



**IPCC WGII
Fourth Assessment Report
Climate Change Impacts, Adaptation and Vulnerability
*Government and Expert Review of Second Order Draft***

Specific Comments

EXPERT REVIEW COMMENTS

Chapter 17

August 2006

INC LATE COMMENTS AT END

Chapter 17:

Comments from the Co-Chairs/TSU are laid out as follows: first we comment on whether the SOD addresses the comments we made on the ZOD; second we comment on whether the SOD addresses the comments we made on the FOD; our concluding comments on the Second-Order Draft are at the end

	Chapter 17 ZOD comments by Co-Chairs and TSU	Has this been addressed in the SOD?	Author response
17.Z1	GENERAL This draft is quite well written and thoughtful but it tends to read like a textbook. It is very descriptive and lacks a critical assessment of the new literature.	This is still the case. This isn't a document for policymakers, but for fellow academics. The ES is now coming close to the appropriate level of writing, but the rest of the text remains dense and sometimes obscure	Edited for style and content
17.Z2	It does not make clear to the reader what 'new' knowledge on the subject has been developed since TAR.	Still true	Not true now
17.Z3	The text is lengthy, lacks tightness and precision. For example, the introductory section could be tightened by: a) summarising TAR conclusions on adaptation with bullet points on page 1. b) referring to the glossary of terms which will be at the back of the volume, to cover your definitions (which currently uses a page or two in your introduction).	(a) There is no summary of TAR conclusions (b) Introductory section still contains lengthy and superfluous definitions.	Addressed
17.Z4	The current length is near the maximum and you will need to condense greatly elsewhere in order to accommodate the necessary additions.	36 pages of text means that this chapter is now 5 pages overlength	Now in line
17.Z5	CONTENT <i>References:</i> There is much self citation and the author list seems to be narrow (not many new names here). There is no reference to other chapters (e.g. 1 and 18). Most of the references are to journals, but surely the main literature on adaptation practice is to be found outside journals. For example, while there is a general assessment made of NAPAs etc., little detail is drawn from them and the reader is not referred to them specifically. Don't these comprise a large new body of information in themselves?	These comments all remain true.	addressed
17.Z6	The main headings in the plenary outline are covered. But missing is consideration of: a. what are the costs of adaptation; b. are there current limits (e.g. technologically) and how elastic are these.	<ul style="list-style-type: none"> • Main headings are followed • There is now a long section on costs (and benefits). This could be shortened to good effect. It is one of the more accessible sections of the 	addressed

	NB. Plenary explicitly wished costs and limits/barriers to be covered and we suggest you have subsections on this. Are these not two further key questions for inclusion in Table 1?	chapter. <ul style="list-style-type: none"> Limits to adaptation are covered in a long and rather uneven section, with some overlap (e.g., technological and financial limits are often the same thing – technological solutions exist but at prohibitive cost. 17.4.2.5 could usefully be halved in length (see specific comments file) 	
17.Z7	Does current knowledge allow inference concerning: a) How much of the projected damage from climate change is it /will it be possible to adapt to? b) at what cost and effort? Of course the answers are not simple and may need to be place and time specific, but how far does current knowledge address these questions.	This isn't addressed to any extent in the SOD.	addressed
17.Z8	There is a lack of numbers: e.g. on costs, damages avoided, measures of vulnerability/resilience, etc. and there is little recognition of the geography behind these numbers (e.g. why not include some of the new vulnerability index maps?)	There are some more numbers. No vulnerability index maps.	addressed
17.Z9	Can you summarise key new findings? It is not clear how the current statements in the draft: a) confirm TAR conclusions or b) substantially (or otherwise) revise them. The next step might be to a) sort clearly in the collective mind of the writing team what is the new knowledge on adaptation since 2001; then b) differentiate this into which is the most policy-relevant; then c) decide on this basis what space to accord development of these topics in the limited space text space available. At present the reader is not left with a clear picture.	No substantial reference to TAR outside the section on definitions.	addressed
17.Z10	The policy maker reading this chapter really needs much more specific information about what is currently possible regarding adaptation and what might be possible in the future given investment in knowledge, etc. This reads too much like a treatise on adaptation methodology and is more suitable for a textbook than a policy-relevant assessment of current knowledge.	Still true	addressed

17.Z11	More real-world case study examples would be valuable and rather less repetitive theory. For example, the Thames Barrier example on page 8 could be much expanded, as could the Hurricane Mitch and European Heat Wave examples from page 16. Given that the title of the chapter is “Assessment of Adaptation Practices”, there is too much theory. How successful has the adaptation in the Sahel been? Has it been timely? How long was the adjustment period? Did people suffer during the adjustment period? Is the difference between this and adaptation to European heat waves maybe simply a matter of timescales? In general, the examples are lacking in insights and somewhat facile.	This is still true. Case studies on Thames estuary, Hurricane Mitch, Sahel and 2003 European heat waves not present Boxes have been added on Agriculture in the Gambia, Water in South Africa, gender, NAPAs etc.. Uncertain whether any of these have resonance but they are a step up from the FOD.	addressed
17.Z12	The schematic diagrams are more suited to a textbook, than an assessment of this kind. The reader needs more concrete illustration of practice and process.	Only one schematic diagram in the SOD, which is useful	Addressed – mainly through boxes
	Chapter 17 FOD comments by Co-Chairs and TSU	Has this been addressed in the SOD?	Author response
17.F1	Comments 17F.1 – 17.F7: Martin Parry **Length: Text is 40 pp word (makes 25 pp print); refs are 9 pp word, = 4.5 pp print. Therefore text length is currently at max.	36 pages of text means that this chapter is now 5 pages overlength	addressed
17.F2	Suggest subsection be added on COSTS of adaptation in S 17.2: this should give an indication of the extent of the literature of actual costs (at local regional and global [if there have been no satisfactory global assessments, then say so]). Box 17.2 2 could then be part of this section	Box 17.2, which was highly technical, has been removed. Costs sub-section has been added, and is largely successful.	addressed
17.F3	Table 17.4 (effect of AD on impacts): these data are all pre 2001 TAR: Suggest use more recent data, and if possible for a spread of different sectors, not just agric.	Table removed. There is only one table in the SOD, on current adaptation practices.	addressed
17.F4	Conclusions and ES: Not clear how your concns take us forward from TAR: state what is new to TAR, how TAR is revised, and what TAR concns are re-affirmed.	Now no conclusions – chapter ends very abruptly. Vanishingly small references to TAR in main text, none in ES	addressed
17.F5	Suggest, again, you summarise TAR concns on AD in one-quarter page of bullet points	Not done	addressed
17.F6	See my comments in square brackets below. It is disappointing that you do not address head on the question posed by Plenary and by so many p/makers: Can we adapt? What would it cost to adapt? And, as you break down the question into more subsets: How much (and what rate) can be adapted to? If not by all, then by what sectors/ regions etc? How elastic are the barriers to adaptation	First para not addressed. These questions are not posed and so not answered, although it's possible you might find partial answers in the text if you dug deep enough. There is no evidence of any liaison with ch 18.	addressed

	<p>(institutional, technological, etc)? How much does it cost to 'stretch' them? In the end you need to contribute to the wider question, put too crudely but it still needs to be answered: Would it be cheaper to adapt than to mitigate? Or in what mix A and M? And would this need to vary over time? I see Chapter 17 as addressing adaptation costs and damages avoided, whilst Chapter 18 examines damages avoided by mitigation and makes the comparison between the two. Chapters 17 and 18 need to liaise on this.</p> <p>Not much of these Qs can probably be answered at present. But you need to a) answer what you can b) specify what you cannot answer at the present, and c) identify the areas needing more research in order to answer.</p> <p>Ignoring the question, because you think it naïve or whatever, will not make it go away. If we do not try to answer it, then p/makers will go to someone else (probably less able than you, but willing to try).</p> <p>The main addition needed is an assessment of the literature on costs of adaptation. It is essential the readers be clear how much is known about this/ and how little.</p>	<p>The structured approach suggested in the second paragraph is not followed.</p> <p>Costs section is added and is good.</p>	
17.F7	<p>Below are copies of comments ON THE ZERO-ORDER DRAFT by Martin Parry in Jan 2003, [with comments by MP in square brackets regarding whether FOD has responded to these comments]:</p> <p>General comments:</p> <p>1) Length: Zod max pages is xx (equivalent to 25 printed pages). So current length is near max, and you need to condense elsewhere in order to make any additions.</p> <p>2. Suggest you summarise TAR conclusions on adaptation with bullet points on page 1. [not yet done]</p> <p>3) Missing seems to be consideration of: costs of adaptation; are there current limits (eg technologically). NB Plenary wishes costs and limits/barriers to be covered, and we suggest you have subsections on this. [limits/barriers now covered; costs covered theoretically by Box but</p>	<p>1) Length: see comment 17.Z4 2) Not done 3) Done; section on costs is good, section on limits is uneven, see 17.Z6 4) Not done 5) More on costs 6) No conclusions, ending oddly abrupt. ES is good 7) Still very academic, with little that would hold the interest of policymakers. Nothing on actions required, and timing, but there is something on costs.</p>	addressed

<p>literature on costs not yet assessed]</p> <p>4) Does current knowledge allow inference concerning: a) How much of the projected climate change is it /will it be possible to adapt to? B) at what cost and effort? Of course the answer is not simple, and may need to place and time specific, but how far does current knowledge address these Qs. [p-makers ask the question: can we adapt to c. change? You need to start to provide an answer, even if by saying: it is not that simple, depends on costs/ability/objectives, etc. There is literature for some places which indicates current ability to adapt to some levels (in fact these amount/rates, such as 1 deg C per 50 years, underpinned some thinking on targets). These were then based on guesswork. Now more info is available, and this chapter should contain this information].</p> <p>5) There is a depressing lack of numbers: eg on costs, damages avoided, measures of vuln/resilience, etc. Is there more information here? [more in this draft, but still v. little on costs]</p> <p>6) Can you summarise key **new** findings: It is not clear how these a) confirm TAR conclusions or b) substantially (or otherwise) revise them. Next step might be to sort clearly in the collective mind of the writing team what is the new knowledge on adaptation since 2001; then differentiate this into which is the most policy-relevant; then decide on this basis what space to accord development of these topics in the limited space text space available. [not yet clear what is new from TAR]</p> <p>7) The policy maker reading this chapter really needs much more specific information about what is currently possible regarding adaptation; and what might be possible in the future given investment in knowledge, etc; this reads too much like a treatise on adaptation methodology, and is more suitable for a textbook than a policy-relevant assessment of current knowledge. [now less text-booklike than earlier draft; but still could contain more info on what p-maker needs to know: i.e. what do we currently know about: how much climate change we can adapt to? What</p>		
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	would be the cost? What sort of actions would we need to take? and when?]		
	Chapter 17 SOD comments by Co-Chairs and TSU		Author response
17.S1	LENGTH:	36 pages; now 5 pages over length	addressed
17.S2	ARE PAO HEADINGS PRESENT?	Yes	
17.S3	HAVE MOST GENERAL COMMENTS OF ERs FROM ZOD AND FOD BEEN COVERED?	No	addressed
17.S4	ARE REFERENCES BROADLY COMPLETE?	Yes	
17.S5	IS THERE LINE-OF-SIGHT TEXT → ES AND TEXT+ES → TS+SPM?	Yes	
17.S6	Policymakers would find little to help them in decision making here, and little to hold their interest. This reads too much like a textbook, written by academics for academics. It is very likely to miss its target audience. There are some exceptions – mainly new material since the FOD – the new boxes and the section on costs. But a lot of work is still required if this potentially exciting chapter is to succeed.		addressed
17.S7	The chapter buries the gems. Amongst these are page 15 lines 15-18 and page 37 lines 4-7. These statements are important to policymakers, but would most likely be overlooked.		addressed
17.S8	New boxes are a plus point, as is section on Costs (17.2.3). These are aimed in a much more user-friendly way at policymakers, rather than at the peer group of the authors.		addressed
17.S9	The Introduction is weak because it is so focussed on definitions. These could be put in the Glossary, leaving the authors more space to properly introduce the chapter with something more appealing to policymakers.		addressed
17.S10	Conclusions are absent. The chapter ends on a very abrupt note, with two paragraphs which are important (one on natural hazards, one on mainstreaming), but which are unlikely to be read since they come at the very end with little relationship to the preceding text. It's as if the authors had two leftover paragraphs which they didn't really like, so they decided to put them at the end. Please (a) re-locate these paragraphs appropriately and (b) develop a proper conclusions section which summarizes progress in understanding since TAR, and remaining uncertainties.		addressed
17.S11	Authors need to say something about adapting to beneficial climate change.		addressed
17.S12	<u>In summary, the authors need to:</u> <ul style="list-style-type: none"> • Shorten text by 5 pages • Make the style of text more accessible to policy types and general readers rather than the specialist • Make clear what is new since TAR and how new studies since TAR either confirm or contradict what was said in TAR. • Give the chapter a proper ending – it currently ends far too abruptly and without proper conclusions. • Liaise with Chapter 18 • Make further attempts to make the chapter more accessible to policymakers through answering key questions such as: <ul style="list-style-type: none"> ○ Can we adapt? 		addressed

	<ul style="list-style-type: none"> ○ What would it cost to adapt? ○ How much (and what rate of) climate change can be adapted to? If not by all, then by what sectors/ regions etc? ○ How elastic are the barriers to adaptation (institutional, technological, etc)? How much does it cost to 'stretch' them? ○ In the end you need to contribute to the wider question, put too crudely but it still needs to be answered: Would it be cheaper to adapt than to mitigate? Or in what mix A and M? And would this mix need to vary over time? <p>If you can't give general answers to these questions, maybe a case study approach could be used to show potential approaches to answering them.</p> <ul style="list-style-type: none"> ● In Executive Summary, provide references back to sources in main text, in the form [17.x] 	
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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-17-1	A	0				With only a few exceptions, I did not see in the chapter references to the work done under the AIACC (Assessments of Impacts and Adaptations to Climate Change) project framework. It included studies in Africa, Asia, Latin America and the small islands in the Caribbean, Indian and Pacific that should be mentioned. [http://www.aiaccproject.org] (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed – many papers only recently published
E-17-2	A	0				This chapter is much improved and includes a wider range of references. My only major comment is that it ends with a whimper and should, I think, be much more confident about what has been learned and what research needs to be done to enhance our understanding of adaptation. (Diana Liverman, Oxford University)	addressed
E-17-3	A	0				This chapter - overall - has greatly improved since the last round. (Susanne Moser, National Center for Atmospheric Research)	addressed
E-17-4	A	0				The chapter could be structured around the key differences in adaptation, i.e. between incremental adjustments and fundamental changes or system transformation. Incremental adaptation (shifts in cropping patterns, irrigation systems, etc...) contributes to or occurs within “resilient” systems, whereas structural forms of adaptation (wholesale migration, fundamental changes in economic structure, etc...) may be required when climate change alters fundamental features of the function and structure of systems. The 2 forms of adaptation are fundamentally different. The present definition of adaptive capacity overlooks the key element of transformability that is the capacity to create a fundamentally new system when ecological, economic or social (including political) conditions make the existing system untenable (Walker, B., C. S. Holling, et al. (2004). "Resilience, Adaptability and Transformability in Social-ecological Systems." Ecology and Society 9(5)). The chapter does not address the distinction between adaptation and coping. Coping involves responses where system productivity and quality of life decline. (Many of the “adaptive” strategies cited in the chapter may fall closer to coping than adaptation.) Adaptive capacity is meant to prevent such losses or declines. Generally, the chapter could clarify distinctions between the “foundations” of adaptive capacity and the more specific courses of action groups take to adapt. The foundations of capacity referenced at various points in the literature (Ch 17 notes some of these in relation to vulnerability on p. 19, lines 24-25, and p. 23 lines 24-26, etc..) include the psychological factors noted in the chapter along with systems and agent properties such as: 1. Diversification 2. Knowledge	Addressed – but we stick to PAO

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>3. Mobility (transport systems, access to trade)</p> <p>4. Communications</p> <p>5. Convertible and non-convertible assets</p> <p>6. Organization</p> <p>7. Perception</p> <p>8. Agency</p> <p>The actual courses of adaptation people take vary between sites but appear to build off common foundations such as the above. For a discussion on some of these elements see (Moench, M. and A. Dixit, Eds. (2004). Adaptive Capacity and Livelihood Resilience: Adaptive Strategies for Responding to Floods and Droughts in South Asia. Boulder, Kathmandu, Institute for Social and Environmental Transition).</p> <p>The chapter was also found to lack attention to the social level. It conveys the impression that society is composed of governments, private sector and individuals whereas examples target specific groups. Some of the proposed comments intend to address this contrast to better reflect the collective nature of adaptive capacities and the relevance of civil society and groups affected by climate change in the implementation of effective measures to enhance resilience to climate change.</p> <p>We also found that more attention could be given to the importance of traditional, indigenous cultures and livelihoods as sources of adaptations and good practices for climate change, especially those that depend heavily on climate.</p> <p>Authors may also want to consider addressing the concept of 'living with' being climate variability and change or risk which has more potential to enhance resilience than expressions such as climate-proof. (in this regard, conclusions of the recently held conference on climate variability and change (i.e. WMO climate risk conference, 17-21 July 2006) may be of interest http://www.livingwithclimate.fi/)</p> <p>We finally think that the chapter could include a section on key research priorities. Our comments includes new sources of literature that we recommend for inclusion in the list of references:</p> <p>1. United Nations International Strategy for Disaster Reduction, Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. Adopted at the World Conference on Disaster Reduction, 18-22 January 2005, Kobe, Hyogo, Japan. See www.unisdr.org/wcdr</p> <p>2. Walker, B., C. S. Holling, et al. (2004). "Resilience, Adaptability and Transformability in Social-ecological Systems." Ecology and Society 9(5)</p> <p>3. Moench, M. and A. Dixit, Eds. (2004). Adaptive Capacity and Livelihood Resilience: Adaptive Strategies for Responding to Floods and Droughts in South</p>	

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						<p>Asia. Boulder, Kathmandu, Institute for Social and Environmental Transition (www.i-s-e-t.org)</p> <p>4. IFRC, 1999 Vulnerability and Capacity Assessment, International Federation of the Red Cross, Geneva 1999</p> <p>5. Twigg, 2004 Disaster Risk Reduction. Mitigation and Preparedness in development and emergency programming. Overseas Development Institute, London, 2004</p> <p>6. Communication from the Commission to the Council and European Parliament: 'Climate change in the context of development cooperation (2003) (http://europa.eu.int/eur-lex/en/com/cnc/2003/com2003_0085en01.pdf)</p> <p>7. Conclusions of the Chair of the OECD global forum on sustainable development (2005) (http://www.oecd.org/document/5/0,2340,fr_2649_37465_33751109_1_1_1_37465_00.html)</p> <p>8. Moench, M. (2005). Water, Climatic Variability and Livelihood Resilience: Concepts, Field Insights and Policy Implications. Stockholm, Resilience and Freshwater Initiative, Swedish Water House: 49</p> <p>9. F. Sperling and F. Szekely (2005). 'Disaster Risk Management in a Changing Climate'. Discussion Paper prepared for the World Conference on Disaster Reduction on behalf of the Vulnerability and Adaptation Resource Group (VARG). Reprint with Addendum on Conference outcomes. Washington, D.C.</p> <p>10. Yamin, Rahman and Huq. Vulnerability, adaptation and climate disasters: A conceptual overview, IDS Bulletin Vol. 36, N°4 October 2005</p> <p>11. Living with risk: a global review of disaster reduction initiatives 2004 UNISDR http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm</p> <p>12. UNU Research brief, N° I (2005) 'Danger need not spell disaster, but how vulnerable are we?' written by Joern Birkmann available on the unu-ehs website</p> <p>13. Deshingkar and Start 2003. 'Seasonal Migration for Livelihoods in India: Coping, Accumulation and Exclusion'. London, Overseas Development Institute</p> <p>14. Chipeta and Kachaka 2004. 'The Role of Migrant's Remittances in an Unstable Low-Income Economy: A Case Study of Malawi'. Zomba, Southern African Institute for Economic Research & Malawi National Statistical Office: 48.</p> <p>14. Disaster risk reduction: a development concern: A scoping study on the links between disaster risk reduction, poverty and development. DFID. December 2004 (http://www.dfid.gov.uk/pubs/files/drr-scoping-study.pdf) (Silvia Llosa, ISDR System)</p>	
E-17-5	A	0				Thank you for the opportunity to comment on Chapter 17. Overall I found the	addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						chapter improved in clarity in comparison to the previous version. In particular I would have liked to see strong linkage with efforts focused on disaster prevention, which are also of relevance to adaptation measures. A stronger integration of and reference to the ongoing initiatives at level of development institutions in terms of studies and projects would also in my opinion be beneficial, given that there is widespread recognition that climate change represents a threat to development process and adaptation (or climate risk management) has to viewed as integral component for achieving sustainable progress. Overall I hope you find the comments below useful for you work. (Frank Sperling, World Bank)	
E-17-6	A	0				Some references in the text do not appear in the reference section e.g. US National Assessment, 2000; Poumadere et al, 2005; ADB, 2005; O'Brien et al, 2006; Mace, 2005; Mendelsohn, 2000; Baer, 2006; Dore & Etkin, 2003; Pielke, 2005; DFID 2005; Vellinga & Mills, 2001; Few et al, 2004; Social Learning Group, 2001; Hansen et al, 2004; Brunner & Klein, 1999; Orlove, 2005; Pretty, 2004; Fox, 2003; Jameison, 2005; Patel, 2006; Few et al, 2004; UKCIP, 2003; Schroter et al, 2005; Berkhout et al, 2004; Eriksen and Kelly, 2005; Pearce, 2006; Condon, 1995; NEF, 2000; Bangladesh Country Report, 2005; Munich Re, 2001; Dore & Etkin, 2003; Tearfund, 2005. Also a large number of references in the reference section are not mentioned in the text. (Bernard Edward Gomez, Department of Water Resources)	addressed
E-17-7	A	0				One issue that is hardly mentioned in this chapter is the subject of incremental costs. It would be worthwhile to mention that while most adaptation measures entail incremental development costs, they do not necessarily entail incremental environmental benefits, a thorny issue for the GEF mandate. (Sofia Bettencourt, World Bank)	Addressed. But not included to any great extent – no published work on this subject
E-17-8	A	0				Much improved from FOD, more concise, better flow, improved use of concrete examples. Still needs thorough edit for typos AND FOR REFERENCES: extremely cursory and non-systematic checking turned up several that were missing: O'Brien et al. 2005 (p.18), Sutherland et al. 2005 (p.25), Hansen et al. 2004 (p.33), Fox 2003, p.34) Patel 2006 (p.35) List of references is not fully alphabetised. Eakin et al.2005 appears twice (John Morton, University of Greenwich)	addressed
E-17-9	A	0				It would be very useful if this chapter could provide a more systematic analysis of temperature thresholds at which adaptation could become too expensive or otherwise infeasible. It provides some useful specific examples, but these are insufficient to allow any extrapolation towards global temperature changes and	Not addressed – not in literature

