



**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 20

August 2006

Organization of the review comments file

Comments are organized as follows:

- (a) First are the comments from the Co-Chairs and TSU. These:
 - (i) track the development of the ZOD and FOD, and your responses to review comments on each of these drafts, and then
 - (ii) present comments on the Second-Order Draft
- (b) Second are the comments from the Expert Reviewers, organized in the same format as your FOD comments file.

**Government and Expert Review of Second Order Draft
Confidential, Do Not Cite or Quote
August 2006**

Discussion of expert review comments and record keeping

IT IS RECOMMENDED THAT:

- AUTHORS BEGIN WORK ON THE COMMENTS IMMEDIATELY. SUBSTANTIVE COMMENTS NEED TO BE SEPARATED FROM NON-SUBSTANTIVE, AND THE TWO SHOULD BE TREATED DIFFERENTLY
- CONTACT IS MADE BETWEEN AUTHORS AND THEIR REVIEW EDITORS IN AUGUST

Substantive comments

- The chapter writing team should discuss all substantive expert review comments, by email and/or at Cape Town.
- Substantive comments require full and proper consideration. The *Principles Governing IPCC Work* state that:
 - genuine controversies should be reflected adequately in the text of the Report and
 - it is the role of the Review Editors to advise the lead authors on how to handle contentious/controversial issues
- You must record the outcome of these discussions in this document, under the column 'Notes of the Writing Team'.

Non-substantive comments

- For non-substantive comments, a very brief entry should be made in the column 'Notes of the Writing Team'. The following terms are acceptable:
 - Addressed
 - Not applicable
 - Text removed
 - A tick to denote a comment has been addressed (somewhere on the document this should be stated)

General

- The record should be kept in this document, ideally electronically.
- The document becomes part of the traceable account of the Working Group II Fourth Assessment. When completed to the satisfaction of the Review Editors, a copy should be returned to the TSU by the **8th December 2006**.

Chapter 20

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 20 ZOD comments by CCs and TSU	Has this been addressed in the SOD?	Author responses:
20.Z1	<p>This chapter is at a more preliminary stage than most others. And much, understandably, needs to be done. This is to be expected, since the chapter relies to a fair extent on material in preceding chapters. Obviously, much now needs to be quarried from the other chapters in their ZOD form, in order to give substance to this chapter. We suggest this as a priority next step, as follows:</p> <p>i. Actions in the run-up to Cairns: We suggest that the priority should be for authors of this chapter to agree reading assignments for all the other chapters, and to <u>come to Cairns</u> with carefully thought through extracts from the rest of the volume that can then be discussed at Cairns and subsequently integrated. There also needs to be some concrete reading of the new literature on:</p> <ol style="list-style-type: none"> net global effects (eg the UK 'Social Costs of Climate Change' report [copies from Tol and Downing]; regional effects; and local effects. <p>The team also needs to read up the Millenium Development Goals (if these are to be the base on which net effects are to be evaluated – see below).</p> <p>ii. Actions at Cairns. Then, we suggest, the writing team need to debate at Cairns the key emerging findings from the volume as a whole, especially those pertaining to sustainability, and agree which ones to focus on.</p>	OK	Good
20.Z2	<p>The core sections of the chapter should be 20.5, 20.6 and 20.7. The prime objective of this chapter should be to give the reader the considered conclusions <u>of the whole report</u> regarding how these relate to future sustainability, and this will happen in these three sections. The key questions are:</p> <ol style="list-style-type: none"> Where, when, and what kind will be the key pressures at the global and aggregate scales (Section 20.5)? Which regions, what sectors are the most vulnerable, 	<p>a) Section 20.6 looks at hunger, water stress, flooding, vegetation dieback but there's nothing that explicitly states that these are the key pressure and where</p>	<p>We agreed that Chapter 20 need not try to be a summary chapter for the report. That said, using versions of Figures SPM-3 and SPM-5 will serve that function and bring more relevance to the regional impacts business. That, tied to the notion that these impacts</p>

