermore, there are several studies which do not confirm a link between drought and civil war, which goes unmentioned in this paragraph (see Ide 2012: 13 for an overview as well as my comment on page 3, line 8-9). Literature: Ide, Tobias (2012): Climate Change: Source of Conflict or Promoter of Peace. Presented at AFK-Nachwuchstagung, Villigst, 21.-22.3.2012. URL: http://www.afk-web.de/fileadmin/afk-web.de/data/nachwuchs/P4_Ide_Tobias_-_Paper_u_Abstract_-_Climate_Change_as_a_Source_of_Conflict_or_Promoter_of_Peace.pdf (03.08.2012). (Tobias Ide, Research Group Climate Change and Security)	The text has been revised to include this perspective.
312	52371	12	17	52	18	10	This is followed by a review of the rather sceptical quantitative literature. (Hans Guenter Brauch, Free University of Berlin)	The text has been revised to include this perspective.
313	47267	12	18	0	0	0	Somewhere in this section, more could be said about how climatic conditions might give rise to violent conflict of various types. Is it because of competition over dwindling resources? Lack of government reach in the rainy season? Volatilities in opportunity costs of violent behavior? Traditions and rites? If resource scarcity is important, then future climate change is likely to increase conflict risk in vulnerable regions. If it's more about relative opportunities and constrains that follow seasonal cycles, then it is less obvious that climate change per se will have much influence on future conflict dynamics. (Halvard Buhaug, Peace Research Institute Oslo, PRIO)	These are good suggestions, but the text has not been revised to include this perspective as it is not obvious in the literature at this stage. Word limits also constrain the addition of a discussion of this kind (which could not be concise).
314	47264	12	18	1	0	0	While the presentation of the climate variability-civil war literature is much more balanced now than in the zero-order draft, it is still odd that contrasting findings are not cited (even though methodological uncertainties are acknowledged). For example, Burke et al. is referred to as finding a positive and significant temperature effect, but the text fails to mention that that study also contrasts the negative correlation between rainfall and civil war cited in the previous sentence. See also Theisen, Holtermann, and Buhaug's recent article in International Security 2011/12 vol 36 no 3 "Climate Wars? Assessing the Claim that Drought Breeds Conflict", which fails to uncover robust effects of rainfall anomalies on civil war risk. (Halvard Buhaug, Peace Research Institute Oslo, PRIO)	The text has been revised to include this perspective, the suggested citation has been added.
315	43104	12	18	1	18	4	Miguel et al (2004), Hendrix and Glaser (2007) and Burke et al (2009) examine the direct impact of climatic conditions (precipitation and temperature) on the onset and incidence of civil conflict. Consequently the statement "Where other risk factors are extremely low (as in wealth democracies), the impact of rainfall is virtually zero" is wrong. (Vally Koubi, University of Bern)	The text has been revised to include this perspective, references to sources that stress the importance of other risk factors has been added.
316	40473	12	18	1	18	44	This section could benefit from more presentation of anthropological research challenging the rainfall/conflict paradigm and examples of greater cooperation, not conflict, in times of stress. See, for example, Derman et al, eds., Conflicts over Land and Water in Africa, Oxford: James Currey, 2007; Q. Gausset et al, eds., Beyond Territory and Scarcity: Exploring Conflicts over Natural Resource Management, Stockholm: Nordiska Afrikainstitutet, 2005; articles in the (Betsy Hartmann, Hampshire College)	The text has been revised to include this perspective - see para 1 section 12.5.1, the Gausset citation has been added.
317	43105	12	18	4	18	5	You should also add 'measures of climate variability' (Vally Koubi, University of Bern)	The text has been rewritten.
318	50740	12	18	4	18	36	There are a number of places throughout this passage of text ready author team might consider presenting calibrated uncertainty language to characterize its degree of certainty in conclusions: for example, where "significant uncertainty" is described on line 4, where "general agreement" is described on line 11, where "a well-established body of evidence" is described on line 27, where "some indirect evidence" is described on line 33, and where "strong theoretical reasons" are described on line 36. (Katharine Mach, IPCC WGII TSU)	The text has been revised to include this perspective.
319	39777	12	18	5	18	9	to some extent this contradicts the text on page 17, lines 46-49 (Peter Burt, University of Greenwich)	The text has been revised to include this perspective.
320	47266	12	18	9	0	0	Buhaug is spelled incorrectly. (Halvard Buhaug, Peace Research Institute Oslo, PRIO)	The text has been revised to include this perspective.
321	47265	12	18	11	0	0	I do not agree with the first half of the sentence: there is NO general agreement in the literature that there is an association between climate variability and "causal mechanisms of conflict"; see reviews by Deligiannis (International Studies Review, 2012), and Bernauer, Böhmelt and Koubi (Environmental Research Letters, 2012) for further documentation of the lack of scholarly consensus on this issue. The second point, about the need for more theoretical work, is well taken. (Halvard Buhaug, Peace Research Institute Oslo, PRIO)	The text has been revised to include this perspective.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
322	43106	12	18	11	18	14	Add reference to Bernauer et al (2012). Bernauer et al. Identify the most important research challenges in climate change-conflict nexus o be: a) the lack of issue coding. That is, existing studies do not explicitly identify whether the issue over which a violent conflict broke out is related to environmental changes. b) data on other types of conflict events, such as demonstrations, riots and various forms of communal violence not involving state actors, are missing. Presently, conflict data such as the UCDP/PRIO Armed Conflict Dataset and the Correlates of War (COW) data, only capture rather high-intensity conflict events. c) better data for differentiating local environmental conditions is needed. Researchers often patch together various data from different localities in a country to construct a national environmental-pressure average, which in turn is correlated with conflict data. Because environmental conditions may vary strongly across different locations within countries, such averaging is likely to lead to biased and potentially wrong results. d) existing empirical research does not adequately deal with endogeneity among conflict and environmental changes. That is, the majority of studies empirically measures environmental changes in terms of water scarcity, soil erosion, land degradation, or deforestation. e) most existing studies focus primarily on a direct link between environmental changes and conflict. Conditional effects that could result from economic and political factors have been discussed in the qualitative case studies literature. Bernauer, Thomas, Tobias Böhmelt and Vally Koubi "Environmental changes and violent conflict," <i>Environmental Research Letters</i> 7(1): 015601, 2012. (Vally Koubi, University of Bern)	The suggested citation has been added. However this perspective has not been discussed as the methodological challenges of research of this kind is beyond the immediate scope of the chapter.
323	52372	12	18	12	18	24	This paragraph shifts back to the linkage between climate variability and conflict where it remains unclear which role the anthropogenic factor has played and may play in the future. (Hans Guenter Brauch, Free University of Berlin)	The text has been revised to include this perspective.
324	43107	12	18	18	18	20	Add reference to Koubi et al. (2012), who Explicitly argue and test of the mediating effect of political institutions on conflict (Vally Koubi, University of Bern)	The suggested citation has been added.