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						limits at which one may be able to generalise for regions or even the globe as a whole. Yet it is very likely that policymakers want to know more about the temperature levels at which such adaptation limits could be reached generically, rather than some isolated examples. This is of course difficult to do on the basis of available literature; however, if it is the assessment of the authors that this in fact can NOT be done on the basis of available literature, then this is an important finding in its own right that should be stated clearly and in its own right in the executive summary. (Andy Reisinger, IPCC SYR TSU)	
E-17-10	A	0				It would be interesting to tie 17.2 closer together with 17.4 in the sense that: 1) capacity enables practices; 2) understanding practices to date leads to a greater understanding of lessons, opportunities and constraints for policy; 3) opportunities and constraints for policy allows some generalizable conclusions. (Jan Corfee-Morlot, University College London & OECD)	addressed
E-17-11	A	0				It is well established in literature that adaptation to climate change has been receiving more and more attention, especially in the United Nations Framework Convention on Climate Change (UNFCCC) and among development and disaster specialists. Most approaches to adaptation took a “top-down” perspective, moving from global climate model scenarios to sectoral impact studies and then to assessments of adaptation options. However, currently there is more emphasis on assessing new risks due to climate change in the context of current vulnerability and local adaptive capacity, especially in the context of economic development. The report under review provides an overview of the studies relating to vulnerability and adaptation to climate variability. There is variety of studies spanning over several disciplines like economics, sociology, disaster management, etc. The possible consequence for vulnerability to climate scenarios in different parts of the world is well documented. The report concludes that aggregate effects of climate change at global and regional levels will be negative especially in the context of multiple stresses. This, in turn, threatens the very foundations of sustainable development. It calls for urgent policy interventions in both developed as well as developing countries; in the form of reducing emissions and enhance mitigation in developed countries, and to formulate specific policies and strategies for improving the adaptive capacity of the vulnerable populations and regions in developing countries. The draft report very rightly states that although improving adaptive capacity is costly, “adaptation and mitigation efforts are more effective when they are applied together and not in isolation”. However, planned adaptation is much more prevalent in developed rather than developing countries.	addressed

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						<p>One of the most important contributions of this report is that it uses the experience in both top down as well as grassroots disaster preparedness activities for climate change adaptation. However, the report fails to demonstrate the inadequacies of the top-down approaches to climate change, especially in the context of vulnerability assessment and adaptations. Moreover, most of the findings are based only on a large body of anecdotal evidence and experience of practitioners. The report could have used some more case studies to test the hypotheses developed. Research is underway in exploring the linkages between climate change adaptation and community-based disaster risk reduction. Methodologies like the one developed by the Red Cross/Red Crescent's Vulnerability and Capacity Assessments (VCAs) could be used for this. Also, it is important to discuss the historical evolution of climate change adaptation and community-based disaster risk reduction, and examine the challenges of linking the global phenomenon of climate change into a bottom-up and place-based approach. The literature has pointed out that VCAs serve better the needs of adaptation to climate change, and provides suggestions on how to improve the ways in which we can incorporate climate risks in VCAs, and on how to use their results for national and international adaptation policy making. Several methods have been suggested in the report. But, it would have been very enriching had there been efforts to encourage carrying out more rigorous analysis of grass-root level data in testing the usefulness of the suggested approach. Empirical studies in developing countries have demonstrated that people tend to be more concerned with the everyday survival, and issues that directly affect their current or future livelihoods, rather than just the extreme hazards that organisations 'from outside' are concerned about. In many cases people do not mention extreme events because they have learned to live with it. As a result, dealing with extreme hazards and disasters needs to become an integral component of the development process, so that resilience to the impact of hazards is achieved without the people feeling that they are being diverted from their concern about their daily survival. It is important for the WG II to acknowledge this in the preparation of the Fourth Assessment Report. The authors may also refer to some of the literature that has come to limelight very recently in the context of the Tsunami affected areas in developing countries. Further, a critical question that remains to be answered is: whether we can attribute all the vulnerability to climate change alone? And also whether we can term all adaptations to cope with climate changes? There are a number of places in developing world which are subjected to extreme poverty, and high exposure to risks and disasters, which may not directly be attributable to climate change. Local</p>	

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						<p>populations have been formulating and adapting strategies to cope with such extreme situations over a long period of time. Institutions have also been playing a very important role in supporting the local communities, especially in the form of micro-financing and encouragement of forming self-help groups – among the women and households. Recognition of these aspects would enrich the draft order. Finally, as the report points out, there are lot of inter as well as intra regional differences in vulnerability and adaptations. The importance of identifying local specific adaptation strategies, involving the stakeholders in planning and decision making also needs to be stressed.</p> <p>(Krishnan Narayanan, IITB Department of Humanities and Social Sciences)</p>	
E-17-12	A	0				<p>In general, Chapter 17 describes the assessment of adaptation practices, options, constraints and capacity from four parts. The authors made a great improvement in the content compared with the first version. I think it might be readable if more tables rather than words were used in this Chapter, especially "17.2 Assessment of current Adaptation Practices" and "17.3 Assessment of Adaptation Capacity, Options and Constraints".</p> <p>(Guangsheng ZHOU, Institute of Botany, the Chinese Academy of Sciences)</p>	addressed
E-17-13	A	0				<p>General comments: This chapter has been improved since the last version. However, it needs more illustrations (diagrams, flowcharts, equations, Tables, maps, etc.). There is too much text and that would make it difficult and non attractive to non-specialists to read.</p> <p>The references are a source of trouble: Some are missing, some are used in text and not listed some incomplete and some have incorrect alphabetical order. Some of my previous comments were taken on board and some were not. It might be worthwhile to revisit them.</p> <p>(Ragab Ragab, Centre for Ecology and Hydrology)</p>	addressed
E-17-14	A	0				<p>GENERAL COMMENT: I support the use of boxes and there are many boxes in this chapter, but I find them to be too long on the whole. Boxes are useful to illustrate points, and thus support the text. In other chapters, there are too few boxes (see for example Chapter 20). I think boxes need to be used to support the text, not as stand-alone pieces. I find that the length of the boxes at the moment distracts from the rest of the text. Boxes 17.5, 17.6, 17.7 in particular are too long.</p> <p>GENERAL COMMENT: Certain sections of this chapter need major rewriting. They are mentioned below.</p> <p>GENERAL COMMENT: Use of the expression 'natural disasters' has mostly disappeared (this was a comment I made last time) but I have found a couple of references still. Please consider removing this misleading language. The</p>	Addressed – shortened many boxes etc

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>international community has agreed on the use of either 'disasters', 'disaster risk' or 'natural hazards'. It does appear on Page 32, line 11, and on p. 36 l. 28-29.</p> <p>GENERAL COMMENT: I am glad to see that the section on the UNFCCC has been removed. I recognise that there is a section on adaptation and mitigation under the UNFCCC in Chapter 18, but it is not as detailed - and irrelevant - as the previous section that was included in the first draft of Chapter 17.</p> <p>GENERAL COMMENT: The chapter has changed character since the previous version. Although there was a huge emphasis on costs in the previous version, it balances less equally now - in other words I find that the costs section is too long. It gives the impression that costs are the most significant barrier to adaptation - do the authors feel this way?</p> <p>(Emma Lisa Freja Schipper, International Water Management Institute)</p>	
E-17-15	A	0				<p>First of all, I would like to congratulate the authors on compiling a comprehensive yet concise assessment of the current understanding of adaptation and adaptation issues.</p> <p>(Upasna Sharma, Indian Institute of Technology, Bombay)</p>	
E-17-16	A	0				<p>Finally, I should note that Chapter 18 appears to have taken a step back in terms of coherency in certain sections of this draft, particularly in the earlier part of the chapter. Perhaps in an attempt to respond to suggestions for the inclusion of additional material, the 'storyline' has been lost and overarching conclusions do not emerge as clearly. This is a systemic problem with the IPCC process, and is also evident in Chapter 17, whereby the focus on describing research mitigates against the process of synthesis and identification of overarching conclusions in the main text. In any event, as I suspect that Chapter 18 will evolve, a watching brief needs to be kept on the overlap with Chapter 17. .</p> <p>(Mick Kelly, University of East Anglia)</p>	addressed
E-17-17	A	0				<p>Congratulations to the authors for the hard work - significant improvements have been made on the chapter since the FOD. More examples from different parts of the world, covering different systems and sectors have been introduced moving the chapter from the FOD – abstract, conceptual document - to a more informative global coverage, well written and easy to read document. Although the underlying flavor is still naturally influenced by experiences of the composition of the authors in terms of regions/nationalities and also because some have published widely in the area. In some cases it might help to follow the TSU advice i.e. to reduce beginning sentences with the author/s name or putting authors ' names in the middle of the sentence (see e.g. page 14) - but rather to begin the sentence with the idea and have the author names at the end of the sentence.</p>	addressed

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						<p>The questions that come to mind when reading the chapter is “What is and or what is not adaptation Or could adaptation measures for a particular location be categorized for e.g. into a. short term relief measures (which do not remove vulnerability to the climate stress experienced) and b. long-term sustainable adaptation which builds resilience to the climate stress? From the chapter it seems all actions taken in response to anticipated and/or exposure to climate stress is adaptation. For example how far is International food Aid (which is supposed to be a temporary relief measure but in some regions has become more or less permanent) and some of the national relief measures (e.g. drought relief which in some countries have been shown to continue even in wet years) – which although may save life do not reduce vulnerability to the climate stress in question. There is a body of literature that argues that some of these intervention measures have served to destroy what ever adaptation capacity existed before and have deepened and perpetuated vulnerability in some parts of world e.g. Africa. Examples include work by : 1. Sporton, D. and Thomas, D.S.G. (eds). 2002. Sustainable livelihoods in the Kalahari environments. A contribution to global debates. Oxford University Press. 2. Thomas, D. S.G. and Twyman C. 2005. Equity and justice in climate change adaptation amongst natural-resource-dependent societies. Global Environmental Change 15:115–124. 3. and 3. Hulme, M. (2004). A change in the weather? - Coming to terms with climate change. Chapter 12. In Harris, Frances (ed). Global Environmental Change Issues. John Wiley and Sons. It will be useful for the chapter to reflect on some of these views to help stimulate international debate on developing policies/strategies that serve self-sustaining adaptation than dependency.</p> <p>(Opha Pauline Dube, University of Botswana)</p>	
E-17-18	A	0				<p>Comparing with the previous version I think that the chapter has been improved, my only concern is that there is too much weight on the Inuit issues. Even if this culture is highly important there are other communities (for example in Latin America) that merit to be mentioned (see The Indigenous Peoples' Restoration Network's (IPRN) [http://www.ser.org/iprn]. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))</p>	addressed
E-17-19	A	0				<p>Again, the chapter is significantly improved from earlier drafts and I have only a small number of comments to make. (Richenda Connell, acclimatise)</p>	
E-17-20	A	0				<p>"This draft is a marked improvement from the first order draft - much more structured and clear, with a better balance of examples from developed and</p>	addressed

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						developing countries. For the next draft, I would recommend revising and shortening Section 17.3 to ground it with more real-life examples and avoid a tendency to sound over-academic (Sofia Bettencourt, World Bank)	
E-17-21	A	1	3		4	This chapter excessively focuses on what adaptation has been done but ignored what should be done. It must have a general assessment for adaptation including: what should adaptation do, what adaptation has done, what adaptation is doing, and what adaptation has not done at present. Many examples are too (regional or sectoral) specifically, which is not clear where or which sector could be applied. Readers could not figure out what adaptation to climate change should be going to do under what rudders from this chapter. Too many boxes in this chapter. General judgement must be: importance of adaptation to climate change has been widely accepted. But adaptation actions just started up. There are only sporadic practices. Systematic adaptation to climate change has not yet established. For example, in architecture no systematic research and development on designing houses/buildings based on climate change. The whole chapter is too optimistically. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	addressed
E-17-22	A	1	28	1	28	"methods" changed to "Methods" (Guangsheng ZHOU, Institute of Botany, the Chinese Academy of Sciences)	addressed
E-17-23	A	1	32	1	32	"Examples of Adaptation Practices" changed to "Examples of adaptation practices" (Guangsheng ZHOU, Institute of Botany, the Chinese Academy of Sciences)	addressed
E-17-24	A	1	33	1	33	"Assessment of Adaptation Costs and Benefits" changed to "Assessment of adaptation costs and benefits" (Guangsheng ZHOU, Institute of Botany, the Chinese Academy of Sciences)	addressed
E-17-25	A	1			55	This is a great improvement on the First Order Draft with well articulated concepts on adaptation and assessment of the stated of knowlegde on adaptation practices, options, constraints and capacity in relation to climate changed in line with the agreed IPCC Plenary outline. Therefore, there are very few comments as indicated below. (Maggie Opondo, University of Nairobi)	addressed
E-17-26	A	2	0			we find an imbalance between the executive summary and the body of the chapter relating to the treatment of the lack of capacity to adapt suffered by many people and limits to adaptation. We recommend to increase the amount of documentation reviewed in the body that supports assertions in the executive summary regarding	addressed

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						these points. (.)	
E-17-27	A	2	3			Change the heading to: "Adaptation can reduce vulnerability to climate and climate change." Rationale: First, adapting to current climate (and not just climate variability) is itself a challenge for endeavors such as agriculture, forestry, fisheries, etc. Similarly, malaria and other climate sensitive diseases are and would be challenges, even if climate were invariant. Measures to address such problems would also be useful in dealing with such problems under climate change. Second, the term climate also covers "climate variability." For the detailed rationale see Goklany (2000, 2003). (Indur Goklany, US Department of the Interior)	No longer applicable - headline deleted
E-17-28	A	2	5	2	7	It is worth noting that not all adaptations in this long record have been successful (mistakes have been made with dire consequences) nor have they all resulted in benefits for all (the adaptation implemented was not what all wanted and in some cases were seen as having a negative impact) (Roger Street, OUCE)	addressed
E-17-29	A	2	6			You list irrigation and water management - but irrigation is a form of water management. You could simply delete 'irrigation' here. (Emma Lisa Freja Schipper, International Water Management Institute)	addressed
E-17-30	A	2	9	2	10	What permafrost impacts are being referred to in this statement? Engineering techniques do exist to deal with the impacts of permafrost thaw on infrastructure as these impacts need to be dealt with regardless of climate change. In this case, the risks and adaptation techniques are not necessarily outside the range of experience. (Sharon Smith, Natural Resources Canada)	addressed
E-17-31	A	2	9	2	10	The current phrasing of the sentence places an emphasis on novel risks associated with climate change. I would like to suggest a slight rephrasing: "Climate change also poses novel risks, which lie outside the range of experience". The majority of the the hazards are not new (e.g. storms, droughts, floods etc.), rather their frequency of occurrence, strength and duration may change. Other risks associated with climate change, such as vector borne diseases, may not be new on a global scale, but new to a specific region. Hence, while outside the range of experience at that location, there are still learning lessons and experiences that can be drawn upon from other region(s). Other risks such as glacier retreat and expansion of glacial lakes are new in their geographical range or like permafrost melt new in its scale and magnitude. In many ways individual hazard types experienced with climate change are not new in a general sense, but the intensity and frequency of the hazard may go beyond existing experience and hence overwhelm coping capacities.	addressed

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						Through the proposed rephrasing I want to keep the focus on the fact that climate change may put humans beyond their current experience in coping and adapting to climate related risks, while at the same time avoiding the possible misconception that most risk types are novel in an absolute sense. (Frank Sperling, World Bank)	
E-17-32	A	2	9	2	10	The aspects of projected climate change should be spelled out much clearer than using the descriptor 'novel'. As has been noted in previous reports of the IPCC and other publications, the concern is that projections are for climate changing faster and to a larger extent than most natural and human systems have experienced in the past and it is believed that most of these systems do not have the capacity to adapt to these projected changes. I would also suggest, as is suggested later in this chapter, that it should be noted that climate change and our attempts to adapt to it and its impacts poses the potential for conflicts. (Roger Street, OUCE)	addressed
E-17-33	A	2	12			Change the heading to: "Adaptation to climate and climate change is already taking place" (Indur Goklany, US Department of the Interior)	addressed
E-17-34	A	2	13			Add a new bullet that would read: "Measures that would reduce vulnerability to current climate more often than not would also aid in reducing future vulnerability to climate change." For the detailed rationale see Goklany (2000, 2003, 2005a, 2006a). (Indur Goklany, US Department of the Interior)	Considered – restructured headlines in ES
E-17-35	A	2	17	2	26	In my opinion the level of specificity provided in the examples does not fit with the level of discussion in the executive summary. It may be worthwhile to either expand on examples to increase their relevance or give a more abstract description of the type of measures that can be undertaken to address observed and projected changes in climate. The current examples predominantly focus on structural measures and do not include adaptation options at the institutional or policy level. An example here could be the integration of climate change in economic planning processes (as is the case in Kiribati, see work by Bettencourt and others, World Bank) (Frank Sperling, World Bank)	addressed
E-17-36	A	2	18	2	19	The executive summary mentions adaptation to permafrost thaw but the origin of this statement and the details can not be found in Chapter 17. There are references to adaptaion to climate change by the Inuit but there is nothing that specifically mentions adaptation to permafrost thaw. (Sharon Smith, Natural Resources Canada)	addressed

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E-17-37	A	2	19	2	20	I think " the increased use of artificial snow-making by the alpine ski industrie" is a bad example of adaptation. Artificial snow-making is produced with a big electric expenditure and this increase the CO2 emissions. In many chance artificial snow is made for to improve the qualitie of snow, out of season or even in places where it had never snow and not for reasons of climate change. (Dionisio Rodriguez Alvarez, Xunta de Galicia)	addressed
E-17-38	A	2	28	2	29	Adaptation actions, as noted on page 4 lines 26-27, are often taken to deal with current climate variability [including extremes] and how this variability is projected to change (e.g., warmer winters, hotter, drier summers) not just to extremes. (Roger Street, OUCE)	addressed
E-17-39	A	2	35			It should be mentioned here that the significant costs of adaptation occur generally because of the uncertainties in the location and severity of the impacts. This is exactly why no regrets measures - measures which are beneficial even in the absence of climate change - should be preferred. (Sofia Bettencourt, World Bank)	addressed
E-17-40	A	2	37	2	38	The first sentence is incorrect. In fact, some estimates global costs and benefits of adaptation are provided in Goklany (2005a), which is in the current list of references. Revise this to read as follows: "Some multi-sectoral estimates of the global costs and benefits of adaptation indicate very high benefit-cost ratios for much of the remainder of this century, particularly if such adaptation is designed to reduce vulnerability of current climate-sensitive problems that might be exacerbated by climate change." (Indur Goklany, US Department of the Interior)	addressed
E-17-41	A	2		3		The Executive summary does not suggest any confidence levels. Other chapters do that, and you may consider it as well, difficult as it may be. (Susanne Moser, National Center for Atmospheric Research)	addressed
E-17-42	A	2		37		Following are the references that were noted in our comments but for which citations may not have been provided, and don't seem to be in the report. Most of them are available at http://members.cox.net/igoklany/ : Goklany, IM. 1995. Strategies to Enhance Adaptability: Technological Change, Economic Growth and Free Trade. Climatic Change 30: 427-449. Goklany, IM. 1998. Saving Habitat and Conserving Biodiversity on a Crowded Planet. BioScience 48 (1998): 941-953 Goklany, IM. 2000. Potential Consequences of Increasing Atmospheric CO2 Concentration Compared to Other Environmental Problems. Technology 7S: 189-	Addressed – references examined and incorporated where appropriate

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						<p>213.</p> <p>Goklany, IM. 2002. The Globalization of Human Well-being. Policy Analysis, No. 447 (Washington, DC: Cato Institute, August 22, 2002).</p> <p>Goklany, IM. 2003. Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation. Energy & Environment 14: 797-822.</p> <p>Goklany, IM. 2005a. A Climate Policy for the Short and Medium Term: Stabilization or Adaptation? Energy & Environment 16: 667-680.</p> <p>Goklany, IM. 2005b. Is Climate Change the 21st Century's Most Urgent Environmental Problem? Lindenwood Economic Policy Lecture, Series 7, Lindenwood University, St. Charles, MO, also forthcoming in Society (Transaction Publications)]</p> <p>Goklany, IM. 2005c. Is a Richer-but-warmer World Better than Poorer-but-cooler Worlds? 25th Annual North American Conference of the US Association for Energy Economics/International Association of Energy Economics, September 21-23, 2005.</p> <p>Goklany, IM. 2006a. Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development. Mitigation and Adaptation Response Strategies for Global Change, forthcoming.</p> <p>Goklany, IM. 2006b. Death and Death Rates Due to Extreme Weather Events: Global and U.S. Trends, 1900-2004, Climate Change and Disaster Losses Workshop, 25-26 May 2006, Hohenkammer, Germany. (Indur Goklany, US Department of the Interior)</p>	
E-17-43	A	3	1	3	23	<p>This section may be generally accurate for the current state of affairs, but may not be accurate for the future as adaptive capacities increase in the future because of enhanced economic and technological development, particularly if developing countries make progress on sustainable development and their economic and technological development proceeds per the assumptions built into the SRES scenarios (see Goklany 2006a, 2005c). Accordingly:</p> <p>A. The heading should be changed to read as follows: "Currently not everyone has</p>	