	<p>and how far might this vulnerability impinge on their sustainability (20.6)?</p> <p>c) What local and sub-regional aspects are the most threatened (or by contrast the most resilient) (20.7)?</p> <p>These three sections of the chapter should be its core. And now that the other ZoD chapters are available, we recommend that you quarry them for content that might best comprise these core sections of Chapter 20</p>	<p>and when they will happen. Sectors are mentioned briefly but there are no specifics</p> <p>b and c) Section 20.7: the set of figures 20.6-20.9 show the regions most vulnerable in the future with varying degrees of adaptation</p>	<p>can impede SD will make the chapter less “weak”.</p>
20.Z3	<p>How to round off the chapter (and the WGII AR4)?</p> <p>a) Can the chapter conclude with a list of the key challenges to sustainability that policymakers should be aware of? In this respect, the <i>2005 Environmental Sustainability Index</i> might provide valuable baseline (see www.yale.edu/esi).</p> <p>b) Could you use, as the measure of impact of climate change, the effects (positive and negative) these may have on the various Millennium Development Goals?</p>	<p>a) Key challenges covered in 20.10. ESI website not referenced</p> <p>b) MDGs at 2015 discussed on 20.7.1</p>	<p>Will do</p> <p>Yes</p>
20.Z4	<p>The Introduction should include a summary of TAR conclusions regarding climate change and sustainability</p>	<p>This isn't explicitly stated in the Introduction but is mentioned in various sections</p>	<p>Anchored definition in the TAR; will add a little more – Rodel</p>
20.Z5	<p>Can case studies be used effectively to illustrate?</p>	<p>Some do exist but mostly the text is general with relatively few specific illustrations</p>	<p>Case studies were hammered in the FOD, and so dropped.</p>
	<p>Chapter 20 FOD comments by CCs and TSU</p>	<p>Has this been addressed in the SOD?</p>	
20.F1	<p>Authors now need to read all other FOD chapters to identify key messages for Ch 20</p>	<p>OK</p>	<p>Good</p>
20.F2	<p>Suggest a map (to parallel table 1) that illustrates global distribution of sustainability and/or vulnerability, with climate change effects overlaid</p>	<p>Table 1 no longer in SOD. A series of maps illustrating global vulnerability are present 20.6-20.9</p>	<p>Fewer next time</p>
20.F3	<p>eg overlay climate change impacts on global maps of most vulnerable areas/least sustainable: eg (2005 Environmental Sustainability Index (CIESIN/Yale); Natural Disaster Hotspots (World Bank/Columbia Univ); and on maps of vulnerability indices</p>	<p>Now have new maps; since these just about to be published, there needs to be very thorough discussion/review of them by the writing group</p>	<p>Will discuss, but we like them. There will be fewer, though</p>
20.F4	<p>It is very important that there be a thorough assessment of the literature on global assessment of damages. This should include review of all relevant econ studies since TAR, eg FUND, eg Social Costs of Carbon, eg Benefits project of OECD. eg Social Costs of Carbon (and be clear whether SAR and TAR figures still stand; NB the SAR figures are still in circulation, I suspect because of lack of anything since. Should this be the case or should they be</p>	<p>Economic studies – FUND, DICE and PAGE are included as are SCC. SAR and TAR figures are discussed in 20.6.2 and in ES</p>	<p>Yes</p>