325	43110	12	18	20	18	23	Add reference to Tir and Stinnett (2012) who find that water scarcity increases the risk of militarized conflict, but that institutionalized agreements can offset the risk. Tir, Jaroslav and Douglas M Stinnett (2012) Weathering climate change: Can institutions mitigate international water conflict? <i>Journal of Peace Research</i> 49(1): 211–225. (Vally Koubi, University of Bern)	The suggested citation has been added.
326	54105	12	18	20	18	23	Could this statement be the basis for the construction of an assessment finding? (Michael Mastrandrea, IPCC WGII TSU)	Included in ES point, and FAQ.
327	50741	12	18	22	18	41	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	This suggestion has been incorporated
328	39778	12	18	25	18	25	change 'reduced' to 'reduces' (Peter Burt, University of Greenwich)	This suggestion has been incorporated
329	42078	12	18	25	18	34	You are absolutely right about the connections between climate change and macro-economic factors on the one hand, and between macro-economic factors and violent conflict on the other land. However, where does this leave us if only some (and not a large majority) of large-N studies are able to detect a direct link between climate change and violent conflict (e.g. Buhaug 2010; Theisen et al. 2011; Theisen/Buhaug 2012)? In addition, there are also studies disputing the claim of climate change leading to economic turbulences (Koubi et al. 2012). Literature: Koubi, Valley/Bernauer, Thomas/Kalbhenn, Anna/Spilker, Gabriele (2012): Climate variability, economic growth, and civil conflict. In: <i>Journal of Peace Research</i> 49 (1), 113-127. Buhaug, H., & Theisen, O. M. (2012). On Environmental Change and Armed Conflict. In J. Scheffran, M. Brzoska, H. G. Brauch, P. M. Link & J. Schilling (Eds.), <i>Climate Change, Human Security and Violent Conflict: Challenges for Societal Stability</i> (pp. 43-55). Berlin: Springer. Theisen, O. M., Holtermann, H., & Buhaug, H. (2011). Climate Wars? Assessing the Claim That Drought Breeds Conflict. <i>International Security</i> , 36, 79-106. (Tobias Ide, Research Group Climate Change and Security)	A more nuanced discussion has been added, see paras 8 -10 of section n12.5.1
330	43108	12	18	27	18	29	Add reference to Slettebak (2012) who, using multivariate methods and employing a global sample covering the p[eriod from 1950 to the present, finds that countries that are affected by climate-related natural disasters face a lower risk of civil war. Rune T. Slettebak (2012) Don't blame the weather! Climate-related natural disasters and civil conflict. <i>Journal of Peace Research</i> 49(1): 163–176. (Vally Koubi, University of Bern)	The suggested citation has been added.
331	39779	12	18	28	18	29	again, slightly contradictory of previous text (Peter Burt, University of Greenwich)	This suggestion has been incorporated
332	39780	12	18	32	18	32	change 'thr' to 'the' (Peter Burt, University of Greenwich)	This suggestion has been incorporated
333	42079	12	18	36	18	37	There are not only theoretical reasons, since there are (as you mention for instance on page 17, line 51 - page 18, line 9) also robust empirical evidence supporting a link between climate change and violent conflict. (Tobias Ide, Research Group Climate Change and Security)	The text has been revised to include this perspective.
334	43109	12	18	36	18	37	Please note that Theisen et al (2012) did not find any relationship between drought and civil conflict. Theisen, Ole Magnus, Helge Holtermann and Halvard Buhaug (2011–12) Climate wars? Assessing the claim that drought breeds conflict. <i>International Security</i> 36(3): 79–106. (Vally Koubi, University of Bern)	The text has been revised to include this perspective.
335	52373	12	18	37	18	45	Here again conflict is limited to internal war but many human security consequences are totally unrelated to this extreme and least likely outcome. (Hans Guenter Brauch, Free University of Berlin)	This topic is discussed elsewhere in the chapter.
336	47765	12	18	38	18	40	This statement would be best supported by a citation since there are many risk factors for internal war (Marcus King, George Washington University)	The text has been revised to include this perspective.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
337	48688	12	18	40	18	42	the line of reasoning underlying the fragment is questionable. In the word 'hence', there is a logical step that, although crucial, remains unexpressed: "and hence climate change will elevate the risk of internal was through the negative impact on well-being". I do not see, from the previous part of the sentence, what justifies the 'hence'. Climate change will negatively impact the well-being of people, even in conflict prone areas. But what proves that this leads to increased conflicts? It remains unclear how the fact that the poor get poorer (it is widely recognised that the impacts of climate change are going to be 'sensitive' to class, gender etc, so that the ones most severely affected are likely to be the vulnerable strata of the population - what chapter 13 identifies as 'the poorest of the poor'.) leads to increased conflict. (Giovanni Bettini, Lund University)	The text has been substantially rewritten and this perspective has been included.
338	52374	12	18	50	20	7	Here individuals, communities and the states are introduced as reference objects and the focus is on the narrow pillar of human security as freedom from fear with a violence, conflict and war-related agenda. However, the different scales of community conflict over scarce resources (water, soil), cross-border clashes and international conflicts and wars are not systematically discussed. This part is not clearly structured with regard to scale, intensity of conflict and violence. Again a large body of literature is summarized in an additive way with a low degree of a systematic analysis to obtain generalizable conclusions. (Hans Guenter Brauch, Free University of Berlin)	Communal conflicts are discussed distinctly in para 7 of section 12.5.1. Section 12.5.1 has been restructured to more logically present the findings of evidence from research on climate change and violent conflict.
339	39781	12	18	52	18	52	change 'geographic' to 'geographical' and move 'effectively' to end of line to remove split infinitive (Peter Burt, University of Greenwich)	The text has been substantially rewritten and this perspective has been included.
340	50742	12	19	4	19	4	Given the description of evidence here, could a summary term for evidence (and potentially also a summary term for agreement) be assigned? (Katharine Mach, IPCC WGII TSU)	The text has been substantially rewritten, the operative phrase here no longer exists.
341	50743	12	19	8	19	8	"High confidence," as calibrated uncertainty language, should be italicized. (Katharine Mach, IPCC WGII TSU)	This suggestion has been incorporated
342	42080	12	19	28	19	44	In my eyes, it is a great strength of the chapter that it also assesses the impact of violent conflict on vulnerability in general and natural resources in particular. You should think of also including the study of UNEP (2009: 15-18) which is very informative on systemizing these links and underlying it with examples. Literature: UNEP (2009): From Conflict to Peacebuilding: The Role of Natural Resources and the Environment. Nairobi: UNEP. (Tobias Ide, Research Group Climate Change and Security)	We have not chosen to include this citation as its findings are largely incorporated in the peer-review sources cited in this section.
343	46380	12	19	37	19	38	Not very clear : what does "financial losses" exactly means here ? (Etienne Piguet, University of Neuchatel)	This suggestion has been incorporated
344	39782	12	19	48	19	48	edit for sense: remove , after 'poverty' and insert , after 'which' (Peter Burt, University of Greenwich)	This suggestion has been incorporated
345	52375	12	20	10	20	34	The concept of social capital is introduced without a clear definition. These four paragraphs offer a lot of detailed information but do not offer a systematic assessment responding to clear criteria. (Hans Guenter Brauch, Free University of Berlin)	The text has been revised to include this perspective.