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						sufficient capacity to adapt, but adaptive capacity should be higher in the future”. B. Insert “currently” between “that” and “have” on line 3. C. Change the beginning of the second bullet commencing on line 8 to read as follows: “The capacity to adapt can be enhanced because it is dynamic and is influenced by....” D. Insert a new 3rd bullet on line 15 that would read as follows: “If the future unfolds per the SRES scenarios, adaptive capacity of developing countries should be substantially enhanced relative to the current situation.” (See Goklany 2005c). (Indur Goklany, US Department of the Interior)	
E-17-44	A	3	3		6	Women in developed countries have no such problems while men in developing countries would have such problems. In fact, such problem relates more to development level. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	addressed
E-17-45	A	3	5	3	6	Change southern Africa to Sub-saharan Africa (Opha Pauline Dube, University of Botswana)	addressed
E-17-46	A	3	8	3	10	Information', 'knowledge' and 'infrastructure' could be added to the list. Add 'capacities' to 'human resources'. The importance of flows of information, goods, services and finances and even people (i.e. migration) could be noted given their importance in determining the adaptive capacity of local populations. (Silvia Llosa, ISDR System)	addressed
E-17-47	A	3	8	3	10	Gradient of adaptive capacity is often as steep within sector/community as between sectors/communities reflecting the diverse socio-economic and cultural characteristics of those sectors/communities. This point is raised in the chapter and should be reflected in the exec summary. (Roger Street, OUCE)	addressed
E-17-48	A	3	11	3	13	This statement might be true for hurricane preparedness but isn’t necessarily true for all key vulnerabilities. Accordingly, insert “in some situations” before “appropriate”. (Indur Goklany, US Department of the Interior)	addressed
E-17-49	A	3	15	3	18	Globalization is not always a source of stress. Sometimes it (along with trade) can aid adaptation and relieve stress. For example, globalization is one of the major reasons why global food prices are 75 percent lower today than they were in the 1950s. This is one reason why hunger is lower today than it used to be then (see Goklany 1995, 1998, 2002). Accordingly: A. Replace the first sentence in the current 3rd bullet with the following: “Multiple factors affect exposure to adaptive capacity – some positively, others negatively.	addressed

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						Such factors include HIV, AIDS, violent conflicts and globalization.” B. Append a new sentence at the end of the 3rd bullet that would read: “same time globalization and trade have helped reduce global food prices over the past several decades which has helped reduce world hunger substantially; such benefits should continue even under climate change.” See Goklany (1995, 1998, 2002, 2006a). (Indur Goklany, US Department of the Interior)	
E-17-50	A	3	16	3	18	It is important to note the compounding effects of other socioeconomic and environmental stressors adaptive capacities and hence encouraging to see studies of these important interlinkages. While referring to a specific study, it seems not necessary here to confine the reference of the exposure of communities to impacts of market changes and lower prices in addition to adverse climate change solely to India. Access to markets, price fluctuations, conflict etc. are widespread problems in developing countries. If cross compared with existing vulnerabilities to hydrometeorological hazards and future climate projections, these situations will reinforce conditions of vulnerability and a more general statement (beyond the communities of India) appears to be justified in the Executive Summary. (Frank Sperling, World Bank)	addressed
E-17-51	A	3	17	3	18	The meaning of the phrase "thresholds in technology" is unclear. It needs to be explained. (Lenny Bernstein, L.S. Bernstein & Associate, L.L.C.)	addressed
E-17-52	A	3	20	3	23	This reflects social/cultural deprivation that is not normally reflected in indicators/determinants of adaptive capacity or in the assessment of vulnerabilities. This point is raised in the chapter and warrants mention in the executive summary. (Roger Street, OUCE)	addressed
E-17-53	A	3	23			Change “continue to experience high levels of mortality” to “experienced high mortality during the European heat wave of 2003.” Also add a new sentence that would read as follows: “However, what should be a one-of event could become a chronic problem unless greater emphasis is placed on adaptation and reducing vulnerability.” Rationale: Where is the empirical data that shows this is a continuing trend? The 2003 episode ought to be “one of” experience if European authorities chose to learn from it, and start taking adaptation seriously. One of the problems seem to be that despite paying lip service to the threats of CC, the emphasis in Europe has been on mitigation. Not surprisingly, when the heat wave struck, authorities were caught flat-footed. (Indur Goklany, US Department of the Interior)	addressed

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E-17-54	A	3	25			Modify the heading to read as follows: “If climate change is excessive or too rapid, limits to adaptation might be reached.” (Indur Goklany, US Department of the Interior)	
E-17-55	A	3	27	3	32	This paragraph is oddly written as if governance, understanding of risk and technological limits define adaptation, and the physical and biological limits are separate and not really the concern of this chapter. But this isn't true. Without restrictions on emissions, in the end adaptation won't work because the climate changes beyond the capacity of human and natural systems to adapt. The chapter never says this, which maybe is a truism but it comes across as odd that this is not stated, if only as a lead-in to Chapter 18. (Jean Palutikof, Met Office)	addressed
E-17-56	A	3	27	3	32	See our comments below on Section 17.4.2. We recommend replacing the sentence on lines 27 to 29 with the following: “There are constraints on adaptation that can reduce their effectiveness. These include inertia, governance issues, risk framing and risk cognition.” Note that we are unsure by what is meant by “technology thresholds”. Certainly, technologies that would violate the basic laws of physics and chemistry are non-starters – is that what is meant? If that's the case – it's a trivial statement. (Indur Goklany, US Department of the Interior)	addressed
E-17-57	A	3	27	3	32	In the discussion of limits to adaptation it should be recognized that inertia is not confined to technologies, but also part social and political and financial systems. The paragraph appears weak and would benefit from elaboration of constraints to adaptation that need to be overcome. (Frank Sperleng, World Bank)	addressed
E-17-58	A	3	27	3	32	In addition to physical and biological limits to adaptation, I would suggest that this executive summary should recognize the other limits/constraints/barriers that are noted throughout the chapter. These include social and cultural limits that currently exist and will need to be challenged and/or integrated into our thinking about adaptation options if adaptation is to be successful. I would also suggest that at least some examples of what is meant by resources should be included so that those interpreting this statement are not limited to thinking only of economic resources. (Roger Street, OUCE)	addressed
E-17-59	A	3	29	3	29	Does framing and cognition of risk imply perception? Disaster risk reduction work shows the importance of risk perception in explaining why adaptive capacity does not translate into action. (Silvia Llosa, ISDR System)	addressed

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E-17-60	A	3	32			Added wording to acknowledge that not all participatory processes are likely to be successful: "... decisions but fair and effective participatory processes are recognized...." (Stephen Sheppard, University of British Columbia)	addressed
E-17-61	A	3	33			Need something here on thresholds, perhaps as they pertain to ecological systems. You might want to refer to the four different categories or systems within which key vulnerabilities are outlined in ch. 19 and say something pertaining to the limits of adaptation for each (i.e. for natural systems, social systems, market systems and geophysical systems). (Jan Corfee-Morlot, University College London & OECD)	addressed
E-17-62	A	4	1			This section does not define resilience and is not clear enough in fleshing out the overall concepts of adaptation and adaptive capacity. You may want to assess and refer to work in the Resilience Alliance (www.resalliance.org/1.php) (Silvia Llosa, ISDR System)	addressed
E-17-63	A	4	9	4	9	How to make differences between adaptation to "variability" and "changes" (Juan Llanes-Reguerio, University of Havana)	addressed
E-17-64	A	4	9		9	add "and expected" or "anticipated" between "observed" and "climate changes" - to be consistent with rest of text where you always mention both (Susanne Moser, National Center for Atmospheric Research)	addressed
E-17-65	A	4	14			This reference to UKCIP, 2003 doesn't feature in the reference list. The reference list includes a ref to UKCIP, 2005 - and to a webpage. I consider this reference would be better if it referred to the recent report by UKCIP (West and Gawith, 2005) which reviews progress in the programme over the last 3 years. This reference is included in chapter 2. (Richenda Connell, acclimatise)	addressed
E-17-66	A	4	20			Citing of US National Assessment, 2000 regarding the statement "adaptation is increasingly regarded as inevitable as part of a response strategy for climate change" - is this actually the most appropriate reference for such a statement. Considering the US' position on responding to climate change on the whole, it strikes me that support for adaptation could be politically motivated. I recommend finding an alternative reference for this statement. (Emma Lisa Freja Schipper, International Water Management Institute)	addressed
E-17-67	A	4	20			Add Goklany (1995) to the reference on this line. Rationale: it predates the current reference and sets forth an elaborate rationale for adaptation. (Indur Goklany, US Department of the Interior)	Pre2001 reference – was included in previous draft
E-17-68	A	4	23	4	24	The last sentence in this para sounds right but needs references and evidence. (Indur Goklany, US Department of the Interior)	addressed

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E-17-69	A	4	27	4	27	add 'including extreme weather events' after 'effects' (Silvia Llosa, ISDR System)	
E-17-70	A	4	28	4	28	after 'processes' add 'perception of climate-related risks,' (Silvia Llosa, ISDR System)	addressed
E-17-71	A	4	30	4	31	Would suggest that it be noted that adaptations to current variability in weather and climate can reduce vulnerability and hence build resilience for dealing with a changing climate as long as that variability is consistent with projected changes in climate. There are some components of current vulnerability that will be less frequent in the future and therefore expending resources to address that aspect of vulnerability would not really be building resilience for dealing with a changing climate. (Roger Street, OUCE)	addressed
E-17-72	A	4	31			As references to the paragraph, add Goklany (1995, 2000, 2003). (Indur Goklany, US Department of the Interior)	condidered
E-17-73	A	4	36	4	42	Not all historical adaptation to past changes in climate by natural or human systems were, nor would now be judged as being, successful. This should be noted. For example, the loss of species as a result of past changes in climate may not be acceptable now, nor as it is noted later in the chapter would be mass migration of human populations to find more acceptable climates. (Roger Street, OUCE)	addressed
E-17-74	A	4	39	4	39	after 'individuals' add 'and communities' (Silvia Llosa, ISDR System)	addressed
E-17-75	A	4	40	4	42	Change “is undertaken by governments...” to “are undertaken, e.g., by governments ...” (Indur Goklany, US Department of the Interior)	addressed
E-17-76	A	4	40	4	41	“[A]daptation ... undertaken by government on behalf of society” is a phrase that obscures the fact that governments often act on behalf of segments and pressure groups within society. (.)	addressed
E-17-77	A	4	44	4	51	we suggest adding a sentence to convey a people oriented vision of vulnerability: 'When the focus is adaptive capacity of social systems, vulnerability can be seen as the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impact of hazards. (IFRC, 1999 Vulnerability and Capacity Assessment, International Federation of the Red Cross, Geneva 1999)' (Silvia Llosa, ISDR System)	addressed
E-17-78	A	4	46	4	46	definition of vulnerabilityc ombines elements of vulnerability and resilience (John Morton, University of Greenwich)	addressed

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E-17-79	A	4	48	4	51	"...it also depends on the distribution of resources and ..." Isn't dirticution of resources already a part of adaptive capacity. (Upasna Sharma, Indian Institute of Technology, Bombay)	addressed
E-17-80	A	4	50	4	50	Differentiate between publications by O'Brien et al, 2004 (Bernard Edward Gomez, Department of Water Resources)	addressed
E-17-81	A	4	50			Change "distribution" to "availability". The reason why distribution becomes a problem is that a skewed distribution means resources are not necessarily available in equal amounts to all segnments of society. Thus the real problem is availability. (Indur Goklany, US Department of the Interior)	addressed
E-17-82	A	5	2	5	2	is it the impacts or the 'probability to experience' the impacts? (Silvia Llosa, ISDR System)	addressed
E-17-83	A	5	8	5	9	'the ability of social systems to learn in response to disturbances (Turner et al, 2003 A framework for vulnerability analysis in sustainability science, PNAS (July 8 2003) vol 100, no 14 pp8074-8079)' could be added in the definition of adaptive capacity (Silvia Llosa, ISDR System)	addressed
E-17-84	A	5	8			Eliminate "evolve in order", although we would agree that the ability to evolve as the nature and magnitude of the threat changes would be an important – but not the only aspect of aspect -- adaptive capacity. (Indur Goklany, US Department of the Interior)	addressed
E-17-85	A	5	11	5	11	delete 'inherent' (Silvia Llosa, ISDR System)	addressed
E-17-86	A	5	12	5	12	after 'present day' insert 'Indigenous people have been living in hazard-prone areas for centuries and have devised their own methods for protecting themselves and their livelihoods, based on their own skills, resources and experiences (Twigg, 2004 Disaster Risk Reduction. Mitigation and Preparedness in development and emergency programming. Overseas Development Institute, London, 2004).'	addressed
E-17-87	A	5	16	5	16	Last two words "well adapted", what is the measure of a society being well adapted? Maybe we can use "well developed" instead of "well adapted". (Upasna Sharma, Indian Institute of Technology, Bombay)	addressed
E-17-88	A	5	18	5	30	The paragraph on "planning" is too condensed and does not provide a sufficient definition of what planning is. Scale and the kinds of resources and rules planners use as tools to guide change are unaddressed. (.)	addressed
E-17-89	A	5	24	5	30	The question is more related to identification of where the decision to introduce a particular adaptation intervention should take place. Many would suggest that it is	addressed

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						rather obvious as to where the intervention should take place. (Roger Street, OUCE)	
E-17-90	A	5	26		29	There is also a question of agency - I.e. who should be the principal agent of change for different types of vulnerability -- government? If so, at which scales for which types of vulnerability? Individual or private sector actors? (Jan Corfee-Morlot, University College London & OECD)	addressed
E-17-91	A	5	29	5	30	Insert "can" before "remain" on line 29. On line 30, change "will" to "might". (Indur Goklany, US Department of the Interior)	addressed
E-17-92	A	5	35			adaptation practices should be those intentionally considering climate change. The useful actions but inconsciously considering climate change should be excluded. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	The authors disagree as (1.) consciousness is hard to attribute; and (2.) any action that reduces the impacts should be qualified as adaptation.
E-17-93	A	5	38	5	38	delete 'facilitate adjustment that' (Silvia Llosa, ISDR System)	Accepted.
E-17-94	A	5	45	5	47	Delete first sentence of this paragraph - redundant. (Jean Palutikof, Met Office)	Rejected. Authors disagree.
E-17-95	A	5	45	6	33	A real world autonomous crop adaptation in response to extreme flooding in Bangladesh has been addressed by Younus et al. in 2005a and 2005b. The complete reference is: Younus, Bedford and Morad (2005a): Not so High and Dry: Patterns of 'autonomous adjustment' to major flooding events in Bangladesh, Geography, Vol 90, Part 2, Geographical Association, UK; Younus, Bedford and Morad (2005b): Climate-Induced Flooding, Autonomous Adjustments and Human Security in Bangladesh - A Geographical Assessment, An International Workshop on Climate Change and Human Security, held in Oslo, Norway, organised by GECHS, CICERO and PRIO, 22-23 June, 2005, currently available at http://www.gechs.org/activities/holmen/Younus_etal.pdf It is an important case study for autonomous crop adaptation where extreme flooding event (s) has been triggered/considered as a main emerging force for climate change. (Aboul Fazal Younus, The University of Adelaide)	The authors are just laying the stage here and there are many more examples that could be mentioned here.
E-17-96	A	5	51	6	3	The following suggestions aims at making the typology more flexible and facilitating the links between climate change science and other disciplines as ecology and developmental sciences: replace 'climatic zone' by 'ecosystems'; in the following parenthesis after 'arctic', add 'urban environments'; replace 'baseline economic development ... implemented' by 'level of human development (low, middle and high human development)'; (Silvia Llosa, ISDR System)	Inconsistent logic: urban environments are not an ecosystem; changes made in text concerning income/development levels.
E-17-	A	6	5	6	22	In connection with cost-effectiveness of early adaptation, we propose the following	This comment is making a different point: cost

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97						quotation from Tearfund: 'It has been estimated that for every \$1 spent on preparing for a disaster, a further \$4-10 is saved in the cost of recovering from it.' found in several papers including 'One disaster too many' (2005) The points in this paragraph could be reinforced by the following suggestions: As noted by the EC (see Communication from the Commission to the Council and European Parliament: 'Climate change in the context of development cooperation' (2003) http://europa.eu.int/eur-lex/en/com/cnc/2003/com2003_0085en01.pdf), addressing vulnerability to current climate is a logical first step in adaptation to climate change. Furthermore, the case of the region of Paris cited in the conclusions of the Chair of the OECD global forum on sustainable development (2005) (http://www.oecd.org/document/5/0,2340,fr_2649_37465_33751109_1_1_1_37465_00.html) states 'The case of the region of Paris meanwhile highlighted that risk management priorities should focus first on reducing the high vulnerability to current flooding risk.' (Silvia Llosa, ISDR System)	effectiveness of disaster prevention is not relevant here but rather the cost effectiveness of adaptation measures.
E-17-98	A	6	6	6	6	add 'and extremes' after 'variability'. The fact that adaptation has to address both gradual changes in average climatic conditions and climate variability and extremes could be clearer. Moench defines adaptive capacity as “the ability of entities (individuals, groups, institutions, species, etc.) within a socio-economic system to respond to both sudden and long-term changes that fundamentally alter system characteristics without facing large declines in the overall productivity of the system or causing distributional changes that undermine access to resources or the quality of life for the individuals involved.” (Moench, M. (2005). Water, Climatic Variability and Livelihood Resilience: Concepts, Field Insights and Policy Implications. Stockholm, Resilience and Freshwater Initiative, Swedish Water House: 49) (Silvia Llosa, ISDR System)	Rejected: “variability” includes extremes
E-17-99	A	6	12	6	13	Leave some questions open without further explanation, this applies for expressions as 'synergistic with development priorities' and 'conflicts' (Carla Encinas, IPCC TSU)	Examples have been added to clarify the statement.
E-17-100	A	6	12			To Ribot et al. (1996), add Goklany (2006a). (Indur Goklany, US Department of the Interior)	Goklany (2006) does not exist as of Nov 2006 at the source indicated by the author (Mitigation and Adaptation Strategies for Global Change)
E-17-101	A	6	13	6	23	Suggest making this text section a new paragraph. It provides a different level of detail to the preceding text on the three levels of adaptation response (i.e. current variability, observed trends, scenarios) by discussion how adaptation to current	Section now broken up in three paragraphs.

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						climate variability can increase resilience to long-term climate change. (Frank Sperling, World Bank)	
E-17-102	A	6	13	6	23	On the discussion of adapting to climate variability in its relevance for adaptation to climate change. Reducing the adaptation deficit to current climate variability is an important step towards improving the resilience to current and future climate risks (e.g. Burton). However, some caveats apply. It is necessary to ensure that adaptation efforts to current climate variability and extremes due not represent rigid measures which lock stakeholders into a development path which may be maladaptive in the long-run by not be capable to accommodate further changes in climatic conditions. In the text you rightly highlight that a forward looking investment and planning response may be required. This may be the case for example for climate proofing infrastructure projects or deciding on the value of irrigation schemes in a specific region. In the discussion paper "Disaster Risk Management in a Changing Climate" (F. Sperling and F.Szekely, 2005, Reprint w/ addendum on conference outcomes), which was prepared for the World Conference on Disaster Reduction on behalf of the inter-agency Vulnerability and Adaptation Resource Group (VARG), we argue (p. 22 ff.) -- in the context of the inter-linkages between disaster risk management and adaptation to climate change -- that the knowledge of 'change' by itself implies flexibility, continuous re-evaluation of risk and re-adjustment of measures where necessary. 'Change' means that past experiences focused on addressing climate related disaster risks may only be of limited use in the future. Where the direction of change is unclear, rigid solutions with long-term effects should be avoided to the extent possible and alternative risk mitigation measures for the given objective be explored, which provide more flexibility for being adjusted over time. Often there exists more specific information, which gives insights into at least the qualitative, if not quantitative direction of change. In connection with understanding of current vulnerabilities, such knowledge will provide more detailed guidance whether a specific climatic risk is likely to be exacerbated in the future and therefore should receive further attention. (Frank Sperling, World Bank)	No change – the statement only says “adaptation to climate variability <i>can</i> also increase resilience to long-term climate change”. The possibility of exceptions is implicit in the formulation.
E-17-103	A	6	13	6	14	Adaptation to current climate variability can increase resilience, but can also cause conflicts and result in maladaptive or non-sustainable measures being introduced. These later examples are not to difficult to find and most countries have some direct or indirect experience in dealing with them. (Roger Street, OUCE)	No change – the statement only says “adaptation to climate variability <i>can</i> also increase resilience to long-term climate change”. The possibility of exceptions is implicit in the formulation.
E-17-	A	6	13	6	14	a source of information corroborating this affirmation is F. Sperling and F. Szekely	Citation included