	'knocked on the head?')		
20.F5	How far do (very) recent re-assessments (downward revisions) of CO2 fertilisation effects on agric alter positive agg econ effects on developed countries? Eg those by Nordhaus et al which indicate net global positive up to say + 1 degree, then point inflexion, then negative? We have long suspected this is an artefact of only hypothetical CO2 fertn based on non-field studies. Now field studies confirm fertn effect may be much less. If we revise down northern agric prod potential changes, does this remove all pos effect in near term?	Not addressed in draft; suggest there be a breakout group at Cape Town on this point of inflexion and whether knowledge about it has altered since `SAR and TAR	Will take results back to the group.
20.F6	Needs clear conclusions that reflect the volume as a whole (this needs reading chapters and also awaits full outcome of discussions on the TS and SPM)	There are clear conclusions at the end: developing countries are generally most at risk under moderate climate change, and everyone is at risk from severe climate change. Need to be clear what is new here: Could read as a confirmation of TAR (or is there something qualitatively new in the conclusions?)	Will try to locate re the TAR. Expect mostly confirming with expanded links across determinants.
20.F7	Below are comments on ZERO-ORDER DRAFT by M. Parry in Jan 2005 [with note in square brackets regarding whether covered by FOD]: General comments: 1) Intro should include summary of TAR conclusions regarding climate change and sustainability 2) Obviously, much needs to be quarried from the other chapters in ZoD, in order to give substance to this chapter: suggest this as priority next step. [mainly still to be done] 3) Prime objective of this chapter should be to give the reader the considered conclusions **of the whole report** regarding how they relate to future sustainability, viz: a) where,when, what kind will be the key pressures at the global and aggregate scales; b) which regions, what sectors are the most vunersable, and how far might this impinge on their sustainability; c) what local and sub-regional aspects are the most threatened (or by contras the most resilient). These three sections to the chapter should be its core. And now that the other ZoD chapters are available, we recommend you quarry them for content that might best comprise these core sections of ch 20. 4) can case studies but used effectively to illustrate. [FOD	See responses to Z1 to Z5	OK

	<p>is better on this, now]</p> <p>5) Can the chapter conclude with a list of the key challenges to sustainability that these people should be aware of.</p> <p>6) Could you use as the measure of impact of climate change: the effects (pos and neg) it may have on the various millennium development goals. [still an idea worth pursuing, I think. Viz take the MDGs as given objectives, and one by one analyse how far climate change affects goals-achievement].</p> <p>7) Suggest you condense 20.0 section to 1 page.</p> <p>20. Perspectives on Climate Change and Sustainability</p> <ul style="list-style-type: none"> • Summary of new knowledge relating to impacts and adaptation • Impacts and adaptation in the context of multiple stresses • Implications for environmental quality • Implications for risk, hazard and disaster management • Global and aggregate impacts • Implications for regional and sectoral development; access to resources and technology; equity • Sub-regional and local issues • Opportunities, co-benefits and challenges for adaptation (including over long term) • Uncertainties, unknowns, priorities for research 		
	Chapter 20 SOD comments by CCs and TSU		
20.S1	LENGTH:	35 pages (target is 31)	The target IS 35 per agreement to add 3 printed pages when we took up the aggregate estimates bits
20.S2	ARE PAO HEADINGS PRESENT?	yes	good
20.S3	HAVE MOST GENERAL COMMENTS OF ERs FROM ZOD AND FOD BEEN COVERED?	yes	good
20.S4	ARE REFERENCES BROADLY COMPLETE?	yes	Will confirm
20.S5	IS THERE LINE-OF-SIGHT TEXT → ES AND TEXT+ES → TS+SPM?	Needs work e.g., → ES: Statement 1 – can't find anywhere it states that CC impacts will be greatest in areas affected by multiple stresses. There are examples of multiple stresses and statements of CC being one of multiple stresses but nothing which	Will confirm