346	35109	12	20	18	20	24	"12.5.2.2. Conflict and Social Capital" Traditional conflict resolution mechanisms may be well adapted to a harsh environment, but can be destroyed or weakened by major conflicts, such as in Somalia. See Kolmannskog 2010, Climate Change, Human Mobility, and Protection: Initial Evidence from Africa, Refugee Survey Quarterly (2010) 29 (3): 103-119. (Vikram Kolmannskog, Norwegian Refugee Council)	The text has been revised to include this perspective.
347	52376	12	20	37	21	7	These four paragraphs add on detailed fragments of literature but do not offer a criteria-based assessment- the first focuses on local and state level institutions, the second on chronic political conflict , the third deals with fragile institutions and the fourth with effect of conflict on institutions (Hans Guenter Brauch, Free University of Berlin)	The text has been revised to include this perspective.
348	39783	12	20	42	20	43	move 'effectively' to after 'Strip' to remove split infinitive and improve sense/clarity (Peter Burt, University of Greenwich)	This suggestion has been incorporated
349	52377	12	21	10	21	50	The literature is summarized in five paragraphs that do not reflect a logic or systematic argument. (Hans Guenter Brauch, Free University of Berlin)	The text has been revised to include this perspective.
350	40476	12	21	12	21	50	This is an important section. The authors might want to include articles on green grabs in The Journal of Peasant Studies, Vol. 39, No. 2, April 2012, particularly the introduction by James Fairhead, Melissa Leach, and Ian Scoones, "Green Grabbing: a new appropriation of nature?" The notion of "economies of repair" is relevant to the discussion. (Betsy Hartmann, Hampshire College)	The suggested reference has been added.
351	44902	12	21	15	21	15	"play into political bargaining" is obscure (John Morton, Natural Resources Institute, University of Greenwich)	This suggestion has been incorporated
352	37070	12	21	24	21	25	Statement could be more precise, and should be backed by citations, e.g. Roberts and Schlenker, 2010; Wright, 2011; von Braun, 2009; Abbott, 2008; or IPCC SRREN, Chapter 2 (Chum et al, 2011), or crossreference to e.g. Ch7.2.2 (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	The text has been revised to include this perspective.
353	45258	12	21	24	21	25	references missing (Marcus Kaplan, German Development Institute)	The text has been revised to include this perspective.
354	41533	12	21	28	21	28	Terms "REDD" and "REDD+" are appeared to be inconsistently used throughout the draft. Full spells are also inconsistent: e.g. in 12.5.3., Reduced Emissions from Deforestation and Forest Degradation (REDD), in 13.4.1.2., Reduction of Emissions from Deforestation and Forest Degradation (REDD+), in 16.5.3., reducing emissions from deforestation and degradation (REDD+), and in 20.2.2., REDD (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries). (Yoshiyuki Kiyono, Forestry and Forest Products Research Institute)	The text has been revised to include this perspective.
355	39784	12	21	36	21	36	reference style odd (Peter Burt, University of Greenwich)	The text has been revised to include this perspective.
356	50744	12	21	44	21	44	If the description here of evidence as "limited" is per the uncertainties guidance for authors, the term should be italicized. (Katharine Mach, IPCC WGII TSU)	The text has been rewritten.
357	39785	12	21	45	21	47	poor English. Edit for clarity (Peter Burt, University of Greenwich)	The text has been rewritten.
358	50745	12	21	47	21	47	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	The text has been rewritten.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
359	42081	12	22	1	22	52	I appreciate your discussion of environmental peacebuilding, since this line of research is often ignored in the debate on climate change and violent conflict. You could improve this chapter by including the literature on disaster diplomacy, which specifies conditions under which natural disaster (climate- as well as non-climate-related) could catalyze diplomatic negotiations and trust building between communities/states (e.g. Kelman 2006; Kelman 2011; Kingsbury 2007). Literature: Kelmann, Ilan (2006): Acting on disaster diplomacy. In: Journal of International Affairs 59 (2), 215-240. Kelmann, Ilan (2011): Disaster Diplomacy: How Disasters Affect Peace and Conflict. London: Routledge. Kingsbury, Damien (2007): Peace Processes in Aceh and Sri Lanka: A Comparative Assessment. In: Security Challenges 3 (2), 93-112. (Tobias Ide, Research Group Climate Change and Security)	Mention of the potential for disasters to catalyse peace has been added, see para 9 section 12.5.1, reference from Kingsbury reference has been added, further citations were not considered necessary as there is not the space to explain this issue in greater detail (this is discussed in the IPCC SREX).
360	42082	12	22	1	22	52	One should also mention the circumstances under which shared environmental problems are likely to (fail to) lead to peacebuilding as spelled out by, e.g., Carius (2006: 12-19) Feil et al. (2009) and, specifically for water, Wolf et al. (2005). Literature: Carius, Alexander (2006): Environmental Peacemaking, Environmental Cooperation as an Instrument of Crisis Prevention and Peacebuilding: Condition for Success and Constraints. Berlin: adelphi. Feil, Moira/Klein, Diana/Westerkamp, Meike (2009): Regional cooperation on environment, economy and natural resource management, How can it contribute to peacebuilding? Synthesis report. Brüssel: Initiative for Peacebuilding. Wolf, Aaron/Kramer, Annika/Carius, Alexander/Dabelko, Geoffrey (2005): Managing Water Conflict and Cooperation. In: Worldwatch Institute (ed.): State of the World 2005: Redefining Global Security. Washington DC: Worldwatch, 80-95. (Tobias Ide, Research Group Climate Change and Security)	This is a level detail we have not been able to enter into into this section given constraints on length.
361	52378	12	22	2	22	53	The classic comparative case study projects on environmental security by Baechler and Spillmann or Homer-Dixon could have offered criteria for a theoretically based structuring of the disperse empirical evidence. The authors obviously are not very familiar with the literature on peace-building. (Hans Guenter Brauch, Free University of Berlin)	These sources are dated, more recent studies advance the findings of these studies
362	39786	12	22	10	22	18	lots of good information, but no supporting references (Peter Burt, University of Greenwich)	The text has been rewritten, references now added.
363	44903	12	22	10	22	18	This whole paragraph needs citations (John Morton, Natural Resources Institute, University of Greenwich)	The text has been rewritten, references now added.
364	39787	12	22	23	22	23	supporting reference for FEWS required (Peter Burt, University of Greenwich)	The text has been rewritten, references now added.
365	44904	12	22	28	22	39	This should probably be placed lower, with the last para of p.23 (John Morton, Natural Resources Institute, University of Greenwich)	The text has been rewritten.