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104						(2005). 'Disaster Risk Management in a Changing Climate'. Discussion Paper prepared for the World Conference on Disaster Reduction on behalf of the Vulnerability and Adaptation Resource Group (VARG). Reprint with Addendum on Conference outcomes. Washington, D.C. (Silvia Llosa, ISDR System)	
E-17-105	A	6	16	6	17	There are examples in Canada where climate change has been considered in engineering design in the permafrost regions. Examples include major development projects such as containment dams for diamond mines or large buildings (eg. EBA 1995, Hayley 2004, see earlier comment for references). (Sharon Smith, Natural Resources Canada)	Text has been modified; forward planning is not relevant here, but is discussed later in the chapter.
E-17-106	A	6	16	6	18	Glacier retreat and permafrost melt are examples of impacts that would need forward planning. They are not an example of forward planning itself as the sentence seems to convey. (Upasna Sharma, Indian Institute of Technology, Bombay)	Text has been modified for clarification.
E-17-107	A	6	16	6	16	after 'variability' add 'and address new types of risks' (Silvia Llosa, ISDR System)	Rejected.
E-17-108	A	6	25	6	27	The figure is not very helpful. What would be more helpful is to look at response space within which there are four areas. The smallest is adaptation to current climate variability, overlapping that area is adaptation to observed climate trends. A third area (adaptation to scenarios of projected climate change) overlaps part of area 1 and area 2 but expands beyond both of these. A fourth area, response to other trends, stresses and considerations overlaps the other three, covers more of the response space, however, there are responses under 1, 2 and 3 which are outside of area 4. (Roger Street, OUCE)	Figure has been removed.
E-17-109	A	6	25			Add a new para that would read thus: "Given the general low confidence in existing impacts assessments, particularly at the regional and local level, it is useful to develop adaptation measures that would be robust regardless of the precise impacts of climate change at any specific location (Goklany 1995, 2000, 2006a)" (Indur Goklany, US Department of the Interior)	Rejected. This point is already made earlier in this section.
E-17-110	A	6	30	6	4	Sub-headings in this long section are needed to help the reader: adaptation to present-day extremes; adaptation in expectation of future climate change etc. (Jean Palutikof, Met Office)	Rejected.
E-17-111	A	6	30	6	42	See comments earlier about natural and human history being full of examples of maladaptation and responses that would not be acceptable considering our current political, socio-economic, and environmental circumstances. (Roger Street, OUCE)	See response to comment E-17-103

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E-17-112	A	6	30	7	18	This introduction to Section 17.2.2 isn't really about examples of adaptation practices, but about adapting to climate variability. It comes across as out-of-place, and an inappropriate introduction to the following text - given space constraints could usefully be deleted. (Jean Palutikof, Met Office)	Disagree. Adapting to climate variability is part of adaptation measures
E-17-113	A	6	30	32	22	For the section examples of current adaptation practices or the section and/or the section on financial limits, it may be worthwhile to explore the role of insurance schemes currently piloted and implemented by the World Bank and others. These range from household level index insurance to regional risk pooling schemes. See relevant World Bank publications. (Frank Sperling, World Bank)	Insurance is now discussed in two sections 17.2.2.2 and 17.4.2.3
E-17-114	A	6	30			This section does not provide examples of, in particular, small-scale community-based adaptation practices addressing climate change from an integrated perspective, linking it directly to sustainable development activities and disaster risk reduction, that involve education, public awareness etc... Examples include the BCAS-CARE-RVCC Partnership project to improve capacity of vulnerable households with regard to direct climate change impact of floods, droughts and water logging. The Peruvian programme on climate change and air quality does interesting work to raise awareness in regions affected by El Niño. They show how climate change will continue to alter the livelihoods like current climate variability is already doing. There are projects in India to develop resilience of livelihoods and the capacity of communities depending on groundwater to adapt to climate change (see the Advanced Centre for Water Resources Development and Management). The Red Cross/Red Crescent climate centre pilot projects on preparedness to disasters related to climate change are also worth mentioning in this section. In Vietnam for example, 30 coastal communities were able to increase their resilience to storms, floods and droughts by implementing small-scale adaptation measures such as dam building, planting trees and improving loud-speakers systems for early warning. Training was also provided. Another example is the TERI case study in Maharashtra: 'Community Initiatives in enhancing resilience to cope with climatic variability and extreme weather', supported by the World Bank. ActionAid has also launched the following project: 'Disaster Risk Reduction through Schools' which aims to reduce people's vulnerability to natural disasters through making schools in high-risk disaster areas safer, helping them to act as a locus for disaster risk reduction and institutionalising implementation of the Hyogo Framework for Action within education systems. A methodology for participatory vulnerability analysis, developed by ActionAid, will be adapted for use within this project, so	Small scale community based adaptation discussed through more examples in section 17.2.2. It is however not possible to include all specific examples suggested by various reviewers.

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						that analysis and priorities of different communities can be heard and acted upon. In addition to the disasters so often captured in the media with the constant cycle of floods and drought, earthquakes and cyclones, the project recognises that climate change could add to such existing disaster burdens by causing extreme climatic events to become more frequent and intense in the coming years - as well as producing new risks. It will therefore expand the role that schools play in helping communities assess and adapt to climate change, tracking trends and balancing the knowledge of elders with new evidence. Another specific example to include can be found on page 23 of F. Sperling and F. Szekely (2005). Disaster Risk Management in a Changing Climate. Discussion Paper prepared for the World Conference on Disaster Reduction on behalf of the Vulnerability and Adaptation Resource Group (VARG). . The dichotomy of pro-active and reactive glosses over the broad range of approaches undertaken and available. Reference to environmental management as an adaptation option could be explored more fully, consider the work of the Red Cross Red Crescent Center and the work of the Tropical Forests and Climate Change Adaptation program carried out by Center for International Forestry Research et al (http://www.cifor.cgiar.org/trofcca/) which reflects efforts to adapt to the impacts of climate change on the forest resources that support local livelihoods. (Silvia Llosa, ISDR System)	
E-17-115	A	6	30			Of interest to the review may be the publication "Adapting to Climate Change" (W. Vergara, 2005, World Bank, Latin America and Caribbean Region, Sustainable Development Working Paper 25). The paper details ongoing and planned adaptation projects in the region, which include for example measures to address increased frequencies in hurricanes, integration of adaptation into planning processes, impact of glacial melt on water resources, monitoring schemes for vector borne diseases etc. (Frank Sperling, World Bank)	Vegara (2005) is now cited in section 17.2.2
E-17-116	A	6	30			Environment protection, ecosystem conservation and restoration, disaster recovery etc. are benefit to adaptation to climate change. But not every practice or action could be taken as adaptation to climate change. Many of them do not take climate change into account. For example, coastal dam construction is more in terms of disaster prevention than of climate change. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Section 17.2.2 now makes it explicit that many current adaptations are driven by current climate risks and not climate change. It is also emphasized that often even climate considerations are only a small part of overall measures that are undertaken to respond to broader sectoral or development priorities.
E-17-117	A	6	35	6	35	after 'forecasting,' add 'community-based disaster risk reduction'; delete 'famine' before 'early'; after 'systems', add 'disaster risk reduction projects'. Add	Comments partly taken on board.

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						“environmental management” (Silvia Llosa, ISDR System)	
E-17-118	A	6	37	6	39	We disagree with the sentence that commences with “In many cases...”. Despite uncertainties inherent to climate risk estimates, there are numerous adaptation that are possible that do not have to be “reactive”. Consider, for example, malaria or other climate-sensitive diseases. Impacts analyses regarding where or when such diseases might spread because of CC are not reliable. Despite that there are numerous methods to reduce vulnerability to such diseases. For malaria, we could, for instance, try to develop a malaria vaccine or more effective treatments. Neither of these have to be reactive to specific climate changes at particular locations. Similarly, we expect that with climate change, agriculture might have to expand into drier areas with more saline soils. Therefore, general research in these areas now would advance future adaptation in the agricultural sector. For details, see Goklany (2000, 2003, 2006a). (Indur Goklany, US Department of the Interior)	Done. The sentence “In many cases or contexts ... has now been removed”.
E-17-119	A	6	39	6	42	Smith, 1997 is not so "recent" as mentioned in the paragraph, indeed it was cited in the TAR (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Collectively, the references given are recent.
E-17-120	A	7	1	9		I would suggest that attempts are made to make sections 18.2 and 18.3 more concise and to the point. The first section, in particular, suffers from the writing style, which tends to describe the findings of the TAR one by one rather than putting the synthesis of these findings to the fore. Having said all that, both these chapters are progressing well and the authors should be congratulated on assembling an impressive array of material (Mick Kelly, University of East Anglia)	Comment is referring to chapter 18.
E-17-121	A	7	2	7	18	When dealing with climate change risks it is important to recognise that the starting point (or logical first step) for adaptation measures is the existing vulnerability to climate variability and extremes. This paragraph is too restrictive addressing only monitoring and forecasting. Other practices and measures promoted by disaster risk reduction include land use management, natural resource management, risk assessments, appropriate infrastructure, education, capacity-building etc... We propose to refer to the five priority areas for action and related activities to complete the picture of 'proactive practices to adapt to climate variability' with the latest thinking and agreement on the subject. The summary of the Hyogo Framework for Action could be inserted as a box (see http://www.unisdr.org/eng/hfa/docs/summary-HFP-2005-2015.pdf). (Silvia Llosa, ISDR System)	Section 17.2.2 now makes it explicit that many current adaptations are driven by current climate risks and not climate change. It is also emphasized that often even climate considerations are only a small part of overall measures that are undertaken to respond to broader sectoral or development priorities.

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E-17-122	A	7	2	7	13	There is a paper from Meinke et al that include examples covering different regions around the world (South America, Europe, Africa, Australia, India) [Meinke, H, W.E. Baethgen, P.S. Carberry, M. Donatelli, G.L. Hammer, R.Selvaraju, C.O. Stöckle. 2001. Increasing profits and reducing risks in crop production using participatory systems simulation approaches. Agricultural Systems 70: 493–513] (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	A representative set of adaptation practices for various sectors and from around the world are discussed in section 17.2.2. It is however not possible to include all specific examples suggested by various reviewers.
E-17-123	A	7	2	7	5	Note that many response are still reactionary hampered by the lack of the necessary planning framework. (Roger Street, OUCE)	Observation by the author does not necessitate any changes in the examples.
E-17-124	A	7	8		11	Many actions were taken based on sectoral proposes, such as agricultural production, water resources allocation, etc. Though the actions were related to climate change or variabilities, they were not based on climate change. In this point, such actions could not taken as "adaptation". (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Authors do explicitly include adaptation to climate variability in the discussion.
E-17-125	A	7	13	7	13	we propose the following sentence after the parenthesis: 'These also include institutions that address and build understanding of climate-related risks, partnerships and promote adaptation applications through knowledge development and information sharing, including education, training, research, networking' (Silvia Llosa, ISDR System)	The ideas suggested broadly duplicate the content of the preceding sentence.
E-17-126	A	7	13	7	13	Suggestion on sentence beginning with A To read "An evaluation of the responses" (Bernard Edward Gomez, Department of Water Resources)	accepted
E-17-127	A	8	1	8		Examples from Southern South America concerning floods could be added in Table 17.1 (e.g. outputs from AIACC project LA26) (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Table 17.1 has been modified in that sense.
E-17-128	A	8	1			Table 17.1 - What would be useful is a column providing some form of evaluation of the adaptation measures e.g. in terms of degree of reducing vulnerability to the climate stress addressed, sustainability of the measure, long term feedbacks etc (Opha Pauline Dube, University of Botswana)	This does not exist in the literature.
E-17-129	A	8	5	8	5	Adaptation practices " Unreliable snow cover". Diversification of services. This is a good example. (Dionisio Rodriguez Alvarez, Xunta de Galicia)	ok
E-17-130	A	8		8		Is it possible to find examples for Latin America since is the only region missing? Is any of these cases mentioned in the regional chapters? (Carla Encinas, IPCC TSU)	Table 17.1 has been redone with more diverse and representative examples. However the number of examples cannot be increased because of space constraints. There are

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							literally thousands of adaptations that could be discussed.
E-17-131	A	8		8		In the footnote for this Table scale would be scale? (Carla Encinas, IPCC TSU)	accepted
E-17-132	A	8				There should be a table analogous to Table 17.1 that lists general adaptation practices measures by sector. For example for malaria, adaptation measures that could be listed include development of measures to better treat and prevent malaria that would reduce current (and, therefore) future vulnerability to climate change (Goklany 2003). Similarly, Goklany (2005a, 2006a) list various measures that would aid populations cope with hunger, declining food production, water stress and coastal flooding, regardless of whether these problems are due to current climate or climate change Equally importantly, work on these measures can commence despite the lack of location specific impacts assessments that one can have too much confidence in. (Indur Goklany, US Department of the Interior)	Not possible due to space limitations; sectoral limitations are discussed in sectoral chapters.
E-17-133	A	8				table 7.1. In general, we recommend to draw from more sources in order to cover left out regions, including Latin America, Central Asia, East Asia, most of South Asia, and the Middle East. (Silvia Llosa, ISDR System)	Table 17.1 has been redone with more diverse and representative examples. However the number of examples cannot be increased because of space constraints. There are literally thousands of adaptations that could be discussed.
E-17-134	A	8				Many examples in table 17.1 are useful/helpful actions but "adaptation practice" (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Table 17.1 has been redone with more diverse and representative examples. However the number of examples cannot be increased because of space constraints. There are literally thousands of adaptations that could be discussed.
E-17-135	A	9	3	9	3	"some way" changed to "some ways" (Guangsheng ZHOU, Institute of Botany, the Chinese Academy of Sciences)	Rejected: "way" is correct.
E-17-136	A	9	7	9	7	after 'infrastructure', we propose a new sentence: 'This mainstreaming of climate change adaptation measures in existing processes is likely to substantially increase their success and level of efficacy' (Silvia Llosa, ISDR System)	Rejected: mainstreaming is discussed later in the chapter
E-17-137	A	9	10	10	13	Sumarise to reflect key adaptation measures (Maggie Opondo, University of Nairobi)	Text in box has been modified.
E-17-138	A	9	11	10	12	Is that the source for the figure in box 17.1? (Carla Encinas, IPCC TSU)	Source description has been modified.

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E-17-139	A	9	14			Section 18.3: This section should précis the conclusions of Chapter 17 regarding factors determining adaptive capacity as a basis for considering the link with sustainable development rather than starting discussion of that aspect from scratch. Presumably there is also material in the WGIII report that is relevant here (on factors shaping mitigation capacity). At present, in focusing on response capacity, the discussion is skewed towards a few studies. (Mick Kelly, University of East Anglia)	Wrong chapter.
E-17-140	A	9	16			Box 17.1 - "One of the most dangerous glacial lakes..." - judgement laden expression. And what is a "dangerous" lake? (Emma Lisa Freja Schipper, International Water Management Institute)	Text has been modified.
E-17-141	A	9	21	9	21	Change "in" to "is" (Bernard Edward Gomez, Department of Water Resources)	Text in box has been modified.
E-17-142	A	9	23	9	23	Should indicate that it is 90-100 million cubic metres of water. (Roger Street, OUCE)	Text in box has been modified.
E-17-143	A	10	20	10	20	These measures include technologies like artificial snow making. The same example. (Dionisio Rodriguez Alvarez, Xunta de Galicia)	Artificial snowmaking is discussed,.
E-17-144	A	10	31			The 2003 heat wave - you mention that it was only in France, but it was actually in most European countries. Portugal had terrible fires. Please adjust as appropriate. (Emma Lisa Freja Schipper, International Water Management Institute)	Text has been modified.
E-17-145	A	10	31			2003 heat wave was Europe wide even if the most fatalities are thought to have occurred in France (Jan Corfee-Morlot, University College London & OECD)	Text has been modified.
E-17-146	A	10	32	10	35	This is an important statement, but buried. Should be more prominent, more generalized and more clearly stated (a) Many (most?) adaptation practices are to climate variability (b) with recognition that events are becoming more common. (Jean Palutikof, Met Office)	Text has been modified.
E-17-147	A	10	35		38	A new report is available from the UK Environment Agency, which documents many of the measures already in place in Europe to respond to extreme heat events -- see EA 2006 (ask Merylyn McKenzie-Hedger for a copy if you cannot find it on the web; from the EA/EU workshop held in November 2005). (Jan Corfee-Morlot, University College London & OECD)	This report is not (yet) available.
E-17-148	A	10	35			"Public health...have now been put in place..." is much too affirmatively. What have been done is much insufficiently. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Actual examples of where such measures have already put in place are provided in the text.
E-17-	A	10	40	10	40	Using the word 'now' twice in this sentence makes it difficult to understand.	Accepted

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
149						(Roger Street, OUCE)	
E-17-150	A	10	40	10	40	Delete second "now" (Bernard Edward Gomez, Department of Water Resources)	Accepted
E-17-151	A	10	40			"There are now...being put in place now" - repetition of "now" twice in sentence (Emma Lisa Freja Schipper, International Water Management Institute)	Accepted
E-17-152	A	11	8		14	"Qinghai" should read "Qinghai" (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Accepted
E-17-153	A	11	13	11	21	Climate change was considered in design of tailings dams for the Ekati diamond mine (opened 1998) in NWT Canada (EBA 1995, ref provided in earlier comment). Thermosyphons were utilized in the design to ensure maintenance of the frozen core dam and the permafrost foundation. (Sharon Smith, Natural Resources Canada)	Ref not located in the reviewers comments (or in a search by the writing team). Also, not all examples suggested by reviewers can be included for space limitations.
E-17-154	A	11	18	11	19	Much research and engineering studies show that railway lines (and other infrastructure) already do affect the permafrost layer. (Roger Street, OUCE)	Here, reference is made to this specific railway line which has only recently been put in place.
E-17-155	A	11	23	11	23	The report should also mention that in Canada, climate change is also a consideration in environmental impact assessment and is specifically mentioned in the terms of reference for assessments of major projects such as a number of recent mining projects and the proposed Mackenzie Gas Project. There are a number of documents on the CEAA (Canadian Environmental Assessment Agency) web site that deal with incorporation of climate change in environmental impact assessment process. As mentioned in previous comments climate change is also considered in project design. (Sharon Smith, Natural Resources Canada)	Text has been modified to include Canada and a reference is also provided.
E-17-156	A	11	23	11	24	Policy strategies and frameworkd can be cheap, action is expensive especially when it involves infrastructure. Perhaps obvious but never stated explicitly. (Jean Palutikof, Met Office)	Rejected. The authors disagree with the generalisation made by reviewer.
E-17-157	A	11	33			Reference: "The Netherlands, 1997" - surely there must be a ministry, department etc. within the government that this reference belongs to - or are you citing the entire population of the Netherlands? (Emma Lisa Freja Schipper, International Water Management Institute)	Reference has been modified.
E-17-158	A	11	37			"national strategies to and frameworks to.." - remove the first "to" (Emma Lisa Freja Schipper, International Water Management Institute)	Accepted
E-17-159	A	11	42	11	43	A reference for the nine step framework and eight step procedure would help (Roger Street, OUCE)	Reference now provided
E-17-	A	11	51	12	1	Would suggest that construction of flood walls is only one long-term adaptation	Accepted: text has been modified.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
160						options and, in a number of cases will not be practical or sustainable. I would suggest referring to it as one longer-term measure. (Roger Street, OUCE)	
E-17-161	A	11	55			and passim: Qinghai not Quinghai! (John Morton, University of Greenwich)	Accepted
E-17-162	A	12	4	17		Section 17.2.3 somewhere in this section on costs & benefits there should be also a discussion of the role of social/individual choice that may not fit well with what is "optimal" adaptation behaviour. I was reminded of this recently when reading Nicholls et al 2006 (new OECD on-line paper on CZ metrics for assessment of benefits of climate policies). They cite an in-depth Dutch study on the preferences of people living near the coast to regarding adaptation options Though coastal protection may be "cost-effective" or economically optimal, people living in these exposed areas may have a strong preference to retreat than to live behind dikes. Perhaps more importantly it would be useful to place this discussion in the context of decision-frameworks. Costs and benefits of adaptation are important sources of information for decision-makers, whether they be governments or individuals, but they may be more broadly relevant to decision-making about climate change, including preferences for adaptation and for mitigation in the long-term. (Jan Corfee-Morlot, University College London & OECD)	Social choice in the view of the writing team would not fit within this particular discussion on a review of adaptation cost estimates.
E-17-163	A	12	4	18		Section 17.2.3 has a good regional and sectorial coverage. It would be useful if examples that cover terrestrial ecosystems were also included given the existence of a large population that rely on non-timber products as buffer against climate stresses such as drought in developing countries (Opha Pauline Dube, University of Botswana)	Adaptation by natural systems in general is not covered in this chapter, but in Chapter 4. Further not all specific examples suggested by all reviewers can be realistically included in the limited space available.
E-17-164	A	12	4			the section does not evoke adaptation costs/benefits linked to abrupt vs gradual changes. The section could mention that lessons could be learnt from sharing expertise on costs/benefits issues with disaster risk management practitioners. (Silvia Llosa, ISDR System)	Not clear if the reviewer is talking about abrupt non-linear change e.g. thermohaline shutdown) as the first half of the statement implies, or changes in extremes as the reference to disaster risk management implies. The limitations of current cost literature are addressed in the section.
E-17-165	A	12	4			Section 17.2.3 The section heading "Assessment of Adpatation Costs and Benefits" does not seem appropriate, as it does not reflect the contents of the section accurately. The content in the section is more than what the words "costs and benefits" imply. Perhaps simply using "Assessment of Adptation Practices" might be more appropriate. (Upasna Sharma, Indian Institute of Technology, Bombay)	The content of the section has been tightened to focus more explicitly on adaptation costs and benefits.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-17-166	A	12	6		22	need citations. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Text/section has been modified.
E-17-167	A	12	12		13	I don't think the statement that "other, perhaps most, adaptation decisions will be taken by private agents" is unequivocally supported. On one level this statement is correct and entirely meaningless, because most actions (mitigation and adaptation and everything else) are taken by individuals. We all constantly decide and act, use energy, and deal with our environment, so, by sheer demographics and the fact that we are in this world, this statement is true. But I am not sure that it is true in the sense of where major adaptation decisions will be made. As chapter 18 correctly states, many adaptation decisions will have to be facilitated and supported by governmental policies etc. It is quite possible that adaptation requirements to climate change will exceed private, personal, or even firm-level decision capacities. In short, this statement may be premature, and if it is retained, it needs a reference or some other explanatory back-up for the claim. (Susanne Moser, National Center for Atmospheric Research)	Text/section has been modified.
E-17-168	A	12	13	12	13	Private agents. Can we talk about private and social costs and benefits of adaptation?. On the other hand there exist total adaptation costs (?) And net adaptation costs (total costs less benefits on avoided costs and mitigation co-benefits ?). See Chapter 18. (Juan Llanes-Reguerio, University of Havana)	Text/section has been modified.
E-17-169	A	12	18	12	22	Need to highlight the challenges (some would say the impracticality) of trying to identify trade-offs between mitigation and adaptation. This is primarily due to the different spatial and temporal scales at which these two types of responses operate, but also is related to the risks associated with not taking mitigation actions. These risks (for we are conducting an experiment on ourselves) are due to the uncertainties of what would be the resulting impacts (and whether adaptation would be possible or acceptable), the fact that a decision to not mitigate will not only impact on those making the decision but on others for whom the resulting impacts may be dangerous and/or unacceptable, and the fact that one group may be able to accept/respond to a level of climate change whereas other may not, as well as the imperfection of adaptation responses of impacted communities. (Roger Street, OUCE)	Text/section has been modified.
E-17-170	A	12	24	12	36	There are also studies on Costs and benefits in La Plata Basin (e.g. outputs from AIACC project LA26) (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Other AIACC projects are cited in the text; also, unfortunately, not all specific examples suggested by all reviewers can be realistically included in the limited space available.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-17-171	A	12	28	12	34	Differentiate between publications by Fankhauser, 1995 (Bernard Edward Gomez, Department of Water Resources)	Accepted.
E-17-172	A	12	38			Add anew paragraph that would read as follows: "Goklany (2005a), based on results of various global impacts analyses of malaria, hunger, water stress and coastal flooding through the 2080s, estimated the costs and benefits of various sets of actions that would reduce current vulnerabilities to climate sensitive problems that might be exacerbated by climate change. He concludes that the benefit-cost ratios are very high, even in the absence of any discounting, mainly because of the large co-benefits of such activities. These co-benefits include substantial reductions in current vulnerabilities which, moreover, would advance sustainable development across a broad front." (Indur Goklany, US Department of the Interior)	Not relevant here (just giving an overview).
E-17-173	A	12	40	17		Two recent regional studies that may be of interest to this section are in Californnia and in the UK. See Guido Franco & Alan Sanstad on changes in heating and cooling energy demand due to climate change (I recall that they monetized estimates) and new UK estimates (Alistair Hunt), (Jan Corfee-Morlot, University College London & OECD)	Franco, Sanstad paper has been added; Hunt paper cannot be used because it is not published.
E-17-174	A	12	40			Should Box 17.2 go in Section 17.1? (Jean Palutikof, Met Office)	Box 17.2 has been removed.
E-17-175	A	12	42	13	30	These three analysis methods are common methold, no need to explain here taking so much space. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Box 17.2 has been removed.
E-17-176	A	13	1	13	4	Old literature of 1996 and 1997 is used. (Opha Pauline Dube, University of Botswana)	Box 17.2 has been removed.
E-17-177	A	13	7	13	7	Differentiate between publications by World Bank, 2000 (Bernard Edward Gomez, Department of Water Resources)	Box 17.2 has been removed.
E-17-178	A	13	23	13	23	Proper reference for "Uruguay Country Study" (Bernard Edward Gomez, Department of Water Resources)	Box 17.2 has been removed.
E-17-179	A	13	23	13	23	Could you please provide the complete reference for the Uruguay country study? (Carla Encinas, IPCC TSU)	Box 17.2 has been removed.
E-17-180	A	13	23		23	This needs a reference (Susanne Moser, National Center for Atmospheric Research)	Box 17.2 has been removed.
E-17-181	A	13	25			section on MCA could include some examples of the kinds of criteria used in a few of the studies cited. (.)	Box 17.2 has been removed.
E-17-	A	13	34	13	41	Brackets can be removed.	Box 17.2 has been removed.