		<p>explicitly states that CC impacts will be greatest where other stresses occur.</p> <p>→ SPM: p16 ln 26 doesn't mention 'no regrets' policies in 20.3 but 20.5.2 but not termed 'no regrets' P19 ln 18 although multiple stresses on ecosystems are covered in 20.3.1 and 20.5.2, and stresses on other systems are mentioned in 20.10 there is nothing that explicitly states that CC impacts are likely to be greatest where multiple stresses occur – apart from in the ES.</p> <p>P24 ln18 achievement of MDGs – SPM states that CC will impede achievement of MDGs by 2015. The ES and 20.7.1 states it won't but 20.7.1 states that in the longer term MDGs will be impeded by CC. Third bulleted statement plus associated text in TS p52 is more in line with the chapter.</p> <p>→ TS: P52 ln21 – this has 2-7 million at risk from coastal flooding as is stated in the ES. But, in 20.6 T20.2 has 2-29 million. Also, hunger is 200-600 m in the TS and 50-600 mill in T20.2. This discrepancy has been noted in the Excel spreadsheet also. P53 ln13-16 – can't find mention of this sentence in the text. P55 ln 28. Can't find reference to this in 20.9</p>	<p>???</p> <p>Will confirm</p> <p>Will confirm</p> <p>Will confirm</p>
20.S6	Use () not []		
20.S7	In places the chapter tends to be too technical with no explanation of terms, most noticeable in section 20.6 e.g. discounting and pure time preference rates		???
20.S8	F20.5 needs improving		Will try to clarify – distinction between mother nature and policy prerogative.
20.S9	Not much cross-referencing to other chapters		Will bring a new version forward
20.S10	Generally well written but there are parts that need to be		Will expand with the new table/figures

	checked for punctuation etc		from SPM
20.S11	Section 20.7 although titled '...; access to resources and technology; equity' doesn't refer to equity, technology development pathways are mentioned only in 20.7.4 and resources are mentioned in terms of finance, food, water and energy. Where these issues are mentioned there are no specifics of regions likely to experience reduced/improved access to resources.		Doing our best....will work on style in last round
20.S12	Reference list is short: 20.7.1 is dominated by references of summary studies e.g., UN and MEA. Very few references in 20.7.2-20.7.4 – nothing in 20.7.3, only IPCC (2001) in 20.7.4		Will make references more clearly, but not going to tell development stories – beyond our scope.
20.S13	Section 20.8.4 has nothing to do with adaptation and should be removed		Will work on that...
20.S14	Section 20.3.1 A catalogue of multiple stresses concentrates only on ecosystems – what about the stresses that affect social and economic sectors?		
20.S15	<p>TO DO:</p> <ul style="list-style-type: none"> • The chapter needs to be reduced by 4 pages • Conclusions need to be clear: especially regarding whether they are a confirmation of TAR; or new. • Need to discuss with chs (e.g. 5 and 19) about the point of inflexion where (global aggregate) positive effects under small T changes become negative under larger T changes. This is a SAR and TAR conclusion. Has it shifted rightwards along the T change axis (<i>Ch5 suggests agricultural production is not negatively affected until above 3deg C, though I doubt this conclusion: MP</i>) • Some very recent IAM runs for other international studies suggest large (e.g. 6 to 8%) negative effects on global GDP for T changes of. ~3deg C. How does this square with the ~1 % under ~2 deg that you report? • And, when one puts together: a) the concentration of WG1 on 'commitment to warming' and b) the key impacts for T changes of less than 2 deg C, and c) the high likelihood that 2 deg will be exceeded (see Table 1 of SPM of WG3), then it appears that (whatever actions) 2 deg will be exceeded. Therefore maybe an estimate of effects on global GDP should be given for 3 deg and above, if possible. • More attention is needed on the social-well being 		

	<p>aspects of sustainable development and climate change to balance out the environmental and economic sections (with the economic dominating but a good section 20.4 on environmental quality). This reflects the statement in section 20.8.1 that social and environmental considerations are not given enough consideration; here is an opportunity to redress the balance. Section 20.3.1 looks only at stresses affection ecosystems and not social and economic sectors</p> <ul style="list-style-type: none"> • Should be more cross referencing to WG2 chapters • Section 20.7 should discuss the issues included in its title • Number of references included in the chapter should be increased – there are several sections with none or very few references • Section 20.6.2 on SCC is hard going and uses terms not accessible to the targeted readership. Is this section necessary? With this removed the chapter would be under length and could devote more space to other sections such as 20.7. For an example of an audience-targeted discussion on costs see 17.2.3. 		
			<p>No it doesn't. OK Will do and incorporate results of the conversations.</p> <p>Citations?? The ones that I have seen were roundly criticized by many in the OECD meeting in Paris in July. Will check – Chris</p> <p>Will show in the version of Figure SPM-3 along multiple numeraires. Will argue that aggregate GDP estimates not useful.</p> <p>Will do</p>