366	50746	12	22	29	22	29	It would be beneficial to clarify the geographical scope of this research--were river basin riparian states considered for the globe as a whole or for a more restricted region? (Katharine Mach, IPCC WGII TSU)	This suggestion has been incorporated
367	40477	12	23	1	0	0	In this section it would be useful to refer to some of the ways key players -- the Pentagon, NATO, UK government -- have conceived of climate change as a national security issue, particularly in regard to "climate conflict." This is missing from the chapter in general. It seems to me there needs to more presentation of the dominant climate conflict narrative in order to show its drawbacks. Why did it gain hold, even at the IPCC? The way human security is being articulated by military interests also bears looking at. For example, (Betsy Hartmann, Hampshire College)	This is a level detail we have not been able to enter into this section given constraints on length. Human security critiques of the state security framing are explicitly covered to make the general point about actors and interests. The human security chapter of IPCC was approved by governments for the first time in AR5.
368	40478	12	23	1	0	0	see the recent Report of the Defense Science Board Task Force on Trends and Implications of Climate Change and National and International Security, October 2011, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, Washington, DC. Is there a contradiction when military interests adopt human security frameworks? What is the downside of human security as a potentially securitizing discourse; will it facilitate greater military control over humanitarian operations related to climate change? The U.S. military's focus on climate conflict in Africa comes at a moment of increasing competition between the U.S. and Chinese for the continent's energy resources. (Betsy Hartmann, Hampshire College)	This is a level detail we have not been able to enter into this section given constraints on length.
369	52379	12	23	2	24	22	It is unclear why the concept of national security is introduced while the debate on climate change as a issue of international security both at the UN (UNSG 2009) and in the EU (EU 2008, 2008a) are ignored. The concept of national security evolved in the US in the post WW II period. The policy debate is limited to the climate change impacts on national security only. However, as legitimate as this may be, human security is not about geopolitics and thus this section confuses the reference object of the individual, of communities and humankind that poses the threat due its its consumption of fossile energy. Different items of the national security debate are introduced that are totally unrelated to the human security approach and may go beyond the mandate for this chapter. But the geopolitical implications of sea level rise for smallIslands states whose very existence are threatened by anthropogenic climate change are not discussed. (Hans Guenter Brauch, Free University of Berlin)	Literature includes national security as connected with human security and connections between multiple referent objects of security
370	39154	12	23	3	23	14	The geopolitical consequences of a warming, crowded and increasingly resource depleted planet will be enormous, and they already are. This passage pays tribute to the fact, but it is too brief and does not mitigate the overall 'apolitical' character of the report. I think the report is far too shy of politics and vested interest, which is the main driver of CC policy. For example, massive amounts of agricultural land in developing countries are being bought up by wealthy nations in anticipation of food shortages - why is this geopolitical maneuvering not being mentioned in the chapter on food security? And why, in this chapter, is it not acknowledged that more than a hundred thousand people have been killed in resource wars over the last decade in Iraq and Lybia, with Iran next in line? Or are you only willing to mention wars the west is not (directly) involved in, eg Darfur? [Section 19.4.2.2 is somewhat more explicit on violence arising from extreme resource competition] (Thomas Reuter, University of Melbourne)	text included for multiple dimensions of geopolitical consequences. Text included "land grabbing" in 12.5.2
371	54935	12	23	5	23	6	"The case of Bangladesh may also be added here." Citation: MOEF, 2009. Bangladesh Climate Change Strategy and Action Plan 2009, Ministry of Environment and Forest (MOEF), Dhaka, 76 p. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Case of Bangladesh included in multiple sections of the chapter.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
372	35679	12	23	5	24	21	I wonder whether the authors want to incorporate some of the earlier discussion about migration and displacement, possibly reflecting upon the geopolitical challenge of accommodating displaced populations through burden sharing, immigration policy and/or the international refugee regime. Whether climate change will lead to increases in international migration is of course difficult to predict, but it would be interesting to reflect upon the ways in which and extent to which principles of burden sharing need to be incorporated into future discussions about the geopolitical impact of climate change on migration, immobility and displacement. (Craig Johnson, University of Guelph)	Migration included in earlier sections of the chapter
373	40278	12	23	5	24	21	I would like to see added to this section some discussion of the effects the security-climate change discourse has had on security actors, in particular armed forces. Contrary to some earlier fears there is little evidence of "militarization" of climate change. However, some militaries are concerned and are funding major studies as well as investing into climate mitigation. Disaster relief is seen as a major potential "growth" area for armed forces. I discuss these issues in Brzoska, Michael 2012: Climate Change as a Driver of Security Policy Jürgen Scheffran, Michael Brzoska, Hans Günter Brauch, Peter Michael Link, Janpeter Schilling, (eds.) (2012): Climate Change, Human Security and Violent Conflict: Challenges for Societal Stability, Berlin, Springer Verlag, Hexagon Series Vol. 8., pp. 165-184 and Brzoska, M. 2012: Climate change and the military in China, Russia, the United Kingdom, and the United States Bulletin of the Atomic Scientists March/April 2012 68: 43-54, (Michael Brzoska, University of Hamburg)	Inserted cite in discussion of securitization
374	42083	12	23	8	23	10	Large-scale North-South migration as well as the multiplication of safe havens and recruiting grounds for terrorists are other prominent examples which are perceived by states as geopolitical concerns associated with climate change. (Tobias Ide, Research Group Climate Change and Security)	Migration included in earlier sections of the chapter
375	40565	12	23	9	23	9	replace "geo-engineering" with "geoengineering" to ensure consistency and facilitate cross-referencing and text searches (David Santillo, Greenpeace Research Laboratories)	revised the spelling to geoengineering through the chapter
376	50747	12	23	18	0	0	Box 12-4. In further development of this box, the author team may wish to consider cross-referencing chapter 28 as appropriate. (Katharine Mach, IPCC WGII TSU)	incorporated a cross-reference to Chapter 28.
377	48745	12	23	20	0	0	Something to consider regarding Box 12-4. Evidence on Security and Geopolitical Dimensions of Climate Change in the Arctic. Arctic ice melt will open the Northern Sea Route and Transpolar Route and become an attractive ocean transit route between European and Asian destinations. Similarly, less ice in the Canadian Arctic may open a seasonal maritime commercial route between the US East Coast and Asia. These conditions offer global shippers commercially viable options for cutting sailing distances and avoiding tolls for services through the Panama Canal. Panama Canal's revenues are about 7% of the country's GDP. A loss in revenue may have economic consequences for Panama, creating vulnerability and risk to Human Security in that country (as defining in the Chapter) as an indirect impact of climate change. (Jonathan Davis, Science Applications International Corporation)	Changes in shipping patterns included in box which is now 12-5
378	50748	12	23	32	23	35	For this statement, the author team should consider cross-referencing findings from the working group 1 contribution to the 5th assessment report. Additionally, for the described projections, it would be helpful to indicate the relevant climate/socio-economic scenarios--for example, is this outcome projected across scenarios of climate change? (Katharine Mach, IPCC WGII TSU)	The issue of consistency with WG1 findings will be addressed at the final draft, though many of the studies we cite in this chapter use older climate scenarios to drive the analysis.
379	54936	12	23	48	23	49	"The two other major international rivers, Ganges and Brahmaputra may be added here." (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	incorporated the suggested examples.