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182						(Opha Pauline Dube, University of Botswana)	
E-17-183	A	13	39	13	40	Check correct use of World Bank reference. (Frank Sperling, World Bank)	Box 17.2 has been removed.
E-17-184	A	14	1		2	The citation: is there no more recent literature? (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	More recent literature is discussed later in the paragraph.
E-17-185	A	14	6	14	6	Is the reference to Fankhauser, 1995 the 1995b? (Carla Encinas, IPCC TSU)	Reference has been modified for clarification.
E-17-186	A	14	17	14	34	Graphics not easily legible (Maggie Opondo, University of Nairobi)	Graphic has been replaced by a table.
E-17-187	A	14	40			What is Ng, please check (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Ng = last name of author.
E-17-188	A	14	42		42	These numbers seem exceedingly low - that's not even the cost of one semi-significant storm. Seems worth checking... (Susanne Moser, National Center for Atmospheric Research)	Numbers are correctly cited. Storms were not considered in the study (as mentioned later in this paragraph).
E-17-189	A	14	44	14	44	Replace "costal" with "coastal" (Bernard Edward Gomez, Department of Water Resources)	Accepted.
E-17-190	A	14	47	14	47	we would like to call attention to expressions such as flood proofing. The connotation that achieving complete protection from, or immunity to, any climate (or weather) influences is misleading. The reality is that it is challenging, if at all possible, to completely proof against an environmental phenomenon pr floods for that purpose. (Silvia Llosa, ISDR System)	Examples have been added to clarify the meaning of "floodproofing". Although achieving complete protection from climate influence is challenging, if at all possible, it remains the assumption of the author cited here.
E-17-191	A	14	47			What is 'flood proofing'? (Jean Palutikof, Met Office)	Examples have been added to clarify the meaning of "floodproofing".
E-17-192	A	15	4	15	24	The description of adaptations considered in the studies cited here is incomplete. In particular, the description should note whether adaptation measures included in them include adaptations that do not exist today but might in the future as societies get wealthier , secular advances in technology more advanced, and their human and social capital advances (see Goklany 2006a). Without this, there will be a tendency to overestimate impacts. (Indur Goklany, US Department of the Interior)	The description of adaptation practices will necessarily be incomplete, given the large number of measures and the limited space available. It is also not possible to deduce from the published citations for specific practices whether they include adaptations that do not exist today but might in the future.
E-17-193	A	15	4	15	6	Reword sentence for clarity (Maggie Opondo, University of Nairobi)	Text has been modified.
E-17-194	A	15	15	15	15	Statements such as this need to be carefully made. Later in the chapter (page 33, lines 50-51) it is said that forest ecosystems in northern Canada are among those	Language modified to clarify statement.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						regions at greatest risk to impacts of climate change. Is the statement on page 15 true for only agriculture? Are the impacts more severe or are is the agriculture sector in the tropics more vulnerable? (Roger Street, OUCE)	
E-17-195	A	15	26	15	29	Table 17.2 is based on Tan & Shibasaki (2003). These results, however, should be taken with some caution. In the case of Argentina maize yields of 2000 kg/ha (as for year 2000) are really nonsense. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Table has been removed.
E-17-196	A	15	26		29	In Table 17.2, it is unclear what the percentage change is -- in what? Given that yield changes with and without adaptation are already listed (Susanne Moser, National Center for Atmospheric Research)	Table has been removed.
E-17-197	A	15	26		27	clarify what the negative numbers mean -- are these damages which diminish but still remain damages with adaptation? Also it is unclear what the numbers under the main table mean? Are these averages or just a mistake? (Jan Corfee-Morlot, University College London & OECD)	Table has been removed.
E-17-198	A	15	27	15	30	W/O in table heading is not defined. Some numbers dropped down of the table. (Ragab Ragab, Centre for Ecology and Hydrology)	W/o meaning "without": has now been spelled out. Numbers under the table due to a formatting problem.
E-17-199	A	15	27	15	29	Section 17.2.3, table 17.2 on Adaptation Benefits, column "Impacts": What means "w/o" before "with adaptation" (Silvio R. Sant'Ana, Fundação Grupo Esquel Brasil)	W/o meaning "without": has now been spelled out.
E-17-200	A	15	40	15	41	Early warning systems themselves do not necessarily reduce adverse impacts. They provide information that can be used to reduce adverse impacts. (Roger Street, OUCE)	It is said that they help in reducing adverse impacts.
E-17-201	A	15		15		Table 17.2 "the combination of crops makes the table difficult to understand and interpret. The use of a single crop may portray the message better, as the aggregation masks individual crop sensitivities" (Bernard Edward Gomez, Department of Water Resources)	Table has been removed.
E-17-202	A	16	2	16	4	But this figure is unrealistic for the climate change case, if the situation returns to 'normal' after this single shock. (Jean Palutikof, Met Office)	The study is specifically focussing on climate change and is, in fact, simulating a single climate shock leading to permanent climate change. Text has been modified to better reflect the results of the study.
E-17-203	A	16	2			Section 18.4.2: Material on cost-benefit analysis etc duplicates material in Box 17.2 (Mick Kelly, University of East Anglia)	Box 17.2 has been removed.
E-17-204	A	16	11	16	13	The sentence is somewhat difficult to understand due to the use twice of the word variability.	Text has been modified for clarification.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Roger Street, OUCE)	
E-17-205	A	16	16		37	A2 scenario considers higher development degree (medium to high emission), which is not properly designed for a poor country. B2 scenario is much more reasonable. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Gambia is not (only) impacted by its own emissions but by global emissions.
E-17-206	A	16	20	16	20	Replace "poor" with "least developing" (Bernard Edward Gomez, Department of Water Resources)	Text has been modified.
E-17-207	A	16	27	16	27	Section 17.2.3, Table 17.3, error on "outcome for 2100" instead of 2010 (Silvio R. Sant'Ana, Fundação Grupo Esquel Brasil)	Text has been modified.
E-17-208	A	16	32	16	32	'yield time price' - not sure what this means ??? (Mark Tadross, University of Cape Town)	Changed to "yield times price"
E-17-209	A	16	32	16	32	Replace "time" with "times" (Bernard Edward Gomez, Department of Water Resources)	Accepted.
E-17-210	A	16	32		32	Explain/replace "yield time price" (Susanne Moser, National Center for Atmospheric Research)	Changed to "yield times price"
E-17-211	A	16	33	16	33	Section 17.2.3, Table 17.3, error on "suggest that for the 2010-1039" instead of 2010-2039 (Silvio R. Sant'Ana, Fundação Grupo Esquel Brasil)	Accepted.
E-17-212	A	16	33	16	33	Replace "2010-1039" with "2010-2039" (Bernard Edward Gomez, Department of Water Resources)	Accepted.
E-17-213	A	16	33	16	33	Need to correctly identify the period (not 2010-1039) (Roger Street, OUCE)	Accepted. 1039 changed to 2039.
E-17-214	A	16	33	16	33	2010-1039? (Opha Pauline Dube, University of Botswana)	Accepted. 1039 changed to 2039.
E-17-215	A	16	34	16	37	Was there any consideration of the viability of irrigation, especially in the longer term? Were there considerations of the costs of irrigation on soil and water resources for uses other than agriculture? (Roger Street, OUCE)	The study is considering adaptation only for near-term scenarios for which irrigation was considered as a viable option. Ground water was estimated to be sufficient and the impact on resources for other use were not considered. Text has been modified.
E-17-216	A	16	46		47	It is unclear whether the Morrison and Mendelsohn figures are for this sector only aggregate numbers e.g. across the market economy -- clarify. (Jan Corfee-Morlot, University College London & OECD)	Text has been modified for clarification.
E-17-217	A	17	3	17	8	not clear - is the current situation (without climate change) assumed to be 100% I.e. is there a reduction in reliability in the future that the adaptations are measured against ??	Text has been modified for clarification.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Mark Tadross, University of Cape Town)	
E-17-218	A	17	8		8	replace "were ignored" with "were not assessed" (unless you know they were ignored, and if so, add why) (Susanne Moser, National Center for Atmospheric Research)	Accepted.
E-17-219	A	17	10		14	move these 5 lines below Box 17.4 (Susanne Moser, National Center for Atmospheric Research)	Accepted.
E-17-220	A	17	17	17	36	Please move Box 17.4 is moved to line 10 after the first paragraph. (Carla Encinas, IPCC TSU)	Accepted.
E-17-221	A	17	26	17	28	Sentence not clear (Opha Pauline Dube, University of Botswana)	Text has been modified for clarification.
E-17-222	A	17	27			Please give figures in dollars or Euros (Jean Palutikof, Met Office)	Not possible. The authors can only report on published numbers and currency. Converting them requires assumptions by the writing team about the precise exchange rates and the date of the the exchange rate.
E-17-223	A	17	28	17	30	social costs do not end with possible harm of rising cost of water due to market reforms. As the World Commission on Dams has demonstrated, dam construction often harms the rural poor by displacement from land designated for reservoirs, increased spread of HIV-AIDS by the juxtaposition of migrant male dam construction workers and villagers, and other down stream affects on small scale water management by the rural poor. Given that dam construction is a common adaptation in many parts of the world, we recommend to cite the report of the World Commission on Dams (http://www.dams.org/) (.)	Authors are referring to possible harm of rising cost of water as "a" social cost.
E-17-224	A	17	45	17	45	how do these benefits compare to the given costs ? (Mark Tadross, University of Cape Town)	The source studies reported in such cases do not provide such a comparison.
E-17-225	A	17	51	18	2	What is your (or IPCC's) opinion on this estimation, properly, too high, or too low? (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Authors (or IPCC) don't have an opinion; no assessment possible on the basis of one study.
E-17-226	A	18	11		25	Make this paragraph (and the rest of the chapter consistent), by always noting a cost in a certain year's dollars (e.g., 1990 US\$) (Susanne Moser, National Center for Atmospheric Research)	The authors would need to check with IPCC in order to ensure consistency throughout the whole report. For the moment, we stick to what authors report in the source study.
E-17-227	A	18	13	18	13	As stated by Yamin, Rahman and Huq (Vulnerability, adaptation and climate disasters: A conceptual overview, IDS Bulletin Vol. 36, N°4 October 2005), 'today's poverty is yesterday's unaddressed vulnerability' (Silvia Llosa, ISDR System)	Where does this comment belong to???

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-17-228	A	18	16	18	23	not clear if these figures now refer to the global costs or just those for the US. (Mark Tadross, University of Cape Town)	Text has been modified for clarification.
E-17-229	A	18	18	18	18	Please specify the What does FUND model stand for? (Carla Encinas, IPCC TSU)	FUND has now been spelled out.
E-17-230	A	18	21	18	21	Replace "obtain" with "obtained" (Bernard Edward Gomez, Department of Water Resources)	Accepted.
E-17-231	A	18	23			Not clear what Tol's number of 1055 bn \$ represents re adaptation cost for SLR. Is this an economically optimal level of adaptation?? (Jan Corfee-Morlot, University College London & OECD)	Yes, it optimised following the methodology developed by Fankhauser (1994); see Tol (2002) for details.
E-17-232	A	18	28			We suggest to provide some examples of old strategies and technologies in order to maintain the stylistic symmetry with "new strategies and technologies," which are amply exemplified (p. 19, lines 32-38). This is not only important because of the tendency for policy makers to favor "the new" and the general cultural bias often observed against "the old", but also because inter-generational transmission of "the old" is imperfect and growing more difficult due to rapid urbanization, premature death due to HIV-AIDS of adults who could transmit experience. (.)	Accepted.
E-17-233	A	18	28			Section 17.3 "Assessment of Adaptation Capacity, Options and Constraints", the "options and constraints" part of this heading seems like a repetition as section 17.4 "Enhancing Adaptation: Opportunities and Constraints" deals specifically with opportunities and constraints. Infact, this entire section 17.3 could do with some restructuring. (Upasna Sharma, Indian Institute of Technology, Bombay)	Accepted.
E-17-234	A	18	30	19		Section 17.3.1 makes good links between vulnerability and adaptation (Opha Pauline Dube, University of Botswana)	Accepted.
E-17-235	A	18	30			What are the elements still unclear in this sub-sub-section. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Addressed
E-17-236	A	18	30			we propose a reconsideration of this section to clearly state the importance of local determination of needs, as adaptation is highly context-specific and generic policies for effective adaptation are difficult to define. (source: Yamin, Rahman and Huq in Vulnerability, adaptation and climate disasters: A conceptual overview, IDS Bulletin Vol. 36, N°4 October 2005). (Silvia Llosa, ISDR System)	Addressed
E-17-237	A	18	30			Section 17.3.1 "Elements of adaptive capacity", though the heding implies that there would be a discussion of elemnents of adaptive capacity here, but actually there is no explicit discussion of 'elements' of adaptive capacity.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Upasna Sharma, Indian Institute of Technology, Bombay)	
E-17-238	A	18	32	18	33	successful is not defined (Silvia Llosa, ISDR System)	Addressed
E-17-239	A	18	36	18	38	If, concerning tourism, this means enhancing current trends in western countries (more frequent departures for shorter stays), this kind of adaptation will lead to an increase in the emissions related to travel, which by far dominate the GHG emissions of tourism (Jean-Paul Ceron, CRIDEAU (Université de Limoges-CNRS-INRA))	Addressed
-240	A	18	39	18	39	Add “awareness of the potential risks and opportunities associated with climate change” (.)	Addressed
E-17-241	A	18	42	18	42	add 'technology' and 'infrastructure' to the list; after 'networks' add 'and assets' (Silvia Llosa, ISDR System)	Addressed
E-17-242	A	18	46	18	49	Section 17.3.1 - The text states that "High income per capita...to adapt to climate change". Following : "Furthermore even within wealthiest developed countries have lower adaptative capacity". However, in the same section, page 19, lines 22 to 24, the text states: "One clear result...(.) some dimensions of adaptative capacity are generic...(.) Generic indicator include factors such education, income and health". It can be argued that wealthiest societies have all those indicators (income, education and health); in that case, how to conciliate these two propositions (one saying that those factors are not relevant and another saying it is relevant). Moreover, the whole document affirms those factors are important. (Silvio R. Sant'Ana, Fundação Grupo Esquel Brasil)	Addressed
E-17-243	A	18	46	18	47	Replace the sentence sentence commencing with “High income per capita ...” with the following: “High income is one of many determinants of the capacity to adapt to climate change (Goklany 2000, 2006a, Moss 2001).” (Indur Goklany, US Department of the Interior)	Addressed
E-17-244	A	18	49	18	50	Not clear how this sentence follows from the previous discussion. I would suggest that what follows from the previous discussion is that adaptive capacity is necessary and its determinants are varied. (Roger Street, OUCE)	Addressed
E-17-245	A	19	1	19	13	The paragraph could refer to extensive body of knowledge on vulnerability from the disaster risk reduction field. In particular, the phrasing 'vulnerability can be seen' (p.19, 1.3) is misleading as it is a reflection of the state of the individual and collective physical, social, economic and environmental conditions at hand. These are shaped continually by attitudinal, behavioural, cultural, socio-economic and political influences on individuals, families, communities and countries (Living	Addressed

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						with risk 2004 UNISDR). They increase the susceptibility of a community to the impacts of hazards including but not restricted to climate change. To add further insights to the discussion on vulnerability, we recommend for assessment the UNU Research brief, N° I (2005) entitled 'Danger need not spell disaster, but how vulnerable are we?' written by Joern Birkmann available on the unu-ehs website. Definitions of vulnerability and how it can be measured accurately are discussed. For consideration we highlight the discussion of the social levels of vulnerability, theoretical aspects of definition of indicators, quantitative vs qualitative approaches, the importance of 'exploring specific cases of severely hazardous recent events [...] for understanding the difference between theories and context situations in general, and the reality of revealed vulnerabilities and actions taken when an extreme event hits the society, economy and environment'. The paper concludes by stating that '[a]lthough major decisions have to be taken at the political level, scientific research and contributions from the scientific community worldwide are essential to examine the opportunities and provide the tools to assess progress towards disaster-resilient societies.' (Silvia Llosa, ISDR System)	
E-17-246	A	19	2			I do not fully understand - and certainly do not agree with - the sentence "Vulnerability is often considered an outcome of climate change". As we know, the risk posed by climate change is a result of the magnitude of the hazard itself (flood, drought, heat wave) and the degree to which people are vulnerable to these hazards. Climate change cannot create vulnerability - vulnerability is based on factors that have to do with governance, poverty etc. With this statement, you are taking us back to the "old" disaster-centred view, whereby people's risk was at the hand of "fate" i.e. the hazard. Even in the context of adaptive capacity, I think this sentence is incorrect and needs to be rephrased. What are you really trying to say here? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-247	A	19	4			Cardona (2003: The Need for Rethinking the Concepts of Vulnerability and Risk from a Holistic Perspective: A Necessary Review and Criticism for Effective Risk Management) would disagree with the characterisation of vulnerability as a "condition" or "state", especially as it is relative to the hazard. People are not just vulnerable - they are vulnerable to floods or droughts - they may not be vulnerable to both. (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-248	A	19	7	19	7	Need to remind readers of the two types of vulnerability. (Roger Street, OUCE)	Addressed

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E-17-249	A	19	8	19	8	The term "adaptive options" can be interpreted variously. Maybe you mean "adaptation interventions and enhancement of adaptive capacity". (Upasna Sharma, Indian Institute of Technology, Bombay)	Addressed
E-17-250	A	19	13			You cite Kelly and Adger 2000 here, but I think you should also go back to the original source - Blaikie et al 1994. (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-251	A	19	22	19	26	It is unclear to me how dimensions of adaptive capacity can be "generic" - aren't they all relative? I think what you are trying to say is that there are certain elements that generally drive adaptive capacity, such as education, income, health. But the use of "generic" does not seem appropriate here. I also don't think use of the term "indicators" is correct - again you are referring to the types of elements that you also describe as "generic" - Please rephrase to clarify and improve consistency. (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-252	A	19	24			Replace the sentence starting with "Generic indicators include ..." with the following: "Generic indicators include measures for levels of education, income and health, and factors that affect them, e.g. food supplies per capita, levels of malnutrition, access to safe water and sanitation (Goklany 2000, 2006a)" (Indur Goklany, US Department of the Interior)	Addressed – much of the section re-written so comment no longer applicable
E-17-253	A	19	29	19	29	you may consider mentioning science also in this context and refer to the initiative on 'Science and technology for sustainability' and its work on vulnerability and resilience of the nature-society system, as well as values, attitudes and behaviours. (Silvia Llosa, ISDR System)	Addressed
E-17-254	A	19	29			Section 17.3.2 "Determinants of adaptive capacity, role of technology", Is it really necessary to have a separate section discussing the role of technology? Technology is only one of the determinants of adaptive capacity. There is no discussion of other determinants of adaptive capacity under a section heading that would imply a discussion of other determinants of adaptive capacity too. (Upasna Sharma, Indian Institute of Technology, Bombay)	Addressed
E-17-255	A	19	29		29	I continue to believe - as in my comments on the first-order draft - that the heading for section 17.3.2 should delete the portion after the comma (role of technology), as the text that follows goes far beyond the role of technology, and it is by far not the only determinant of adaptive capacity as you convincingly argue in that section. Often it is not the dominant one even. You don't lose anything by dropping it from the header - you still talk about it. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-256	A	19	31	19	45	Reflects the need to consider the social and cultural acceptability of technologies (Roger Street, OUCE)	Addressed