			<p>Will make clear it does.</p> <p>The ones that refer back to other chapters don't need more.</p> <p>You asked for it, and it will play a role in the story – lots missing...but a minimum baseline.</p>
--	--	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-1	A	0	0	0	0	Policies that pursue sustainable development and climate change mitigation can be mutually supportive. In other words climate change mitigation can contribute to sustainable development goals and that sustainable development can create conditions that foster climate change mitigation. (James Bero, BASF)	We are not the mitigation WG, but we will be sure to make the link here through determinants overlap.
E-20-2	A	0	0	0	0	Policies that pursue sustainable development and climate change mitigation can be mutually supportive. In other words climate change mitigation can contribute to sustainable development goals and that sustainable development can create conditions that foster climate change mitigation. (James Bero, BASF)	Ditto
E-20-3	A	0				I think chapter 20 is unnecessarily weak by relying in the crucial findings in sections 20.7.2 to 20.7.4 mainly on the Yohe et al paper. The chapter comes up with some very strong and powerful statements based on these sections, but being based on only one (albeit global) paper, these findings are very open to challenge and need to be very strongly qualified as to their validity and uncertainties (the current findings are reported without any use of the uncertainty lexicon, but only use "would" and "could"). It would be much more powerful if these sections in chapter 20 actually tried to integrate findings from across the WG2 report itself (in particular chapters on ecosystems, FFF, coastal regions, polar regions, and small islands), to come up with implications for sustainability, rather rely on only one specific paper that uses a relatively simplistic (and therefore challengeable) metric. The chapter could also try to refer to concrete temperature bands so as to provide a possible handshake with a discussion of impacts under different temperature bands (as the current draft SPM attempts). It would also provide a very important underpinning for possible material that could be brought forward into the Synthesis Report to connect with stabilisation scenarios and damages avoided by mitigation, and benefits to sustainability that are contingent on mitigation. (Andy Reisinger, IPCC SYR TSU)	Will work on that. Adding Figures SPM-3 and SPM-5 will help.
E-20-4	A	0				I was somewhat surprised not to see any mention of "no-regrets" adaptations (also known as win-win adaptations or low-regrets, or implementing the precautionary principle) anywhere in the chapter. While some reference is being made to these in sections 20.5.1 and 20.5.2 (pg. 14 lines 11-24, and pg 15 lines 17-34, respectively), the terminology of "no-regrets" or equivalent is lacking. I was wondering if this was done consciously, perhaps because it was deemed not necessary, or because the use of this terminology is not consistent? (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	This terminology is loaded and can focus attention too narrowly.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-5	A	0				The chapter is overall a substantial improvement on the previous draft. (Edward Clay, Overseas Development Institute)	Thanks.
E-20-6	A	0				"The chapter becomes progressively less focused and more wishfully speculative (Section 20.8.3 and onwards). An overall weakness of this chapter is that it is written from the perspective of social scientists working on CC and environmental issues for whom the issues are self-evident. The chapter would be strengthened by a clearer input from precisely the mainstream development community of macro-economists and other social scientists with whom they wish to engage and with references to their research. So, for example, there would be a strong case for the authors reconsidering this chapter again in the light of the UK Stern Review [www.sternreview.org.uk/] due to report in autumn 2006 and similar exercises that are presently underway." (Edward Clay, Overseas Development Institute)	Very little in the literature. Too late for inclusion, I expect.
E-20-7	A	0				This chapter has an overwhelming focus on potential impacts, which I feel is inappropriate. Understanding potential future impacts has been shown to be less important for sustainable development and adaptation, and more important for convincing decision makers to take action on mitigation. To adapt, action needs to be taken to reduce vulnerability, to reduce poverty, to minimize exposure to hazards, and for the most part, this can be achieved without global or aggregate models of impacts. Further sustainable development is about having a long term vision, intergenerational equity, balancing growth with development and environmental quality, and about choice. None of these appears to come through as themes in this chapter. (Emma Tompkins, Oxford University)	Good points and language for Section 20.8 and conclusions.
E-20-8	A	0				There are some serious omissions from this chapter including: the role of science in decision making; alternative development pathways; justice and equity implications of alternative development strategies; decision making criteria and the role of precaution; decision support tools; the role of plans and enforcement of plans: strategic, spatial, risk management etc.; systems of governance for resource management (e.g. CBRM); all of which seem to be missing, or inadequately represented at present. (Emma Tompkins, Oxford University)	Research needs...add to Section 20.8
E-20-9	A	0				If I were asked to review this as an academic paper entitled 'Perspectives on Climate Change and Sustainability' I would reject it for two main reasons: the content does not address the title of the paper and there are serious omissions in the literature (detailed below). I feel that the structure of this chapter is very limiting	We worked with the PAO.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						for the authors. The current structure does not allow a full exploration of the various aspects of sustainability. Why are the pillars of sustainability not used to shape this chapter? Why not use any of the frameworks for sustainable development that exist (or even refer to them), e.g. the work of the UK Sustainable Development Commission who shape sustainable development around five elements: living within environmental limits; learning, innovating and adapting; maintaining wellbeing; visioning and choosing; continuity and durability; self-organising communities. I feel that there is too much emphasis in this chapter on elements which are described in other chapters, e.g. impacts and costing impacts. In its current form, this chapter is more about aggregate impacts and the social cost or carbon than about sustainable development and its component parts i.e. equity, justice, legitimacy of decision making and action, sovereignty etc... It was proposed in 2003 that this report should be more carefully shaped around these issues, see Najam, Adil, Atiq A. Rahman, Saleemul Huq and Youba Sokona (2003) Integrating sustainable development into the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Climate Policy, Volume 3, Supplement 1, November 2003, Pages S9-S17. In this paper, Najam et al propose that AR4 can improve its section on climate change and sustainable development by investing in three areas: First, conceptually, by addressing equity concerns explicitly and throughout AR4. Second, analytically, by expanding the examination of alternative development pathways begun during the TAR process. Third, operationally, sustainable development should be integrated in all the AR4 chapters. Unfortunately it seems that only the latter has been done. (Emma Tompkins, Oxford University)	In intro Too late to change, especially given the PAO; AR5?
E-20-10	A	0				Thank you for the opportunity to comment. Overall, the chapter provides an interesting overview of the challenges climate change poses for development and the need for adaptation to ensure sustainable progress. However, the chapter in my opinion would benefit from a stronger recognition of development agencies increasing recognition of the need for adaptation within the development context and corresponding activities. (Frank Sperling, World Bank)	Section 20.8.3
E-20-11	A	0				references for the above: Porritt J, 2005: Capitalism as if the world matters, London, Earthscan Ravetz J (2005) Environment in Transition in an Industrial City-Region: analysis	Don't understand?