380	54937	12	23	49	23	51	"Please add references Ahmed, 2005 and Choudhury et al., 2005." Citations: Ahmed, A.U., 2005. Adaptation Options for Managing Water Related Extreme Events Under Climate Change Regime: Bangladesh Perspectives, in M.M.Q. Mirza and Q.K. Ahmad (eds.), Climate Change and Water Resources in South Asia, Balkema Press, Leiden, pp. 255-278. Choudhury, A.M., Neelormi, S., Quadir, D.A., Mallick, S. and Ahmed, A.U., 2005. Socio-economic and Physical Perspectives of water Related Vulnerability to Climate Change: Results of Field Study in Bangladesh, Science and Culture, 71(7-8): 225-238. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	We have not chosen to include this citation as its findings are largely incorporated in the peer-review sources cited in this section.
381	39788	12	24	10	24	11	Geo-engineering is not just manipulation of the atmosphere. It can apply to any human-induced change of the Earth system. I hesitate to use Wikipedia as a reference, but see the definition section under http://en.wikipedia.org/wiki/Geoengineering . If geo-engineering is to be used in the climate context specifically here a much clearer definition, and perhaps discussion of potential confusion, is required. A good review of geo-engineering from a climate change perspective is provided by: Fox, T.A. and Chapman, L. (2011). Engineering geo-engineering. Meteorological Applications, 18:1 1-8. (Peter Burt, University of Greenwich)	revised to utilize Chapter 20 definition of geoengineering.
382	46419	12	24	10	24	21	The term "geoengineering" is used here to only refer to atmospheric techniques whereas in Chapter 6 pages 73-74 and Chapter 20 pages 15-16 it is used in a broader meaning. A more consistent approach is needed. (Chris Vivian, IMAREST)	revised to utilize Chapter 20 definition of geoengineering.
383	47766	12	24	14	24	14	reference is not listed on the reference page (Marcus King, George Washington University)	Cite no longer included in chapter
384	54106	12	24	24	0	0	Please be sure to maintain a clear separation between climate change-induced changes in extremes and extremes themselves in this section. Lines 40-43 is an example that may mix the two, while lines 28-31 separate more clearly. In addition, please check generalized statements about changes in risk that may be based on projections from specific regions. For example, lines 32-33 seem to assume that all areas prone to flooding and landslides will see an increase in such events, which may not be the case globally. (Michael Mastrandrea, IPCC WGII TSU)	Revised and added text to clarify
385	52380	12	24	25	25	4	The discussion of critical infrastructure and state capacity is crucial but its impact on human security should also have been addressed. (Hans Guenter Brauch, Free University of Berlin)	revised to include a more explicit discussion of the human security link.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
386	43489	12	24	43	24	44	Could add this reference: Koetse, Mark J., and Piet Rietveld. 2009. "The Impact of Climate Change and Weather on Transport: An Overview of Empirical Findings." <i>Transportation Research Part D: Transport and Environment</i> 14 (3) (May): 205–221. doi:10.1016/j.trd.2008.12.004. (Oliver Lah, Wuppertal Institute for Climate, Environment and Energy)	Not accessed. On list for assessment in next round of reviews.
387	54107	12	24	44	24	48	Please clarify the mechanisms by which these changes would occur, as this is currently unclear. (Michael Mastrandrea, IPCC WGII TSU)	Revisions made and one example added to help clarify.
388	50749	12	24	46	24	46	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	revised to remove the term likely as it was not intended to be a probability assessment.
389	39789	12	24	50	25	3	supporting reference required (Peter Burt, University of Greenwich)	Cites added for revised related text in 12.6.2
390	50753	12	25	6	0	0	Section 12.7. In further development of this section, the chapter team should consider assigning calibrated uncertainty language to indicate its degree of certainty in conclusions presented. Additionally, it would be helpful to provide further references to chapter subsections supporting conclusions characterized here. (Katharine Mach, IPCC WGII TSU)	Calibrated uncertainty language used wherever summary statements are offered
391	52381	12	25	7	26	14	Gaspar's suggestion that human security facilitates conversations across the boundaries of diverse policy communities is noted but it could have better been implemented in the whole text. The conclusion that climate change is not yet the primary risk of human security depends on the definition based on a systematic assessment of both the political and the scientific debates. To discuss issues that are framed as national security issues as human security problems may be a misnomer. The lack of definitional precision and systematic analysis has resulted in a text that neither reflects the global debate on human security nor on the linkages with climate change. (Hans Guenter Brauch, Free University of Berlin)	Gaspar's point only need making one - the chapter's task is to review the literature on climate change and human security, this is an important finding but not one that is so frequent in the literature that it warrants repeating throughout the text. The definition has been clarified, as noted in responses to comments on section 12.1
392	39790	12	25	8	25	8	change 'show' to 'shows' (Peter Burt, University of Greenwich)	Text has been changed
393	40479	12	25	18	0	0	Similar to the comment above, human security can allow crossing of policy boundaries, but which boundaries should be crossed and which shouldn't? It may be, per my first comment, that a stronger definition of human security is needed that challenges militarism and unequal power relations in order to protect the concept from cooption. (Betsy Hartmann, Hampshire College)	The definition has been clarified, as noted in responses to comments on section 12.1
394	48146	12	25	25	25	25	add reference: "feedbacks between ... violent conflict (Scheffran et al. 2012c)." Scheffran, J., Link, P.M. and Schilling, J. (2012): Theories and models of climate-security interaction, in: J. Scheffran, M. Brzoska, H.G. Brauch, P.M. Link & J. Schilling (eds.), <i>Climate Change, Human Security and Violent Conflict</i> , Springer, pp. 91-132. (Jürgen Scheffran, University of Hamburg)	We have chosen not include this citation as it does not directly address the issue of feedbacks between each of these elements of human security (for example, culture).
395	50750	12	25	36	25	37	The author team could consider assigning calibrated uncertainty language to this finding to indicate its degree of certainty in the conclusion. (Katharine Mach, IPCC WGII TSU)	Calibrated uncertainty language added.
396	37071	12	25	41	25	44	Sentence is incomplete/typo makes it unclear (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Text has been changed
397	39791	12	25	44	25	44	references missing (Peter Burt, University of Greenwich)	References have been added.
398	50751	12	25	46	25	49	The author team could consider assigning calibrated uncertainty language to characterize this emerging consensus. (Katharine Mach, IPCC WGII TSU)	Calibrated uncertainty language added.
399	37075	12	26	0	0	0	Box 12-5 is very good. Suggest to move to 12.5 for context, else insert a reference in 12.5.1 and 12.5.2 to that Box! (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Reference to the box added in section 12.5.1
400	50752	12	26	1	26	52	"likely" on lines 1, 50, 52 -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Text has been changed
401	36058	12	26	13	26	13	Conversely, inappropriate "or inadequate" climate policy....? (Brad Field, GNS Science)	Text has not been changed, inadequate may not be maladaptive in the same way that inappropriate policy responses are.