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E-17-257	A	19	31	19	34	Add Goklany (1995, 2006a) to the references here. (Indur Goklany, US Department of the Interior)	
-258	A	19	40	19	40	But traditional technologies such as planting trees for coastal protection offer valuable contributions as well. (.)	Addressed
E-17-259	A	19	41			Insert a new sentence on this line that would read: "Openness to technological innovation is also a critical to ensuring that technological options are developed or improved and, where necessary, deployed. In fact, lack of openness to adopting technological options available to other cultures seems to have contributed to the extinction of the Norse civilization in Greenland around A.D. 1500 (Goklany 1995). (Indur Goklany, US Department of the Interior)	Addressed
E-17-260	A	20	3			Add Goklany (2006a) to the references here. (Indur Goklany, US Department of the Interior)	Addressed
E-17-261	A	20	11			Append the following to the end of this para: "Goklany (2005a, 2006a) has developed and applied a preliminary framework that considers adaptation (including efforts to advance adaptive capacity) in conjunction with efforts to advance sustainable development." (Indur Goklany, US Department of the Interior)	Addressed
E-17-262	A	20	13	21	24	Maybe we could have a different section (say 17.3.3) named "Aggregate vs. local context of adaptive capacity" where we could locate the discussion related to "national indicators of adaptive capacity" and "Local context for adaptive capacity". Its current location under the heading 17.3.2 "Determinants of adaptive capacity, role of technology" does not seem to be appropriate. (Upasna Sharma, Indian Institute of Technology, Bombay)	Addressed
E-17-263	A	20	13		43	This part is not talking about the indicators. It is talking on what have been done on national indicators. Therefore, the topic should change into "work on national indicators of adaptation capacity." (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Addressed
E-17-264	A	20	14	20	16	In the text it is suggested that the inter-agency document "Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation" (AfDB et. al, 2003) merely equates adaptive capacity with levels of development. As editor of the document I feel this does not paint a complete picture, especially if used as a sole citation of the document in chapter 17. The document, which was jointly co-authored by ADB, AfDB, BMZ, DFID, DGIS, EC, OECD, UNDP, UNEP and the World Bank and received highlevel signature, represents a consensus view of these	Addressed

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						agencies that climate change threatens the sustainable progress towards and especially beyond the MDGs. Emphasis is placed on the need to mainstream adaptation into development processes. In this context adaptation entails addressing existing vulnerabilities to climate variability and extremes and future change. The document therefore played an important role in shaping the view of these agencies of climate change as development issue. In terms of vulnerability it is recognized that human, social and environmental capital play an important role. However, this does not imply a business as usual scenario for development, which suggest that improvement in development automatically improves adaptive capacities. It can, but it is not necessarily so. That is why the paper argues the need for adapting to climate change as an important integral part of sustainable development. The precise point of the document is that more needs to be done, that we cannot continue simply with business as usual. In this context the document also discusses lessons learnt from past experiences and outlines a way forward to overcome some of the existing challenges and barriers. Hence, it would be appreciated if a more complete picture of the messages of this document would be presented in the connection with the discussion of adaptation options and constraints of pp. 18 onward and international action on pp. 27. (Frank Sperling, World Bank)	
-265	A	20	14	20	14	Broadly speaking, national capacities for forecasting and early warning as well as for disaster risk reduction provide an important national indicator of adaptive capacity. (.)	Addressed
E-17-266	A	20	16			Add Goklany (2000, 2006a) to the reference on this line. (Indur Goklany, US Department of the Interior)	Addressed
E-17-267	A	20	20			"seeking to maximise the welfare of ITS citizens, to maintain control of THEIR citizens" - who do ITS and THEIR refer to? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed – sentences deleted
E-17-268	A	20	24	20	28	This entire section needs to be rewritten. The way it is presented is totally inconsistent. For example, you talk about different elements that are important attributes of adaptive capacity, but they are not all on the same level, i.e. "per capita income, INEQUALITY IN THE DISTRIBUTION OF INCOME, UNIVERSAL HEALTH CARE COVERAGE, HIGH ACCESS TO INFORMATION" = this should be rewritten as "per capita income, distribution of wealth, health care coverage, access to information". It is obvious that these things need to be "equal, universal and high" but it should not appear here as it is too value laden (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed

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E-17-269	A	20	24			"per capita" - remove "s" (Emma Lisa Freja Schipper, International Water Management Institute)	
E-17-270	A	20	25		25	Make all these variables go in the same direction, i.e., so they logically fit into this sentence. Inequality in the distribution of income - at least as far as I know - does NOT allow a country to adapt to health-related risks. So, just change that phrase to "equally distributed income". (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-271	A	20	35	20	43	In addition, vulnerability indices are not always objective. For example, small islands have used their inherent vulnerability to receive exceptions in concessional development lending. A vulnerability index that shows how vulnerable they are reinforces these exceptions, and tends therefore to be suspicious to donors. (Sofia Bettencourt, World Bank)	Addressed
E-17-272	A	21	3	21	3	We propose the following as last sentence of this paragraph "Examples of such case studies include community-based initiatives as disaster risk reduction and other livelihood related projects." (Silvia Llosa, ISDR System)	Addressed
E-17-273	A	21	4	21	14	The points raised are good but it is not clear if this is universally applicable i.e. does the word communities here also include communities for instance in coastal zones of developed countries? Arguments in this paragraph -particularly the last two sentences (lines 10-14) could be enhanced by incorporating discussions on adaptation at community level for resource dependent communities as in Thomas, D. S.G. and Twyman C., (2005), Equity and justice in climate change adaptation amongst natural-resource-dependent societies. Global Environmental Change 15:115–124. Von Maltitz, G.P. Scholes, R.J., Erasmus, B and Letsoalo, A (In press). Adapting conservation strategies to accommodate impacts of climate change in southern Africa, AIACC Working Paper. (Opha Pauline Dube, University of Botswana)	Addressed
E-17-274	A	21	11	21	14	Community-based disaster risk management is an equally potent means to enhance the resilience of communities and adaptation to present and future climate risks (Silvia Llosa, ISDR System)	Addressed
E-17-275	A	21	20	21	20	lacking specific references? (Silvio R. Sant'Ana, Fundação Grupo Esquel Brasil)	Addressed
E-17-276	A	21	20			You are looking for a reference here. I suggest Pelling 2003 ed Natural Disasters and Development in a Globalising World (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-277	A	21	21	21	21	add 'natural hazards' after 'trade liberalization' (Silvia Llosa, ISDR System)	Addressed

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E-17-278	A	21	28			box 17.5 could be strengthened by the addition of an historical dimension. Many of the same stresses were present with the introduction of so-called 'Green Revolution grains' in India in the 1960s and 1970s, a period during which many marginal farmers could not compete with larger land owners in a position to take advantage of new technology and market conditions. Much can be learned from such recent history that can provide insight into the likely outcome of multiple stresses in the future. (.)	
E-17-279	A	21	47	21	50	Something is missing from this sentence (Roger Street, OUCE)	Addressed
E-17-280	A	21	48	21	48	Add "are" between "districts" and "most" (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-281	A	22	1	22	8	The shading on the map is not legible (Maggie Opondo, University of Nairobi)	Addressed
E-17-282	A	22	3	22	8	Section 17.3.2, Box 17.5 - Indian map not centered (Silvio R. Sant'Ana, Fundação Grupo Esquel Brasil)	Addressed
E-17-283	A	22	8		8	delete - you don't have that in any of the other boxes. You cite their work in the box text already. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-284	A	22	11	22	12	Adaptive capacity within human populations is also differentiated by social connectivity (as referred to later in this chapter). (Roger Street, OUCE)	Addressed
E-17-285	A	22	18	24	5	Box 17.6 is very interesting but it is too long. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-286	A	22	19	24	5	As indicated before, such situation is related more on degree of development, but less on gender. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Addressed
E-17-287	A	22	19			Shorten this box (Sofia Bettencourt, World Bank)	Addressed
E-17-288	A	22	19			box 17.6 there are also examples of women's collective responses (should one call them "adaptations"?) such as the emergence of women's weeding groups who are much in demand in Tharaka, eastern Kenya, due to the increase in invasive weeds. Groups are able to negotiate good wages for their labor due to this high demand and the fact that the women work collectively (http://www.lucideastafrica.org/publications/Smucker_LUCID_WP22.pdf , p. 10). (.)	Addressed

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E-17-289	A	22		24	5	Section 17.3.2, Box 17.6 - on "Gender Aspects". Fully agree with the contents of the Box. However, being so important (this aspect), the Box conclusion should be stronger, including the question of specific preparedness measures for that group. (Silvio R. Sant'Ana, Fundação Grupo Esquel Brasil)	Addressed
E-17-290	A	23	10	23	10	Replace "adapt" with "adopt" (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-291	A	23	13	23	26	Although regrettably reflective of the situation in a large portion of human systems, this general picture is not reflective of all societies. I would suggest that in these latter cases the role of gender in determining adaptative capacity is not as clear. (Roger Street, OUCE)	Addressed
E-17-292	A	23	15	23	15	I believe that it is 'for example' not 'for examine', (Roger Street, OUCE)	Addressed
E-17-293	A	23	21	23	21	replace 'flooding event with speedy onset.' by "flash floods". (Silvia Llosa, ISDR System)	Addressed
E-17-294	A	23	43			problem with sentence construction (John Morton, University of Greenwich)	Addressed
E-17-295	A	24	8			What options we can choose or follow? (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Addressed
E-17-296	A	24	8			Section 17.3.3 Most of the material in this section can be incorporated in the previous sections. For example, the discussion on 'Resources' (line 29) could be put under the section discussing the determinants of adaptive capacity. Ths constraints are anyway discussed at length in section 17.4. It is not clear, that in its present form, how is section 17.3.3 is adding value in terms of understanding and synthesis of knowledge about adaptive capacity. (Upasna Sharma, Indian Institute of Technology, Bombay)	Addressed
E-17-297	A	24	10	24	15	This section needs to be re-written. The first sentence is too long. (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-298	A	24	10	24	15	Need to include capabilities to deal with diversity of views of what is important and with the resulting conflicts as determinants of adaptive capacity. (Roger Street, OUCE)	Addressed
E-17-299	A	24	12			What does "conditions that are important to them" mean? A drought cannot be considered a "condition" - and if it is part of the normal climate, how does that relate to a discussion on adaptation to climate change? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-300	A	24	17	24	27	Section 17.3.3 pages 24-25 are generally not easy to follow. The second paragraph in page 24 is somewhat abstract	Addressed

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						(Opha Pauline Dube, University of Botswana)	
E-17-301	A	24	17	25	25	This section describes only two types of determinants of adaptive capacity, although the introductory paragraph implies that there are many more types of determinants. Is something missing here? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-302	A	24	20	24	22	Something is missing from this sentence (Roger Street, OUCE)	Addressed
E-17-303	A	24	21	24	21	Replace "he" with "they" (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-304	A	24	21			"and he" - I think there is a word missing or a typo here (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-305	A	24	27	24	27	Revisit to ensure proper flow (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-306	A	24	29	24	29	Resources: financial systems for risk pooling could be mentioned as they also contribute to adaptive capacity and ability to respond to surprise. In general, the flexibility and diversity of economic systems or sustainable economic development influences adaptive capacity. In this regard, the sub-section could note the importance of placing adaptation within an economic risk management framework (see conclusions of the chair, OECD Global forum on sustainable development, 2005). (Silvia Llosa, ISDR System)	Addressed
E-17-307	A	24	30	24	33	May be there should be a reference to the Box 17.7 to put this sentence in context (Opha Pauline Dube, University of Botswana)	Addressed
E-17-308	A	24	31	24	33	Might appear quite repetitive through the chapter, would be possible to have a complete paragraph for this example and then refer to it when necessary? (Carla Encinas, IPCC TSU)	Addressed
E-17-309	A	24	31	24	32	"purchase of equipment" - this is very vague and confusing - what type of equipment does this refer to? How does this equipment relate to adaptation? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-310	A	24	33	24	33	Mention here where Samoa is found than to do so later in line 50 of the same page. (Opha Pauline Dube, University of Botswana)	Addressed
E-17-311	A	24	37			"the nature and distribution...and biological conditions" - what is a biological condition? I think you mean biological or natural resources here? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-312	A	24	38	24	41	Example not clearly articulated (Opha Pauline Dube, University of Botswana)	Addressed
E-17-	A	24	46	24	46	Differentiate between publications by Ford et al, 2006	Addressed

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313						(Bernard Edward Gomez, Department of Water Resources)	
E-17-314	A	24	48		48	Socio-cultural WHAT? - add a noun here. (Susanne Moser, National Center for Atmospheric Research)	Addressed – sentences deleted
E-17-315	A	24	49		49	What are "levels of cognition"? - it's rather ambiguous and could mean anything from levels of understanding to ability to think or use information or even just perception of environmental change. Be more specific. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-316	A	24	50			Samoa has already been referred to, but here you suddenly mention that it is in the South Pacific - move this up or remove it. (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-317	A	24		26		I find this section on the dynamics of adaptive capacity etc actually quite unsatisfying. What the heading made me expect is not just yet another round on what determines adaptive capacity, but how does it change over time, and what does that suggest for how we should study, assess, and expect adaptive capacity to change in the future. But this section doesn't do that. I would suggest you reconsider this section in toto. (Susanne Moser, National Center for Atmospheric Research)	Addressed – new box etc
E-17-318	A	25	7	25	7	Robledo et al 2004 is lacking in references (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-319	A	25	8		8	Same with "sense of civicness" - spell out what you mean. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-320	A	25	20	25	20	add 'equity' (Silvia Llosa, ISDR System)	Addressed
E-17-321	A	25	28	26	46	Box 17.7 is too long. Maybe the example for coffee could be a little short? Lines 45 to 48 in contradiction with page 31 lines 17-20? (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-322	A	25	33	25	34	Need to be clearer about what are the feedback mechanisms and how they relate to adaptive capacity. (Roger Street, OUCE)	Addressed
E-17-323	A	25	36	25	48	The real issues – not addressed here –are whether new technologies (GPS, snowmobiles, Internet, vhf radios, modern medicine, trade, etc..) has enhanced adaptive capacity, and how to ensure that adaptive capacity is enhanced through consideration of “new” and “traditional” knowledge. (Indur Goklany, US Department of the Interior)	Addressed
E-17-324	A	25	44	25	48	Assume that the spiral is one of traditional knowledge erosion rather than just knowledge erosion. One other thing that has become apparent within this situation of the Inuit and their traditional knowledge, is the continued erosion (eroding	Addressed

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						validity) of traditional knowledge when exposed to situations outside of experience (see page 34 lines 45-46). (Roger Street, OUCE)	
E-17-325	A	25	44	25	45	"positive feedback" - is this really an appropriate use of terminology in a discussion of how various factors contribute to breaking each other down? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-326	A	25	46			Section 18.6.1: This is the area where this is a need for definite coordination between the Chapter 17 and 18 authors on just where this material lies. There is certainly a need for this discussion of institutions in Chapter 18, and consideration of this aspect is the weakest part of Chapter 17. I would suggest that Chapter 18 covers 'institutions' from the point of view of formal institutions (as it largely does at present) and Chapter 17 draws out the relevance of institutions in a broader sense (including informal, 'the way we do things', etc). 'Mainstreaming' really warrants greater discussion than it is given in Chapter 18. This deficiency reflects the perhaps inevitable point that this chapter puts climate policy to the fore and then considers the link with sustainable development, rather than working from the broad principles of sustainable development back to climate policy. But I don't propose the authors respond to that point! (Mick Kelly, University of East Anglia)	Addressed
E-17-327	A	25		26		In light of this textbox, and the vast majority of your case examples cited in this chapter, it would behoove you to revisit the overly optimistic cost estimates both of the climate change impacts and of adaptation. I have yet to find an on-the-ground case study (and your examples just reinforce this impression) that makes me feel optimistic about the ease with which individuals and communities will adapt. In virtually all cases, we see a lot more challenges. The cases really illustrate the interacting multiple stresses, the difficulty of getting a clear signal to adapt, and all the competing demands and limited resources that make adaptation far slower, less effective, and typically only partial. Has nothing to do with the so-called "dumb farmer", but with the realities of life. So, look through those cost estimate sections again and at least say some place that they don't capture the complexities of on-the-ground adaptation and that the cases suggest more difficulties than these relatively low adaptation costs suggest. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-328	A	26	24	26	24	Using the word 'employ' twice in the same sentence makes it hard to interpret. (Roger Street, OUCE)	Addressed
E-17-	A	26	33	26	44	Would help to give examples (e.g., under coping examples). Not clear what the last	Addressed

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329						sentence actually adds to this paragraph - it appears out of place. (Roger Street, OUCE)	
E-17-330	A	26	36	26	37	"coping" and "adaptation" appear to be used as synonymous, which should be avoided (John Morton, University of Greenwich)	Addressed
E-17-331	A	27	2			You may consider structuring 17.4 as 17.3. Alternatively, paragraphs in 17.3 could in a final sentence name the limits/constraints and research gaps that would be elaborated upon in 17.4. Finally, limits, constraints and research gaps can be wrapped up in a final paragraph in 17.3 and unfolded in 17.4. (Silvia Llosa, ISDR System)	Addressed
E-17-332	A	27	4	27	4	"action" might be changed to "actions" (Guangsheng ZHOU, Institute of Botany, the Chinese Academy of Sciences)	Addressed
E-17-333	A	27	4	29	19	In 17.4.1 could be useful to mention actions carried out by PASOLAC (Program for sustainable agriculture in hillsides of Central America). In the paper No 2 (December 2003) "Increasing the Resilience of Tropical Hillside Communities through Forest Landscape Restoration", the contribution of the program to adaptation is described for different activities. [http://www.iisd.org/pdf/2003/envsec_livelihoods_2.pdf]. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-334	A	27	4	37	24	This sub-section relies adaptation more on social economic aspects, almost without/no-related to physical or mechanical measurements. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Addressed
E-17-335	A	27	4			This section may also want to mention the early examples of Kiribati Adaptation Program and Colombia Adaptation Project which were the first pilots of GEF's Special Program on Adaptation. Kiribati did provide a good example of adaptation mainstreaming into national economic planning, where Government allocations to adaptation programs were matched by external grant financing as a way to gradually increase the proportion of adaptation-friendly programs in the national budget. See Bettencourt et al (2006) pages 21 and 22 for a description of the process (the full report is attached to this review). (Sofia Bettencourt, World Bank)	Addressed
E-17-336	A	27	4			Section 17.4.1 could refer to the Hyogo Framework for Action 2005-2015 which provides an official vehicle for mainstreaming disaster risk management and climate change adaptation efforts. It specifically notes that States should '[m]ainstream disaster risk reduction measures appropriately into multilateral and	Addressed

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						<p>bilateral development assistance programmes including those related to poverty education, natural resource management, urban development and adaptation to climate change'. This section could also refer to the three I's for successful mainstreaming 1. Institutional framework, 2. Incentives; 3. Instruments.</p> <p>Conclusions of the chair of the OECD Global forum on sustainable development (2005) also contains national experiences in mainstreaming climate considerations in mountain, coastal systems, infrastructure, agriculture and forestry.</p> <p>(Silvia Llosa, ISDR System)</p>	
E-17-337	A	27	7	27	7	<p>There should be consistency in whether its 'a clear and defined role' or 'clear and defined roles'</p> <p>(Roger Street, OUCE)</p>	Addressed
E-17-338	A	27	7		7	<p>There is a "clear and defined role for public policy interventions" - really? How come all the practitioners and policy-makers I work with keep asking me what to do in light of scope, rate, and uncertainty of change? It is not all that clear and defined to them....</p> <p>(Susanne Moser, National Center for Atmospheric Research)</p>	Addressed
E-17-339	A	27	11	27	16	<p>the change from the general issue of public policy to a very specific economic measure as the "transfers from polluting countries" is abrupt. We suggest to structure the paragraph in two parts: 6-11 role of national public policy; 11-16: role of international public policy.</p> <p>(Silvia Llosa, ISDR System)</p>	Addressed
E-17-340	A	27	11	27	11	<p>Replace "Calloway" with "Callaway"</p> <p>(Bernard Edward Gomez, Department of Water Resources)</p>	Addressed
E-17-341	A	27	11	27	16	<p>Baer (2006) is not listed in the references so we cannot comment on the robustness of this study. However, we note that the issue of compensation is a very complex issue. Goklany (2006a) notes while it is possible to assign GHG emissions to nations based on where the act of burning a ton of coal, for instance, physically occurs, we should be cognizant that GHG emissions are the effluvia of a globalized economy. Economic activity in one country helps provide livelihoods and incomes for many inhabitants of other countries, and vice versa (Goklany 2006a). In fact, a substantial portion of economic growth in developing countries is attributable to trade (Goklany 1995), and remittances and tourism from developed countries. Without such economic activities, U.S. emissions, for example, might be lower, but so would jobs and incomes elsewhere. Moreover, the benefits of these activities spill over into things like foreign aid; creation and support of the Internet; medicines for HIV/AIDS; development and dissemination of technologies to improve access to safe water, sanitation, and reduce tropical climate-sensitive</p>	Addressed