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>and experience: In: Granahan G & Marcotullio P (Eds) The Urban Environmental Transition, London Earthscan with the United Nations University, Ravetz J, 2000: 'City-Region 2020: integrated planning for a sustainable environment': (with foreword by the UK Secretary of State for the Environment), London, Earthscan Roaf, S. (2005). Adapting Buildings and Cities to Climate Change, Architectural Press. Rotmans, J & de Vries B (Eds), 1997: 'Perspectives on Global Change: the Targets Approach' Cambridge University Press Stiglitz J E (2002) Globalization and Its Discontents, W.W. Norton & Company Thompson, M, Ellis, R, & Wildavsky, A, 1990: 'Cultural Theory': Boulder USA, Westview Press</p> <p>(Joe Ravetz, University of Manchester)</p>	
E-20-12	A	0				<p>General comment: There are significant sections in this chapter that do not actually address sustainability issues at all (particularly in sections 20.6 and 20.7). I would strongly advise CLAs and LAs to take a close read of the chapter and make sure that the text consistently addresses this chapter's theme.</p> <p>(John Drexhage, International Institute for Sustainable Development)</p>	Worked within the PAO.
E-20-13	A	0				<p>General comment: The title of the chapter is potentially confusing. Could be clearer by revising to "Perspectives on Climate Change Impacts, Adaptation, and Sustainability. Climate change mitigation and sustainability is clearly also an important and relevant issue, but is not covered in this chapter.</p> <p>(John Drexhage, International Institute for Sustainable Development)</p>	Cannot be changed.
E-20-14	A	0				<p>General Comment: I will address this more explicitly in the relevant sections, but the global maps illustrating envisioned climate change impacts and adaptive capacity are out of order and should be deleted from the chapter. Simply put, climate change impacts of course do not respect political borders - characterizing a country's vulnerability and adaptive capacity to climate change may work for Benelux nations, but it basically stops there. And for a country the size of Canada, the US, China or Russia, such a model is grossly misleading and entirely unhelpful: the Arctic and the Toronto industrial corridor simply cannot be rolled into one gross vulnerability characterization.</p> <p>(John Drexhage, International Institute for Sustainable Development)</p>	Of course...will be careful.
E-20-15	A	0				<p>General comment: Chapter needs important clarifications, definitions, particularly around the concept of 'adaptive capacity'. Adaptive capacity, in a broader policy context, refers to the ability of institutions to address a wide range of scenarios,</p>	