402	48746	12	26	19	0	0	In each subsection examples of support for the contention of climate change impacts on vulnerable people is given in detail and at length, while counter arguments are often explained in more general terms and grouped together in a single paragraph in the subsection (with the exception of Box 12-5. Climate and the Multiple Causes of Conflict in Darfur). More discussion (perhaps using Boxes) on the examples of where climate change has not led to increased vulnerability and risk, and why that might be the case, would strengthen the balance in the Chapter's assessment. (Jonathan Davis, Science Applications International Corporation)	The chapter's task is to review the literature on climate change and human security, there is very little literature about cases where climate change does not affect human security (it is almost all about cases where it does) - and so there is very little evidence that can be added.
403	39792	12	26	24	26	35	Is the reference cited here only in relation to the last bullet point (as written) or does it refer to the whole list? If the latter, it needs to appear on line 24 after 'including'. If not, additional supporting references for each point are required. Also, using 'including' implies things are missing from the list! (Peter Burt, University of Greenwich)	Referencing changed.
404	40279	12	26	24	26	35	A number of important considerations are missing here. One, emphasized by country experts is the extension of state power to the Darfur region beginning in the late 1990s. While largely outside of the reach of state prior to that time, the government began to set up police and military stations which led to increasing tensions with all local groups. When conflicts escalated, the government increasingly allied itself with "Arab" armed groups, often subsumed under the term of "Janjaweed". A second issue is the link to the peace agreement for South Sudan. This led to some population movements, it also installed the fear among Darfurians, that deals where made to their exclusion. The discussion here should at least mention these political dynamics. For literature see the writings by Alex de Waal e.g. in <i>Darfur : a short history of a long war</i> , With Julie Flint, New York : Zed Books, 2005, and Gerard Prunier, e.g. <i>Darfur: The Ambiguous Genocide</i> , Cornell University Press, Ithaca 2005. Ithaca (New York), Cornell University Press, 2005 (Michael Brzoska, University of Hamburg)	The text has not been changed: the box is constrained by length and the full range of causes and chronology of the conflict cannot be included.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
405	47767	12	27	17	27	22	The possibility of rural to rural migration is not considered/emphasized here or in section 12.4.1.1 The period of the "Dustbowl" in the U.S. during the 1930s may be a good example of a time period where economic and environmental factors conspired to cause rural to rural migration. See for example McLemen, R. and B. Smith (2004) "Climate Change, Migration and Security" Canadian Security and Intelligence Service, Commentary No. 86.Ottawa, Page 7 (Marcus King, George Washington University)	Migration section 12.4.1.1 is now clarified to include a definition of migration which helps. There is less emphasis on rural to rural migration since the major trend is urbanisation, but migration to agricultural frontiers and to places where migrants have low environmental knowledge now acknowledged in Section 4. Text at this point in the chapter now re-written, so less relevant here.
406	46381	12	27	18	27	18	FAQ 12.2 There is an implicit distinction here between "climate" and "economic" factors but the question is often if climate change will impact on economic factors that will then impact on migration... (Etienne Piguet, University of Neuchatel)	FAQ on migration substantially rewritten, so comment no longer applies, though point is well taken.
407	47268	12	27	26	0	0	The response to FAQ 12.3 is overly vague and while this implicit uncertainty reflects a lack of definitive knowledge it is unclear how a reader (regardless of background) will get anything from reading that CC impacts will potentially contribute to circumstances in which conflict will emerge in places already prone to such risks... Why not simply state that current understanding of climate-conflict linkages does not allow a satisfactory answer: we don't know. (Halvard Buhaug, Peace Research Institute Oslo, PRIO)	FAQ has been reworded and the text that answers it has been changed.
408	52382	12	27	34	46	35	While the list of references are comprehensive they are not always representative: Authors from OECD countries listed in the Scopus database (maintained by Elsevier) may have resulted in a bias. Major peer reviewed books (monographs, edited book) that are listed in the Book Citation Index (Web of Science) were ignored. There is a bias towards journals on the environment, e.g. Global Environmental Change is cited 49 times Security Dialogue only once, where much of the global scientific debate on human security has occurred. There seems to be an overemphasis on self-citations by one lead author whose work is referred to 45 times, while authors from Africa, Asia, Latin America and non-English speaking scientific cultures in Europe are lacking or underrepresented (see the long list of peer-reviewed literature on human security that was ignored). In the SOD the IPCC guidelines on peer reviewed literature should be given more emphasis. to provide a "balanced and comprehensive assessment of the latest scientific findings" reflecting a "geographical representation" to avoid a primarily Northern-centred literature selection. (Hans Guenter Brauch, Free University of Berlin)	In order to ensure consistency and agreement about scientific evidence, we used a systematic approach in our literature search methodology. The choice of terms reflected themes and subjects listed in the zero-order draft and synonyms. We used these terms to do a search in SCOPUS, to literature in 'social sciences and humanities' and it included articles from 2000.
409	39155	12	29	3	29	37	It is just a little bit too self-promoting for a lead author to cite 15 of his own publications, no doubt there is a mountain of other literature on this topic (though of course the only literature every academic is sure to be aware of is the stuff they write themselves!). (Thomas Reuter, University of Melbourne)	This has been changed.
410	40475	12	29	38	0	0	Unfortunately, local and state level institutions can also play a negative role in terms of appropriating environmental resources as well. (Betsy Hartmann, Hampshire College)	Negative role of states in human security acknowledged in Section 12.6, while this nuance is not incorporated into the FAQ, the point is well taken and reflected in main text.
411	48147	12	43	39	43	39	replace publication year 2011 by 2012 (Jürgen Scheffran, University of Hamburg)	References updated.
412	48666	12	47	0	0	0	Concerning Kilimanjaro, Chapter 22 states that the glacier itself is insignificant as a water reservoir, and that the destruction of forest around the mountain (which they attribute to drought-induced fire) is much more important for water security, so your chapters are inconsistent. In any case, perhaps a better example here would be glacial retreat in the western US (Barnett et alii 2008, Science, 319, 1080). (Dáithí Stone, University of Cape Town)	Additional details not included in this draft. The further example of US water scarcity to be considered for final draft.
413	48667	12	47	0	0	0	The caption refers to impacts of climate variability and change, but most of the evidence from observations of impacts from single meteorological (or climate, if you prefer) events, which may easily be unrelated to climate variability or change (they may be related, but I don't think we know for your examples). (Dáithí Stone, University of Cape Town)	Comment not clear on change suggested.
414	50754	12	47	0	0	0	Table 12-1. As a minor point, there are a few instances of the word "likely" that the author team should consider further. If the term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	The term is not used per the guidance, therefore not italicized.
415	54938	12	47	0	47	0	"Under Agriculture and Food Security, column on evidence from observation: Reference missing: Mubaya et al., 2012." (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Done.