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						diseases such as malaria and diarrhea; and other items now considered by some to be global public goods (ODS 2003). Therefore, in order to determine "compensation", the direct and indirect costs of activities causing climate change should be offset by the direct and indirect benefits resulting from these same activities. As an example, the costs associated with a higher risk of coastal flooding in, say, Bangladesh, should be offset by the benefits that Bangladesh obtained from technologies such as the green revolution, malaria treatment and control, etc., which probably would have been substantially delayed, if not impossible, if the developed world had not been wealthy enough, in part due to fossil fuel driven economic development to subsidize such technological change (Goklany 2006a). Because of such complexities, we advise either a much fuller discussion of the compensation issue or, alternatively, dropping any allusions to "compensation". We recommend that the last two sentences of this para be dropped. (Indur Goklany, US Department of the Interior)	
E-17-342	A	27	11		15	reference problems: Calloway should be Callaway; Baer 2006 is missing in ref list (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-343	A	27	15			\$50 billion enough? Here should give more detailed informaton. (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Addressed
E-17-344	A	27	18	27	34	This entire section appears to come out of context. The discussion on LDCs appears selective, because there are other concerns in the UNFCCC related to adaptation - it is not only focused on LDCs. I don't see any need for this section - it could be deleted. The majority of the information is already contained in Box 17.8. If you prefer to retain the para in the regular text, make this as a box instead and delete what is currently in Box 17.8 (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-345	A	27	18			Specify "UN" Framework Convention on Climate Change (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-346	A	27	20	27	21	replace 'FCCC' by 'UNFCCC'. 'Least Developed Countries are identified as being vulnerable' may be too weak a statement to describe their treatment under the Convention. Article 4.9 deals specifically with their specific needs and special situations. One suggestion is to add 'especially' before 'vulnerable' or provide more references from UNFCCC (Silvia Llosa, ISDR System)	Addressed
E-17-347	A	27	20			Specify "UNFCCC" (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-	A	27	20			"Least Developed Countries are identified..." add "identified as being AMONG	Addressed

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348						THE MOST vulnerable". (Emma Lisa Freja Schipper, International Water Management Institute)	
E-17-349	A	27	21	27	21	adaptation has been facilitated' may be misleading. NAPAs implementation has not yet started. This affirmation contradicts the end of the paragraph; (Silvia Llosa, ISDR System)	Addressed
E-17-350	A	27	25	27	30	Need to check the order of the sentences within this paragraph as they do not all seem to follow a logical sequence. (Roger Street, OUCE)	Addressed
E-17-351	A	27	25	27	26	Delete "So far, only three countries have completed their national NAPA reports (www.unfccc.de)" (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-352	A	27	26	27	29	Are the three countries Bangladesh, Mauritania and Samoa? If so, move line 28 to line 26? (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-353	A	27	26			the website is www.unfccc.INT, not .DE (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-354	A	27	28	27	28	Please, delete one of the "so that" (Carla Encinas, IPCC TSU)	Addressed
E-17-355	A	27	28	27	29	Consider rewording as follows: "Bangladesh, and Samoa (countries that have completed the preparation of their NAPA reports at the time of this report), have identified, respectively (www.unfccc.int). (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-356	A	27	29	27	29	This information in this line is not very clear. (Carla Encinas, IPCC TSU)	Addressed
E-17-357	A	27	44	27	47	This is not correct. Please review the publication mentioned. The NAPA was undertaken in parallel with a much larger mainstreaming effort supported by the World Bank. This has since led to an adaptation project, supported by the GEF, and not yet as a formal follow-up to the NAPA (see World Bank (2006) Project Appraisal Document. Kiribati Adaptation Program Phase II - Pilot Implementation Phase (KAP-II), World Bank, Washington DC, available on the WB website.) The mentioned SAPHE project is much older and was supported by ADB (had nothing to do with the NAPA). Note that the Kiribati Adaptation Program mentioned above does address some of the concerns highlighted in the following paragraphs (chapter 17, page 28 line 1-17) (Maarten van Aalst, Red Cross/Red Crescent Centre on Climate Change and Disaster Preparedness)	Addressed
E-17-	A	27	44	27	45	Correct the sentence as follows : ...presently ongoing such as the Kiribati	

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358						Adaptation Program, currently in its second phase, which addresses adaptation mainstreaming, public awareness, and pilot adaptation investments". (Sofia Bettencourt, World Bank)	
E-17-359	A	27	45	27	47	Is this initiative reflected in another NAPA (i.e. in addition to the three mentioned above)? (Roger Street, OUCE)	Addressed
E-17-360	A	28	4		4	switch the order of "1" and "adopt" (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-361	A	28	5		5	delete the word "should" after "3" (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-362	A	28	6		6	delete the word "should" after "4" (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-363	A	28	21	28	29	This paragraph could more clearly present the concept of mainstreaming. In the first sentence, mainstreaming is defined, then actions that promote adaptation are identified, some of which appear to be mainstreaming. Then something called mainstreaming initiatives is dropped into the discussion. This discussion of a important/relevant concept needs to be reconsidered and made much clearer. (Roger Street, OUCE)	Addressed
-364	A	28	23	28	23	Change "disaster preparedness and emergency planning" to "disaster risk reduction" (.)	Addressed
E-17-365	A	28	25	28	25	The notion of risk is fundamental in policy. The sentence here refers to 'vulnerability or hazard' assessments which would be better phrased as risk assessments or at least vulnerability and hazard assessments as both are needed. Risk assessment encompasses hazard analysis and evaluation of existing conditions of vulnerability (see Living with risk, 2004, UNISDR). An alternative could be to write risk in square brackets after hazard. (Silvia Llosa, ISDR System)	Addressed
E-17-366	A	28	31	28	51	Another important example of mainstreaming, into national policy processes, is the World Bank's Kiribati Adaptation Program. See World Bank (2006) Project Appraisal Document. Kiribati Adaptation Program Phase II - Pilot Implementation Phase (KAP-II), World Bank, Washington DC, available on the WB website (particularly pages 28-32) (Maarten van Aalst, Red Cross/Red Crescent Centre on Climate Change and Disaster Preparedness)	Addressed
E-17-367	A	28	34	28	36	IFRC is "International Federation of Red Cross and Red Crescent Societies" (Maarten van Aalst, Red Cross/Red Crescent Centre on Climate Change and	Addressed

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						Disaster Preparedness)	
E-17-368	A	28	34	28	36	Climate Change Center should be "Centre on Climate Change and Disaster Preparedness" or the short version "Climate Centre" (Maarten van Aalst, Red Cross/Red Crescent Centre on Climate Change and Disaster Preparedness)	Addressed
E-17-369	A	28	41	28	41	Again, we call attention to expressions such as climate proofing or climate proofed. It conveys the connotation that development can be completely protected from, or immune to, any climate or weather influences. This is challenging to achieve to say the least. (Silvia Llosa, ISDR System)	Addressed
E-17-370	A	28	42	28	51	Besides Klein, this should also mention the analysis in the OECD Development and Climate Change project: Van Aalst, M. and S. Agrawala (2005) Analysis of Donor-supported Activities and National Plans, in: Bridge over Troubled Waters, Linking Climate Change and Development, OECD, Paris, France. (Maarten van Aalst, Red Cross/Red Crescent Centre on Climate Change and Disaster Preparedness)	Addressed
E-17-371	A	28	43			"mal-adaptations" - this can be written as one word "maladaptations" (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-372	A	28	48			"they have not explicitly examined how their..." - does this refer to Klein et al or the agencies? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-373	A	28	50			suggest replacing "their" with "development agencies" - then can drop "development" later in sentence (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-374	A	29	2	29	6	Not sure how the first sentence follows from that which it purports to conclude from (i.e. does not appear to be a logical conclusion). Of the five major constraints, the first, second and fifth, although barriers are also perceptions that exist (see Klein et al 2005). With respect to the second, dealing with uncertainties is difficult but is not that dissimilar to uncertainties in other areas. As development planning has these constraints (see section 17.4.2) does that mean those doing development planning lack the necessary adaptive capacity. (Roger Street, OUCE)	Addressed
E-17-375	A	29	2		17	You just explained that the tools for mainstreaming exist - so it does not follow here that mainstreaming is not occurring or lagging. You need to explain - and also need a better transition sentence at the start of para. The barriers/constraints also need elaboration. Also - are you sure that the APF gives us ways to overcome all of these? How? Has it been road-tested? Any evidence that it works?	Addressed

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						(Jan Corfee-Morlot, University College London & OECD)	
E-17-376	A	29	2			we propose a rephrasing of the title of 17.4.2 for several reasons: misleading when one refers to 1.40. The issue is not only ineffectiveness but also absence of action on adaptation. The tone is negative and not proactive. It is not in line with 17.4 title (the same holds true for the rest of the section, avoid limits). Therefore the proposal is to change the title to 'Constraints for effective adaptation to climate change' (Silvia Llosa, ISDR System)	Addressed
E-17-377	A	29	4	29	6	These different phrases should not be capitalised. Also, each one should be explained. As a list it is confusing and does not say much (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-378	A	29	5		5	not clear what the difference between compartmentalization and segmentation is - can that distinction, if there really is one, be made clearer? (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-379	A	29	6			Add two new sentences at the end of line 6 that would read: "On the other hand, Goklany (2006a) notes that several measures to reduce hurdles to sustainable development would also enhance adaptive and mitigative capacities (e.g., efforts to reduce hunger and malaria). Such measures would, therefore, unconsciously constitute 'mainstreaming'". (Indur Goklany, US Department of the Interior)	Addressed
E-17-380	A	29	12			Change the title of Section 17.4.2 to "Constraints to actions that may limit the effectiveness of or options to adaptation". We believe that "constraints" is more accurate than "limits". For example, in the last para on page 29 and in the remainder of this section, it would be more accurate to substitute "constraints" for "limits". Also, while in some situations adaptation options may be limited to migration, doesn't mean that is not a very effective adaptation option, although it may not be the most desirable (see page 30, line 26). (Indur Goklany, US Department of the Interior)	Addressed
E-17-381	A	29	20	30	40	The discussion of limits could be more interesting and empirically based if it was linked to the discussion of adaptation practices. (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-382	A	29	20			we suggest to repeat here the excellent conclusions of box 17.3, i.e. the finding that irrigation would not be profitable for individual farmers but justifiable from a public point of view because it could reduce cereal imports and food aid, increase national food security and generate foreign exchange savings (p. 16, lines 33-37). To capture such public goods, however, one needs a strong government. (.)	Addressed
E-17-	A	29	20			This section discusses 'limits to action that make adaptation ineffective'. I consider	Addressed

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383						it could be usefully broadened to treat barriers to adaptation too. For material on this, see chapter 4 in West and Gawith, 2005, mentioned above. (Richenda Connell, acclimatise)	
E-17-384	A	29	23			Missing full stop after "climate change". (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-385	A	29	28	29	28	goods, services, information could be added as well as flows of goods, services, information and resources. (Silvia Llosa, ISDR System)	Addressed
E-17-386	A	29	28		31	Why is there only one reference here? Several different countries/sub-national regions have done studies and begun to take information about climate change into account in resource management or agricultural practices; see also work in UK (UKCIP studies), Canada (water basin studies - Cohen et al); Finland; California, Germany. Recent OECD study on water and adaptation frameworks pulled some of this together -- EA adaptation study is also relevant. (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-387	A	29	31	29	31	US National Assessment, 2000 is not in the list of references. (Carla Encinas, IPCC TSU)	Addressed
E-17-388	A	29	34	29	34	Something is missing from this sentence (Roger Street, OUCE)	Addressed
E-17-389	A	29	38	29	38	Differentiate between publications by Brooks, 2003 (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-390	A	29	42	29	42	Verify "UN" (Bernard Edward Gomez, Department of Water Resources)	Addressed
-391	A	29	42	29	42	Change "UN" national assessment to "US" national Assessment (.)	Addressed
E-17-392	A	29	42		43	UN National Assessment, 2000? - that probably should be the US National Assessment, 2000. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-393	A	29	43	29	44	the risk context is also influential (Silvia Llosa, ISDR System)	Addressed
E-17-394	A	29	44		44	add (Moser, 2005) after the Brooks, 2003 citation; see note below for complete citation; the paper is published now. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-395	A	29	46	30	3	Substitute "constraints" for "limits". Also on line 48, replace "ineffective" with "less effective than they could be under ideal conditions". (Indur Goklany, US Department of the Interior)	Addressed
E-17-	A	29	47	29	49	we propose the following rephrasing: 'Constraints are defined here as the conditions	Addressed

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396						or factors that render adaptation ineffective as a response to climate change or prevent the translation of adaptive capacity into effective action.' (Silvia Llosa, ISDR System)	
E-17-397	A	29	47		48	shouldn't this definition include also those aspects that make adaptation options "impossible to implement" - not just ineffective? (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-398	A	29	51	29	51	Verify "Kuntz-Duriseti and Azar" (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-399	A	30	12	30	14	Not clear whether this sentence is correct. These limits may raise questions about the efficacy and legitimacy of a specific adaptation options to deliver a desired outcome. Not believe they raise question about the efficacy and legitimacy of adaptation in general. (Roger Street, OUCE)	Addressed
E-17-400	A	30	12			Replace "legitimacy of adaptation" with "viability of some adaptation options". It's not obvious to us why adaptation may not be legitimate, although we agree that some adaptation options may not be viable under certain circumstances. (Indur Goklany, US Department of the Interior)	Addressed
E-17-401	A	30	13		13	add: "and about the relatively low impact/adaptation costs commonly suggested by economic studies." (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-402	A	30	17	30	17	Apart from conventional agricultural systems, coastal zones and fishery there is not much linkages in the chapter of terrestrial ecosystems to human adaptation but here mention is made for the first time of these systems - as a result there is a weak link between 17.4.2.1 paragraph 1 and the rest of the chapter. (Opha Pauline Dube, University of Botswana)	Addressed
E-17-403	A	30	17		31	some cross-refs to Ch 19 and their discussion of thresholds and ecosystems would be relevant here. (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-404	A	30	20	30	20	Chapter 4 also has good examples (Opha Pauline Dube, University of Botswana)	Addressed
E-17-405	A	30	22			What is "kelp forest"? (Shaohong Wu, Institute of Geographical Sciences and Natural Resources Research, CAS)	Addressed
E-17-406	A	30	26	30	26	Not only migration examples can be linked to chapter 15, also the Inuit example on adaptation. (Carla Encinas, IPCC TSU)	Addressed
E-17-	A	30	27	30	28	You can also refer to chapter 4 on the Polar bear example	Addressed

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407						(Opha Pauline Dube, University of Botswana)	
E-17-408	A	30	35	30	35	Does agriculture here include livestock production? (Opha Pauline Dube, University of Botswana)	Addressed
E-17-409	A	30	39	30	40	Not clear how acquiring new knowledge can limit effectiveness of adaptation. (Roger Street, OUCE)	Addressed
E-17-410	A	30	39			the acquirement?? How about the ability to acquire? (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-411	A	30	42	31	20	Is Technological limits the appropriate heading in 17.4.2.2 ? Because reading the paragraphs I understand that technology exists but it is limited by other factors. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-412	A	30	42			this sub-section could convey recent work on technologies for adaptation under UNFCCC, especially results of the Trinidad and Tobago seminar where concepts, needs for, identification and evaluation of technologies for adaptation, sharing of lessons learnt, identification of promising areas for future work were discussed. It noted the relevance and importance of endogenous knowledge. The existence of the technology clearinghouse could be acknowledged. (Silvia Llosa, ISDR System)	Addressed
E-17-413	A	30	44	31	20	The sub-section title seems to suggest limits imposed by technology, the content is about limits imposed on technology by social factors (John Morton, University of Greenwich)	Addressed
E-17-414	A	30		37		I question the term "limits" in the headers on these pages. Seems like the term "constraints" is a bit more forgiving, while still expressing the same issues that we should be careful about. Not everything is a limit, but can make implementation of adaptation options more difficult, less effective, or more expensive. And yes, in some cases impossible or unacceptable. (Susanne Moser, National Center for Atmospheric Research)	Addressed. Long discussion about limits and barriers. Final text discusses both.
E-17-415	A	31	1	31	4	But more likely because of the financial limitation, not a technological limitation. (Jean Palutikof, Met Office)	Addressed
E-17-416	A	31	8			Insert "currently" prior to "beyond". And at the end of this sentence add the following: "although with economic growth and technological change in the future such projects might be more affordable." (Indur Goklany, US Department of the Interior)	Addressed
E-17-417	A	31	9	31	13	It should be noted that ski resorts may adapt by providing alternative revenue generating activities, e.g., hiking or climbing. (Indur Goklany, US Department of the Interior)	Addressed
E-17-418	A	31	11	31	13	This paragraph or elsewhere appropriate in the section could address the downside of some of the adaptation options which result in GHG emissions such as snow	Addressed

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						domes. Is such an option environmentally sound? Adaptation is also about behavioural change and ideas conveyed by the downshifting movement could be reflected. (Silvia Llosa, ISDR System)	
E-17-419	A	31	17	31	20	This is because some are richer than others, so these aren't new inequalities - just persistence of old inequalities. (Jean Palutikof, Met Office)	Addressed – it is the change in inequality that is important – see O'Brien and Leichenko 2000
E-17-420	A	31	17	31	20	Examples from other parts of the world could be used - to provide a global view than to use the same example (Inuit hunters-see also page 34 line 42-45) - over and over. (Opha Pauline Dube, University of Botswana)	Addressed
E-17-421	A	31	19	31	20	A. Insert “today” after “all”. Who knows, with technological change, these won't become more commonplace. Consider, for instance, that once upon a time articles such as cameras, pens, and mobile phones were luxuries unaffordable to most people, but today they are commonplace. This ought to be noted in the text. B. The notion that “they have potentially contributed to inequalities” seems speculative. It also assumes that there is no sharing of resources within these communities. We recommend striking everything following the comma on line 19. (Indur Goklany, US Department of the Interior)	Addressed – it is the change in inequality that is important – see O'Brien and Leichenko 2000
E-17-422	A	31	20			This paragraph describes a case study that is outlined in Box 17.7. It should be referred to here. (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-423	A	31	22			The section 17.4.2.3 raises important points on financial institutions but seems to be focused mainly on climate extremes e.g. disasters - what about slow changes? The section is also silent about existence of large parts of the world where the concept of money insurance does not yet apply/exist or there are no proper frameworks for this industry to operate for e.g. where communal land tenure systems apply. Is there literature addressing e.g. insurance alternatives for these regions? (Opha Pauline Dube, University of Botswana)	Addressed – it is the change in inequality that is important – see O'Brien and Leichenko 2000
E-17-424	A	31	22			Donors also face difficulties releasing funds for prevention or climate change adaptation. It is much easier to access disaster relief funds once the disasters happen. (Sofia Bettencourt, World Bank)	Addressed
E-17-425	A	31	25	31	26	EM-DAT the emergency disasters database is also an important source of information (Silvia Llosa, ISDR System)	Addressed –EMDAT used in Yohe and Tol and Brooks studies referred to.

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E-17-426	A	31	36	32	3	There should be a statement associated with this para that would read as follows: “On the other hand, availability of insurance increases the incentives for individuals to take greater risks, passing a portion of their risk to others.” (Indur Goklany, US Department of the Interior)	Addressed – issue of moral hazard
E-17-427	A	31	41		41	add the word "use" between "land" and "planning" (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-428	A	31	44	31	48	Insurance and disaster relief is one adaptive measure, however, it may actually defer sustainable adaptation measures from being put into place (e.g., rebuilding in vulnerable flood regions continues the cycle of exposure and impacts) (Roger Street, OUCE)	Addressed
E-17-429	A	31		32		Section 17.4.2.3 on financial limits seems awfully limited and unfinished. For example, it does not discuss the very real constraint that at the local level (where adaptation and other things have to be paid out of one local pot), there may very well be (and already is) competition for limited funds (shall we renovate the elementary school, buy a new or additional fire truck, or pay our share of beach nourishment????). The section also insufficiently discusses the two sides of the insurance business: a) insurance as a mechanism for adaptation (e.g., expand coverage, increase premiums to finance greater risk/exposure), and b) the vulnerability of the insurance industry itself to the growing risks from climate variability and change (and the frequently observed reaction of the industry to limit its exposure by withdrawing from high-risk zones, such as storm-prone coastal areas, leaving shoreline home owners and businesses unprotected. (Susanne Moser, National Center for Atmospheric Research)	Addressed – section completely re-written
E-17-430	A	32	1	32	3	The World Bank, however, has had some success promoting index-based weather insurance in developing countries, such as Malawi and India. (Sofia Bettencourt, World Bank)	Addressed
E-17-431	A	32	5	32	14	You could cite Wisner 2001 Risk and the Neoliberal State: Why Post-Mitch Lessons Didn't Reduce El Salvador's Earthquake Losses here as well (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-432	A	32	5	32	14	The paragraph could conclude with a sentence recommending to mainstream development practices in activities such as livelihood diversification, food security and disaster risk reduction programmes. (Silvia Llosa, ISDR System)	Addressed
E-17-433	A	32	8	32	9	This is only one aspect. For sake of completeness, it could be noted that international humanitarian assistance that often inundates countries in crisis is not accompanied by support for long-term institutional investment and local initiatives for disaster risk reduction.	Addressed

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						(Silvia Llosa, ISDR System)	
E-17-434	A	32	8	32	14	These sentences suggest failures due to unresponsive governments. They are good arguments for wanting governments that are accountable to the governed. (Indur Goklany, US Department of the Interior)	Addressed
E-17-435	A	32	19			Vellinga and Mills is not in the refs (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-436	A	32	24			the complexities of cross cultural psychological research upon which early natural hazards research naively shipwrecked could be recalled in this context (e.g. Gilbert White, ed., Natural Hazards, New York: Oxford, 1974 & Ian Burton et al., Environment as Hazard, New York: Oxford, 1978). In addition, such psychological models and constructs as "finite pool of worry" (p. 33, line 4) however accurate it may or may not be (and replicable as a result) nevertheless exists within specific economic and institutional context. If, for example, the subjects of this research had more disposable income, better market opportunities, more trust in the local police and court system, etc., their "pool of worry" might have been found to be larger and the denizens swimming around in it of a different sort (.)	Addressed
E-17-437	A	32	26	32	27	lack of scientific understanding: Thomalla et al 2006 (special issue of Disasters) note that this may be a "myth". This view should also be reflected here. (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-438	A	32	29		30	"may be relatively easy" - well, but it typically is not. So why suggest it? (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-439	A	32	32		36	This argument seems out of place here. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-440	A	32	32		45	this applies to the earlier discussion of adaptation costs & benefits no? it would be good to acknowledge these points in the earlier discussion. Note Hanemann 2000 and Few et al 2004 are not in the refs (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-441	A	32	33	32	33	Replace "soc-called" with "so-called" (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-442	A	32	33			typo - "soc-called", should be "so-called" (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-443	A	32	36		40	This examples seems also out of place here. It's a nice one to include in the chapter, just not here, under this heading. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-444	A	32	36			Missing reference for Few et al., 2004 in bibliography. (Stephen Sheppard, University of British Columbia)	Addressed