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						some more expected than others. In the context of climate change, then, adaptive capacity also should refer to the ability of institutions to effectively adapt to climate change impacts, but also the ability to carry on different mitigation scenarios. An illustration might help - what if we were to discover in ten years time that cc impacts will be much more pronounced than originally envisioned. The adaptive capacity should reference not only the ability to adapt to those impacts but also the ability to take on more vigorous mitigation activities to dampen the impacts of climate change over time. We should not confuse broader 'adaptive capacity' literature with climate change adaptation, and too often this chapter falls into that trap. (John Drexhage, International Institute for Sustainable Development)	No it doesn't. Will be careful.
E-20-16	A	0				General Comments: This new draft is quite different from the FOD and presents in a much more comprehensive way the issue on Perspectives on Climate Change and Sustainability and its interaction with adaptation. New tables and figures included in the text make the discussion more clear and easy to follow. In particular Table 20.1, Table 20.2, Table 20.3, Table 20.4 and 20.6, as well as Figure 20.3, Figure 20.4, Figure 20.5, Figure 20.6, Figure 20.7, Figure 20.8, and Figure 20.9. Congratulations for the significant improvement. (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Thanks.
E-20-17	A	0				The chapter clearly show evidence of scholarship, discipline and solid research. Chapter 20 requires more coherent linkages and inter-contextual connections between sections. Moreover, while “sustainability” admittedly does not mean “sustainable development”, there remain clear linkages between the two. Chapter 20 requires further in-depth definition of sustainability and a more refined focus. As opposed to Chapter 18, for one example, the Executive Summary of Chapter 20 is quite weak and a bit disconnected. Placement of sections and specific emphases of critical aspects, concepts or definitions needs further reconsideration in both chapters. (P. H. Liotta, Pell Center for International Relations and Public Policy)	Noted above. Will try to improve. Work with the PAO
E-20-18	A	0				Figure 20.2 requires further thought and emphasis to merit inclusion. (P. H. Liotta, Pell Center for International Relations and Public Policy)	OK - Section 20.8.3
E-20-19	A	0				Figure 20.1 is an excellent graphic. (P. H. Liotta, Pell Center for International Relations and Public Policy)	Kudos Stewart Cohen.
E-20-	A	0				Chapter 20, Overall vast improvement.	