416	54939	12	47	0	47	0	"Under Water Stress and Scarcity, please check references" : Mirza and Ahmed, 2003; NCVST, 2009. Citations: Mirza, M.Q. and Ahmed, A.U., 2003. Climate Change and Water Resources in South Asia: Vulnerabilities and Coping Mechanisms - A Synthesis, in A. Muhammed (ed.), Climate Change and Water Resources in South Asia, Asianics Agro Dev International, Islamabad, pp. 202-228. NCVST, 2009. Vulnerability Through the Eyes of the Vulnerable: Climate Change Induced Uncertainties and Nepal's development Predicaments, Nepal Climate Vulnerability Study Team (NCVST), ISET, Kathmandu, p. 95. Column highlighting projections: Please add Himalayan South Asia: A significant number of population inhabiting in the Himalayas faces a problem of year-round availability of water (Mirza and Ahmed, 2003). Citation: Mirza, M.Q. and Ahmed, A.U., 2003. (Already given above). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	These are reference to books. In order to ensure consistency and agreement about scientific evidence, we used a systematic approach in our literature search methodology. The choice of terms reflected themes and subjects listed in the zero-order draft and synonyms. We used these terms to do a search in SCOPUS, to literature in 'social sciences and humanities' and it included articles from 2000. This search also guaranteed literature appeared in peer reviewed journals.
417	54940	12	47	0	47	0	Table 12-1: "Under Destruction of Homes and Properties. For Floods: Please add references Ahmed 2005; Ahmed, 2008. For Sea Level Rise: add loss of lives (Ahmed and Neelormi, 2007), for Sea Surface Temperature rise, increased low formation and loss of lives of marine artisan fishermen (Ahmed and Neelormi, 2007; Ahmed, 2008). Citations: Ahmed, A.U., 2005 (Cited before). Ahmed, A.U., 2008 (Cited before). Ahmed, A.U. and Neelormi, S., 2007. Livelihoods of Coastal Fishermen in Peril: In Search of Early Evidence of Climate Induced Adverse Effects in Bangladesh, Campaign for Sustainable Rural Livelihoods (CSRL) and Centre for Global Change (CGC), Dhaka. Other citations are quoted before." (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	In order to ensure consistency and agreement about scientific evidence, we used a systematic approach in our literature search methodology. The choice of terms reflected themes and subjects listed in the zero-order draft and synonyms. We used these terms to do a search in SCOPUS, to literature in 'social sciences and humanities' and it included articles from 2000. This search also guaranteed literature appeared in peer reviewed journals.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
418	52383	12	47	0	48	0	Table 12.1: This table offers a summary of the environmental journal literature on the evidence of observations and projections but no assessment in terms of human security using specific criteria of an agreed human security concept that could be the referent for such an analysis. Thus it remains unclear why and to which extent climate variability and change affect "basic needs and livelihoods undermining human security". (Hans Guenter Brauch, Free University of Berlin)	The goal of the table is to summarize evidence of effects of climate variability on variables listed in the table.
419	36055	12	48	0	0	0	Table 12-1 does not seem to mention re-distribution of Human Capital as an issue. I think it should, at least in passing, with a note to see Table 12-3. (Brad Field, GNS Science)	The linkages between human capital and migration and mobility addressed in Section 12.4 extensively.
420	54108	12	48	0	0	0	Table 12-1: In the last bullet of the projections entry for Human capital: Health, please clarify what is meant by "very severe" impacts in some Asian countries. (Michael Mastrandrea, IPCC WGII TSU)	Direct quote from the conclusions of the paper. But will be clarified in next round of revisions.
421	54941	12	48	0	48	0	Table 12-1: "Under Livelihood Assets, please add: Household livelihood assets such as livestock may be disposed in times of crop failures (Choudhury et al., 2005)." Citation: Choudhury, A.M. ... 2005 (given above). (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	In order to ensure consistency and agreement about scientific evidence, we used a systematic approach in our literature search methodology. The choice of terms reflected themes and subjects listed in the zero-order draft and synonyms. We used these terms to do a search in SCOPUS, to literature in 'social sciences and humanities' and it included articles from 2000. This search also guaranteed literature appeared in peer reviewed journals.
422	54942	12	48	0	48	0	Table 12-1: "Under Human Capital, please add in column under evidence from observation ... nutritional erosion due to acute food insecurity, especially among women in areas where land becomes inaccessible due to prolonged inundation (Ahmed et al., 2007)." Citation: Ahmed, A.U., Neelormi, S. and Adri, N., 2007. Entrapped in water World: Impacts of and Adaptation to Climate Change Induced Water Logging for Women in Bangladesh, Centre for Global Change (CGC), Dhaka. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	In order to ensure consistency and agreement about scientific evidence, we used a systematic approach in our literature search methodology. The choice of terms reflected themes and subjects listed in the zero-order draft and synonyms. We used these terms to do a search in SCOPUS, to literature in 'social sciences and humanities' and it included articles from 2000. This search also guaranteed literature appeared in peer reviewed journals.
423	54943	12	48	0	48	0	Table 12-1: "Regarding Education (under Human Capital) Please add ...inability to go to school since school compounds are also inundated and examinations are held on roads, as in southwestern water logged areas of Bangladesh". (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Was not added as there was no reference to confirm.
424	37069	12	49	0	0	0	table 12-2: I do not understand the placement of the entry "english language phenomenon" in the first column - column header suggests that this should be reserved for (physical) climate change dimensions? (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Table has been fully revised
425	44905	12	49	0	0	0	Table 12.2: I am troubled by the language in the first cell - it assumes the audience will be familiar with linguistic relativism (John Morton, Natural Resources Institute, University of Greenwich)	Table has been fully revised
426	50755	12	49	0	0	0	Table 12-2. For the 3rd entry in the 1st column, the author team might wish to consider framing, potentially adopting a more conditional characterization of potential changes in flood occurrence. Please consider and potentially cross reference Chapter 3 of the special report on extremes; the working group 1 contribution to the 5th assessment report; and chapter 3 of the working group 2 contribution. (Katharine Mach, IPCC WGII TSU)	Table has been fully revised
427	53946	12	49	0	0	0	Table 12-2: This table's caption needs to explain the table further and headers should be clarified. How is it organized? For instance, the first cell under core climate change dimensions reads: "An English language phenomenon – not easily understood in all languages and Cultures" "English a dominant language. " Aren't these supposed to be under cultural dimensions? (Yuka Estrada, IPCC WGII TSU)	Table has been fully revised
428	54109	12	49	0	0	0	Table 12-2: This table needs further development. Currently, the relationship between columns in each row is unclear and each row needs a more cohesive theme. (Michael Mastrandrea, IPCC WGII TSU)	Table has been fully revised
429	52384	12	49	0	49	0	Table 12.2 Cultural dimension of human security. This table applies criteria (hindering, adaptation, action, response). But there is hardly any reference on the social science discussion on the environmental and climate dimension of human security. This peer reviewed literature exists but was not reviewed. (Hans Guenter Brauch, Free University of Berlin)	Table has been fully revised
430	50756	12	50	0	0	0	Table 12-3. For examples presented throughout this table, the author team should carefully consider and indicate as appropriate the timeframe for each. In a number of cases, it is difficult to determine, most basically, if the example pertains to an observed or projected outcome. Where projections are presented, the author team should also consider concise presentation of the relevant climate/socio-economic scenario. Additionally, on page 51, for the example in the top right corner of the page, it would be helpful to clarify what is meant by "the event"--Katrina presumably? Similarly, does the example on that same page that is 3rd from the bottom in the left column also pertain to Katrina? (Katharine Mach, IPCC WGII TSU)	This table now thoroughly revised. Perhaps not quite meeting standards of clarifying all scenarios used for projection studies, but will attempt to iterate again through next version.