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E-17-445	A	32	45		45	I believe I make that same point ever so strongly in Moser, 2005. (Susanne Moser, National Center for Atmospheric Research)	
E-17-446	A	32		33		Section 17.4.2.4 on informational and cognitive limits does not address the issue that many decision-makers are not aware of climate change yet, or of adaptation options. The section also seems to suggest that concern and worry will lead to action. There is just too much evidence in the risk literature and in cognitive and behavioral psychology that the knowledge deficit model does not work, so please be more careful in the underlying suggestion here. Awareness, a sense of urgency, some rudimentary understanding of what's going on, a sense of being personally affected, i.e. vulnerable to the impacts of climate change -- all that constitutes necessary, but insufficient conditions for behavior change, actions, or policy change. You should make this point clearly - it seems like lots of people still don't get that. So please add it. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-447	A	32			33	Section 17.4.2.4: Somewhere in this section should be provided the conclusion from SPM p. 18 line 2 that "Informational and cognitive limits are currently the most severe,..." (Stephen Sheppard, University of British Columbia)	Addressed
E-17-448	A	33	3	33	7	The text should note that Hansen et al.'s finding is quite consistent with the notion that people tend to prioritize the risks they face, and focus on the ones they deem – rightly or wrongly – to be the ones that are most significant. (Indur Goklany, US Department of the Interior)	Addressed
E-17-449	A	33	7	33	10	These lines seem to imply that climate change risks should be presented so as to provoke visceral reactions. We reject this. Risks of nay hazard should be presented in as dispassionate a manner as possible. Accordingly, add a new sentence at the end of this para that reads as follows: “ However, since risks should be presented in as dispassionate a manner as possible, it is possible that people may not be provoked into precautionary action.” (Indur Goklany, US Department of the Interior)	Addressed
E-17-450	A	33	7	33	10	There are experiences with communities that when the risks are transferred to the younger in the future they are more responsive to climate change impacts. (Carla Encinas, IPCC TSU)	Addressed
E-17-451	A	33	7			Missing reference for Weber, 2006, in bibliography. (Stephen Sheppard, University of British Columbia)	Addressed
E-17-452	A	33	9	33	9	Change “pre-disaster risk management” to “disaster risk reduction (.)	Addressed
E-17-	A	33	10			Suggested additional wording referencing relevant literature on alternative risk	Addressed

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453						communication approaches: The potential for more effective means of communicating climate change risks and alternative future scenarios, using various media including visualisation imagery, has been examined by Nicholson-Cole (2005) and Sheppard (2005). References: Nicholson-Cole, S.A., 2005. Representing climate change futures: a critique on the use of images for visual communication. <i>Comput. Environ. Urban Syst.</i> 29 (3), 255–273. Sheppard, S.R.J. 2005. Landscape visualisation and climate change: The potential for influencing perceptions and behaviour. <i>Environmental Science and Policy.</i> 8: 637-654. (Stephen Sheppard, University of British Columbia)	
E-17-454	A	33	11	33	11	Omit word “natural” (.)	Addressed
E-17-455	A	33	12	33	15	Sentence does not make sense (John Morton, University of Greenwich)	Addressed
E-17-456	A	33	19	33	20	Sentence needs rewording to be clearer (Roger Street, OUCE)	Addressed
E-17-457	A	33	23	33	35	Don't agree with statement on lines 23-24. Decisionmakers don't even know what to do with the limited range of uncertainty estimates which modellers do produce. Problems are (a) some variables are poorly modelled at regional scales, such as rainfall, such that confidence ranges are likely to span positive and negative changes (b) decisionmakers have little feel and no tools for dealing with very wide confidence ranges - they ideally want deterministic estimates. (Jean Palutikof, Met Office)	Addressed through references
E-17-458	A	33	26	33	27	Should be explicit what PDO and GCM stand for. (Carla Encinas, IPCC TSU)	Addressed
E-17-459	A	33	31	33	35	Unclear how this text fits here (Roger Street, OUCE)	Addressed
E-17-460	A	33	31		31	"On very broad average"???? (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-461	A	33	33	33	33	Proper reference for "Caribbean Development Bank Report" (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-462	A	33	33			Caribbean Development Bank Report - YEAR? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-463	A	33	35			This final sentence has too many words or is missing something - what does "development-related decisions is to variables that cannot..." mean? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-	A	33	37	35	16	Section needs substantial re-writing to make clear, straightforward, to the point.	Addressed

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464						(Jean Palutikof, Met Office)	
E-17-465	A	33	37			This section should be rewritten to focus on socio-cultural issues. The paragraphs dealing with “psychological limits” are quite confusing and lack coherence in the arguments and examples chosen. Some of the sentences included are value-laden (for instance, 35/2-4) and do not have the same level of scientific quality as the rest of the chapter. The suggestion is to reduce this section but expand the next one. Specifically, paragraphs 34/8-20, 34/22-29 and 34/40-49 should be carefully rewritten or deleted. (Silvia Llosa, ISDR System)	Addressed
E-17-466	A	33	39		48	Might want to cite PRUDENCE project here. (Jan Corfee-Morlot, University College London & OECD)	Wasn'tr sure what this was. Not in published literature
E-17-467	A	33	44	33	46	Not sure I believe this. The reader needs to know more. (Jean Palutikof, Met Office)	Addressed
E-17-468	A	33	46	33	48	How? Reader needs to know which groups, where, in what way. Examples are needed to illustrate the point, otherwise this sentence is unhelpful. (Jean Palutikof, Met Office)	Addressed
E-17-469	A	33	46	33	48	Also need to consider that there will be different visions of the preferred future. (Roger Street, OUCE)	Addressed
E-17-470	A	33	50	33	51	How does this statement relate to previous statement about the greatest impacts being in the tropics. (Roger Street, OUCE)	Addressed
E-17-471	A	34	1		6	Seems this would better be placed in the cognitive section above. Make the point there that cognition and peception are processes that occur socially embedded, as our thinking develops in social context and is shaped by social construction in specific contexts. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-472	A	34	6	34	6	Differentiate between publications by Davidson et al, 2003 (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-473	A	34	8	34	20	This entire paragraph is very confusing. The five "pricipal tasks" appear out of context - and who is supposed to perform these tasks? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-474	A	34	8	34	38	These three paragraphs are examples where the section could be reduced as they are over-theoretical. (Sofia Bettencourt, World Bank)	Addressed
E-17-475	A	34	8	34	20	Points 4 and 5 - how are these part of experience of past lessons? Surely they are implementation of these lessons in a new environment. (Jean Palutikof, Met Office)	Addressed

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E-17-476	A	34	9			Is experience a task/ (Jean Palutikof, Met Office)	Addressed through rewrite of section
E-17-477	A	34	9		16	Does not this fit better with discussion about adaptation practices? (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-478	A	34	18	34	20	This experiences of 'no regrets' adaptation is doing what and where? (Carla Encinas, IPCC TSU)	Addressed
E-17-479	A	34	22	34	49	This is very complex language to put across the point that societal vulnerabilities to climate variabilities and change shift over time. Given page over-run, authors can't afford this kind of extended discourse. (Jean Palutikof, Met Office)	Addressed
E-17-480	A	34	40			The globalisation study has already been mentioned earlier in the chapter, p. 21 line 23, although another report is cited (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-481	A	34	46		49	repeat - maybe replace with a different example? (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-482	A	35	1		5	What about adaptation to abrupt climate change? Can you say anything about this? Also Jamieson 2005 is missing from refs. There is something wrong with the last sentence in this section - meaningless as it is. (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-483	A	35	2			"something deeper is at work" - in appropriate use of language - what does this mean? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-484	A	35	4	35	5	Reword sentence for clarity (Maggie Opondo, University of Nairobi)	Addressed
E-17-485	A	35	4	35	5	Revisit to ensure proper flow (Bernard Edward Gomez, Department of Water Resources)	Addressed
E-17-486	A	35	4			"more carefully specific" - what does this mean? (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-487	A	35	5	35	5	Something is missing from this sentence (Roger Street, OUCE)	Addressed
E-17-488	A	35	7	35	16	on Migration: Overall, if the chapter is going to address migration as part of climate adaptation, then the roles, nature and consequences need to be unpacked in a much more systematic manner. This also needs to be related to the role migrant remittances often play in maintaining local livelihood systems. (See Deshingkar and Start 2003. 'Seasonal Migration for Livelihoods in India: Coping, Accumulation and Exclusion'. London, Overseas Development Institute) as a starting point on this. There has been some interesting micro-level work on the role	Addressed

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						of remittances (mostly grey literature). Work in Mali found, for example, that “remittances respond to economy-wide volatility such as drought, and public policy determined prices. Remittance receiving households can also reinsure themselves against agro-climatic risks.”(Chipeta and Kachaka 2004. 'The Role of Migrant's Remittances in an Unstable Low-Income Economy: A Case Study of Malawi'. Zomba, Southern African Institute for Economic Research & Malawi National Statistical Office: 48.) The fact is that besides being a traditional coping mechanism not encouraged by States, large scale migration is a reality that often goes unreported. It is no longer a response to extremes, but emerges as a dominant mode of labor in the unorganized sector. It remains an area neglected by development policy. Seasonal migration for wage labor becomes an annual feature in India for example. (Silvia Llosa, ISDR System)	
E-17-489	A	35	7	35	16	Note: Success in human adaptation (and natural system and species) in the past has in a number of cases been the result of migraton to better climate conditions. These options may not be available or acceptable in today's world. (Roger Street, OUCE)	Addressed
E-17-490	A	35	7	36	16	What about migration in Africa?? (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-491	A	35	8			A few studies' insert '(see Box 17.9)' after. (Jean Palutikof, Met Office)	Addressed
E-17-492	A	35	15			"perhaps because it..." ADD "IS" before "entirely" (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-493	A	35	15			"entirely outside" - I think "entirely" is a bit of an exaggeration - especially considering that migration is one of the first responses to droughts and floods. Have a look at Manvell, A. 2005 PhD thesis from School of Development Studies, University of East Anglia, entitled 'ACTION SPACES, DIFFERENTIATION & THE DRYLAND FARM: A Case Study from the Dakoro Region of Niger' (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-494	A	35	16	35	16	Add Orlove, 2005 in References (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-495	A	35	16			Orlove 2005 - missing ref (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-496	A	35	20			Box 17.9: A simplistic presentation of the role migration can play. Migration is part of a continuum in the mobility spectrum that ranges from a daily commute up to permanent change of residence. In some cases, for example, migration on the part of one or more individuals is part of a larger proactive household income	Addressed – rewrite of box

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						diversification strategy that helps to “buffer” variability and contributes to the resilience of agricultural livelihood systems (Moench, M. and A. Dixit, Eds. (2004). 'Adaptive Capacity and Livelihood Resilience: Adaptive Strategies for Responding to Floods and Droughts in South Asia'. Boulder, Kathmandu, Institute for Social and Environmental Transition). In other cases, it involves complete shifting of populations. Migration has always been a central element in the way some societies have adapted to climatic variability (refs to the North African nomadic communities could be useful). Now, if access to labor markets through migration contributes to remittances and the sustainability of local livelihoods (a core strategy in much of the world), then yes it may be central to successful adaptation. Much depends on context. Asking “does migration and resettlement represent successful adaptation?” frames the debate and understanding of migration in an unproductive way. (Silvia Llosa, ISDR System)	
E-17-497	A	35	24			concrete examples would be useful. (John Morton, University of Greenwich)	Addressed
E-17-498	A	35	37			Change “is granted” to “have”. Rationale: no one grants countries autonomy to control their borders. It is their sovereign right. (Indur Goklany, US Department of the Interior)	Addressed
E-17-499	A	36	2			Give examples of such temporary migrations. (Jean Palutikof, Met Office)	Addressed
E-17-500	A	36	12			"necessity" should be changed to "necessary" (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-501	A	36	18			You may consider structuring the section in 2 parts, 1. National institutions and politics; 2. International community. In connection with conclusions of this subsection the following quotation from the DFID scoping study on 'Disaster risk reduction: a development concern (2004)' may be worth considering. ... [a]n assumption that development that aims to reduce poverty will automatically address vulnerability. This brings a danger that the role of risk reduction in actually achieving genuine pro-poor development will be overlooked. Much development is still not leading to true, sustainable poverty reduction, and this limited progress can partly be explained by its failure to take proper account of disaster risk. This requires systematic assessment of exposure and susceptibility to hazards for different groups of people, and explicit attention to options for reducing this vulnerability, to be part of the process of designing development interventions.' (Silvia Llosa, ISDR System)	Addressed
E-17-	A	36	18			It is important to mention in this section that climate change (and NAPA teams)	Addressed

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502						have almost always been controlled by the Ministries of Environment, and often by junior-level staff, who have little leverage over vital Ministries such as Public Works, Agriculture or Health. This has been a historical flaw, related to the fact that Environmental Ministries are often the focal points for GEF (and thus the ones that execute the preparation of NAPAs). In our review of adaptation experiences in the Pacific, we proposed that adaptation and risk management be merged under the coordination of a powerful central Ministry (see Bettencourt et al. 2006). This is now starting to happen in Kiribati, where adaptation and risk management are now under the Office of the President. (Sofia Bettencourt, World Bank)	
E-17-503	A	36	21		21	What are appropriate institutions? - in function, size, level of participatory involvement by citizens? Maybe you should make this more specific and clearer. The suggestion in the following sentence that "formal" organizational structures are such appropriate institutions is rather biased by western views. Maybe there is nothing problematic or inappropriate about informal institutions that work just fine. Moreover, you may want to add in this paragraph that it's not just the "appropriate institutions", but the functional interactions between them that matter much in many of the interdisciplinary problems that adaptation brings. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-504	A	36	21			Considering the audience, is it appropriate or necessary to talk about 'institutional capital'? (Jean Palutikof, Met Office)	Addressed
E-17-505	A	36	28	36	28	Omit word "natural" (.)	Addressed
E-17-506	A	36	28	36	29	Change "natural disaster" to "Disaster" (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-507	A	36	29	36	29	after 'humanitarian' add 'and development' (Silvia Llosa, ISDR System)	Addressed
E-17-508	A	36	31		33	Make this example more concrete, specific. It's not very telling what you say here. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-509	A	36	31		35	It would seem that this statement only applies in some locations and with some types of political/institutional contexts. Expand it to qualify it -- and/or explain in more general terms. As it is, it feels very North-centric. Refs needed - Chrstoplos et al 2001 is missing (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-510	A	36	32			Effects => affects (Jean Palutikof, Met Office)	Addressed

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E-17-511	A	36	35			remove "s" from "Wisner et al pointS out" (Emma Lisa Freja Schipper, International Water Management Institute)	
E-17-512	A	36	42		47	It is unclear if this statement is about climate change adaptation, more broadly adaptation to other risks, disaster management or all of the above. (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-513	A	36	47	36	47	In this regard, the efforts and activities of the UNISDR Working Group on Climate Change and Disaster Risk Reduction could be mentioned. The Group is co-chaired by WMO and UNDP. Its purpose is to strengthen integration between adaptation to climate change, disaster risk reduction and sustainable development at policy, programme design and operational levels through existing institutional mechanisms. The Group is currently working on 2 papers: 1. a paper of selected disaster reduction tools that can be useful in climate change adaptation, in collaboration with Red Cross Climate Centre and ProVention Consortium, 2. a paper on terminology and concepts important to climate change and DRR work, to begin bridging the conceptual divide between the two communities. The VARG is also carrying out 3 case studies on current disaster risk reduction practices and climate change adaptation with support from the EC. (Silvia Llosa, ISDR System)	Addressed
E-17-514	A	36	50	37	2	Delete example of Bolivia - tells us nothing (Jean Palutikof, Met Office)	Addressed
E-17-515	A	37	1	55		Check references. There are several citations in the text that are missing. (María Isabel Travasso, Instituto Nacional de Tecnología Agropecuaria (INTA))	Addressed
E-17-516	A	37	4	37	24	Crucial information lost on last page, with no proper conclusions and very abrupt ending - extraordinary! (Jean Palutikof, Met Office)	Addressed – new section 17.5
E-17-517	A	37	4		5	It's not just these serious problems that add additional stresses and you should not suggest that these are the only ones to worry about. In fact, it's the much more mundane ones that are worrisome already: local development pressures, legal conflicts, unemployment or limit employment options, "local politics" and so on - because that's the context in which many adaptation decisions have to be made. (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-518	A	37	5	37	5	add 'natural hazards' (Silvia Llosa, ISDR System)	Addressed
E-17-519	A	37	8			change "inextricable" to "inextricably" (Emma Lisa Freja Schipper, International Water Management Institute)	Addressed
E-17-520	A	37	11	37	13	Sentence should presumably be reversed: "surrounding social environment as well as the natural hazard itself"	Addressed

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						(John Morton, University of Greenwich)	
E-17-521	A	37	13	37	13	in addition to social environment, 'political and economic environments' also matter. (Silvia Llosa, ISDR System)	Addressed
E-17-522	A	37	15		17	is this sentence referring to national government responses to climate change? If so, it should be rephrased. There are many reasons why governments are attending to climate change e.g. to respond to observable effects. (Jan Corfee-Morlot, University College London & OECD)	Addressed
E-17-523	A	37	23		24	This should be discussed more fully (Susanne Moser, National Center for Atmospheric Research)	Addressed
E-17-524	A	37		37		The chapter is missing a good concluding paragraph, a summary assessment of all that's been said: what do all the options and constraints discussed amount to? Without such a conclusion, the chapter feels unfinished and missing a take-home message. (Susanne Moser, National Center for Atmospheric Research)	Addressed – new section on conclusions
E-17-525	A	38	40			Suggested citations for "Poverty and Climate Change": a) AfDB, ADB, DFID, DGIS, EC, BMZ, OECD, UNDP, UNEP and the World Bank, 2003: Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation. Inter-agency report. 43 pp. b) Sperling F., ed., 2003. Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation. Inter-agency report prepared by ADB, AfDB, BMZ, DFID, DGIS, EC, OECD, UNDP, UNEP and the World Bank. Please note: The paper was jointly prepared by the ten agencies and agencies were listed in alphabetical order according to their full names. Ideally the acronyms should be spelled as otherwise the authorship is not in alphabetical order in option a (but due to space this may not be possible). WB is not an official acronym, it should read the World Bank. To my understanding, the report was originally printed in Bonn, Germany. (Frank Sperling, World Bank)	Addressed
E-17-526	A	38		55		Despite this long list of references, I noticed numerous instances where references were missing from the bibliography. In the text, references are cited inconsistently, but I assume you'll catch all that in a thorough copyedit (along with lots of other little things.... (Susanne Moser, National Center for Atmospheric Research)	All reference issues addressed
E-17-527	A	38				Suggested additional citation: Vergara, W. 2005. Adapting to Climate Change: Lessons Learned, Work in Progress and Proposed Next Steps for the World Bank in Latin America. Latin America and Caribbean Region. Sustainable Development Working Paper No. 25. The World Bank. Washington, D.C. 46 pp.	

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						(Frank Sperling, World Bank)	
E-17-528	A	38				Suggested additional citation: Sperling, F. and F. Szekely, 2005. Disaster Risk Management in a Changing Climate. Discussion Paper prepared for the World Conference on Disaster Reduction on behalf of the Vulnerability and Adaptation Resource Group (VARG). Reprint with Addendum on Conference Outcomes. Washington, D.C. 42 pp. (Frank Sperling, World Bank)	
E-17-529	A	39	36	39	36	The full reference is as follows: Bettencourt, S., Richard Croad, P. Freeman, J. Hay, R. Jones, P. King, P. Lal, A. Mearns, J. Miller, I. Psawaryi-Riddhough, A. Simpson, N. Teuatabo, U. Trotz, M. van Aalst (2006) "Not If but When: Adapting to Natural Hazards in the Pacific Island region: A Policy Note", The World Bank East Asia and Pacific Region, Pacific Islands Country Management Unit. Washington, D. C. (Sofia Bettencourt, World Bank)	
E-17-530	A	48	14		16	Here is the full reference, since the paper is published now: (Title as is). Global Env. Change 15: 353-369. (Susanne Moser, National Center for Atmospheric Research)	

This part contains LATE EXPERT comments for chapter 17

CHAPTER 17

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17-1	LATE	35	17		18	<p>Large scale mass migration may not be a possible option. However, mass movement of people and their livestock within a country or across the border for temporary residence in search of water or pasture cannot be ruled out. Secondly, migration of talented young able persons may increase if opportunities are not available within their borders. The desire to reach Europe by Africans across the Mediterranean Sea and the migration across Mexico USA border may not have the same reason but serve as possible indicators of the future. The Christian Aid recent report depicts these scenarios vividly. We can also expect internal conflicts over water and pasture rights to increase in numbers. Already this is happening in many arid and semi-arid areas of developing countries.</p> <p>(Shem O. Wandiga, University of Nairobi)</p>	Addressed
17-2	LATE	35	17			<p>A second factor which is not considered in the text is the cost to international community. The media images of Africa depicting children, women and old people dying from hunger is a prick to the conscience of the world. It never fails to raise response from viewers over the world when such suffering is flashed across their living room TVs. The response is direct contribution of aid by citizens or pressure on their government to send aid. Climate change impacts will increase the cost of such aid due to their frequency and magnitude.</p> <p>(Shem O. Wandiga, University of Nairobi)</p>	Addressed