431	54110	12	50	0	0	0	Table 12-3: It is an important note that direct causality is difficult to detect or infer in many studies. If it is possible in some of the studies, it would be useful to specify this in the table. (Michael Mastrandrea, IPCC WGII TSU)	Deleted reference to causality in caption
432	52385	12	50	0	51	0	Table 12.3: contrary to table 12.2 here as in table 12.1 an assessment in terms of the criteria of human security is lacking. Most of the cited and reviewed literature does not have any reference to the human security debate. If criteria would have been developed in the introductory and definitional part (12.1) these criteria could have been used to assess the environmental literature with these criteria. At present this is not achieved. Again as in many parts of this chapter the wealth of detailed information has not been condensed into generalizable assessments in terms of human security. (Hans Guenter Brauch, Free University of Berlin)	Reference to human security debate not relevant for individual papers - this is the evidence base for the direction of how environment affects migration. Table re-formulated to now make clearer the types of climate change impacts and the evidence for both increased and decreased mobility associated with each

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
433	48668	12	51	0	0	0	Re Senegal, I guess this is not completely at odds with the caption, but by “associated” I have been assuming you meant “driven or facilitated by some weather/climate influence” and I think all of the other entries in the table fit with that. (Dáithí Stone, University of Cape Town)	Causality statement taken out of caption. Most examples rewritten to clarify.
434	48669	12	51	0	0	0	Re Tuvalu, the title for this column starts “evidence for” but this is evidence against. (Dáithí Stone, University of Cape Town)	Table reformulated and entries clarified including this one.
435	36059	12	51	0	51	0	Table 12-3 last row, column 2. On Tuvalu, should it read “climate change is not perceived as a cause...”? (Brad Field, GNS Science)	Tuvalu entry rewritten.
436	54944	12	51	0	51	0	Table 12-3: "Column # 2. Please add: Bangladesh: The zero growth rate in population in coastal Barisal division in Bangladesh compared to national growth rate of 1.3% between 2001 and 2011 clearly indicates very high rates of out-migration from areas highly sensitive to climate variability and change (Ahmed et al., 2012b)." Citation: Ahmed, A.U., Asaduzzaman, M., and Neelormi, S., 2012. Assessment of Major Eco-system Based Climate Change Related Problems in Bangladesh and Future Trends, Jointly published by CARE Bangladesh and Centre for Global Change (CGC), Dhaka (in press). "Please also add ...the women population of Satkhira district of southwestern Bangladesh appeared higher than that of males, unlike any other district, may be attributed to climate variability and water diversion driven effects in the region (Ahmed, 2008)." Citation: Ahmed, A.U., 2008. Desakota Phenomenon Observed in Satkhira_Khulna_Jessore_Dhaka Corridor in the Southwestern Bangladesh, Part II F1 Case Study, in Desakota Study Team, Re-imagining the Rural-Urban Continuum, Istitute for Social and Environmental Transition (ISET), Kathmandu. (AHSAN UDDIN AHMED, Centre for Global Change (CGC))	Grey literature not accessed. Not included. But examples given show the direction of mobility change, including examples from Bangladesh.
437	37076	12	52	0	0	0	Fig 12-2 is not clear: e.g., does migration not increase with temperature? What are the interlinkages of the 4 categories? Overlapping, okay, but what does that mean? This is a conceptual figure, but I can not see the concept. Besides, Font is too small too read. (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Figure now redrawn and caption rewritten to hopefully make the concepts clearer.
438	52386	12	52	0	52	0	Figure 12.1: it remains unclear what this figure is supposed to explain and to contribute to an assessment of climate change and human security linkages. (Hans Guenter Brauch, Free University of Berlin)	Figure makes the point that human development and conflict are related and post-conflict societies are particularly vulnerable. Figure redrawn to make clearer and text amended.
439	53947	12	52	0	0	0	Figure 12-1: An explanatory caption must be provided. What are human development index and governance effectiveness and how should they be interpreted? Other details may also help understand this figure further. For instance, what is each dot representing? What kind of time frame is represented? (Yuka Estrada, IPCC WGII TSU)	Figure has been redrawn.
440	54111	12	52	0	0	0	Figure 12-1: Please explain the axes in the figure caption, particularly the vertical axis on governance effectiveness. (Michael Mastrandrea, IPCC WGII TSU)	Figure has been redrawn.
441	46371	12	52	0	0	0	Figure 12-2 : This figure is very difficult to understand. Either drop it or provide explanations on how it should be read. The positioning of the components on the X/Y axis is questionable : why is "cultural change" more "Localised" than "Migration/Mobility" on the X axis ? (Etienne Piguet, University of Neuchatel)	Figure now redrawn and caption rewritten to hopefully make the concepts clearer.
442	36060	12	52	0	52	0	Figure 12-2. I don't understand the Y dimension. What does the downward arrow mean - that it's decreasing or less, the further down the plot you go? The filled arrows on the diagram suggest the opposite? Does the delta T mean it's rate of change of impact (if so, better to state that in the label?). Does geopolitical mean international? The diagram could be used in gap analysis - solid fill (where evidence/research exists) and un-filled, dotted ellipse extensions showing likely/anticipated field extents - the difference between the ellipses would indicate areas where further research to test inferences is desirable. The resolution of the diagram might need to be increased - it looks a bit fuzzy. (Brad Field, GNS Science)	Figure now redrawn and caption rewritten to hopefully make the concepts clearer.
443	54112	12	52	0	0	0	Figure 12-2: Please explain the axes of this figure, as well as the shaded ovals, interventions, and other components of the figure in the caption. (Michael Mastrandrea, IPCC WGII TSU)	Figure now redrawn and caption rewritten to hopefully make the concepts clearer.
444	53948	12	52	0	0	0	Figure 12-2: This is a very useful figure to summarize the chapter but the visibility of this figure should be improved. Also, it would be more appropriate to this volume if we could find a way to incorporate and highlight the elements of climate change better in this figure. As it stands, climate change is not conspicuously illustrated in the figure. As a minor detail, what is the difference between arrows depicted in different colors? (Yuka Estrada, IPCC WGII TSU)	Figure now redrawn and caption rewritten to hopefully make the concepts clearer.
445	52387	12	52	0	52	0	Figure 12.2: the three references to localised, national and geopolitical are doubtful. The international dimension is lacking, reducing it to geopolitics may refer to a Hobbesian or realist tradition of IR to which the human security debate has been an opposite approach. This figure by itself may blur this distinction. It remains unclear what this figure is to explain especially what the function of the arrows is. do they refer to causality or what? (Hans Guenter Brauch, Free University of Berlin)	Figure now redrawn and caption rewritten to hopefully make the concepts clearer.