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
20						(P. H. Liotta, Pell Center for International Relations and Public Policy)	Thanks.
E-20-21	A	0				The chapter is much better than the previous version and is a very interesting read. The inclusion of some of the MEA results has been very helpful. I would have preferred a somewhat stronger recommendation on the need for the two communities (climate change and development) to work more closely together. Sustainability is looked at over different time scales by these communities and some convergence seems to be in order. The report only refers to this issue when it addresses inter-generational conflicts. It should be dealt with more explicitly in this chapter. (Paul Vlek, University of Bonn)	Will emphasize - Section 20.8.3
E-20-22	A	0				The diagrams of global distributions of vulnerability are excellent. I found insufficient attention to the social drivers of climate change, and its mitigation and adaptation. Perhaps those can be treated in the next issue, as the social drivers are those that are most directly subject to governmental influence. (Peter Haas, University of Massachusetts)	Thanks.
E-20-23	A	0				We found the chapter rather illogically organised. There are numerous interesting elements, but they do not all appear directly related, and as such do not all appear to fit in this chapter. Unfortunately, this also means there is a lack of flow. In some instances, there are elements that could easily be dropped, as they appear in Chapter 17 already. Here we would like to point the absence of cross-references between chapters that would avoid such repetitions. Throughout the text, the Millennium Ecosystem Assessment, which goes by the acronym 'MA' is incorrectly referred to as 'MEA'. Throughout, the quality of the figures could be improved. The section on hazards and disaster risk is very short and we recommend it be lengthened. There is significant literature on development and disasters that can be tapped into here. There is a lot of thinking on these issues now, but this is not reflected in the short section or in the rest of the chapter. Our comments include the following new sources of literature that we recommend for Inclusion in the references' list: 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 2. Disaster risk reduction: a development concern: A scoping study on the links between disaster risk reduction, poverty and development. DFID. December 2004	Will try to exploit within the PAO. Not our understanding of the conventional reference.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>(http://www.dfid.gov.uk/pubs/files/drr-scoping-study.pdf)</p> <p>3. Disaster risk: a challenge for development. 2004. United Nations Development Programme. Bureau for Crisis Prevention and Recovery. www.undp.org/bcpr (http://www.undp.org/bcpr/whats_new/rdr_english.pdf)</p> <p>4. IGES (2005): Asian Perspectives on Climate Regime Beyond 2012: Concerns, Interests and Priorities (http://www.iges.or.jp/en/cp/report13.html).</p> <p>5. Shaw R. (2006): Community-based climate change adaptation in Vietnam: inter-linkage of environment, disaster and human security, In: Multiple dimension of global environmental changes, edited by S. Sonak, TERI publication, 521-547</p> <p>6. Schipper, E.L.F. (2006) ‘Conceptual History of Adaptation to Climate Change under the UNFCCC’ Review of European Community and International Environmental Law (RECIEL) 15 (1): 82-92</p> <p>7. Adger et al.s work on Justice and Equity in Adaptation (Tyndall, 2003) from Tyndall Seminar “Justice in Adaptation to Climate Change”, 7-9 September, 2003, University of East Anglia, Norwich</p> <p>8. Anderson, M.B., P.J. Woodrow (1991) ‘Reducing Vulnerability to Drought and Famine: Developmental Approaches to Relief’ Disasters, 15 (1) 43-54 and Anderson, M.B., P.J. Woodrow (1998) Rising From the Ashes: Development Strategies in Times of Disaster, Lynne Rienner Publishers: Boulder, CO.</p> <p>9. Basher and Briceno, ‘Climate and disaster risk reduction in Africa’ (2005) in ‘Climate change and Africa’ Pak Sum Low (ed.)Cambridge University Press. this book is referenced in chapter 9</p> <p>10. Living with risk: a global review of disaster reduction initiatives. UNISDR 2004. (http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm)</p> <p>11. Schipper, L., M. Pelling (2006) ‘Disaster Risk, Climate Change and International Development: Scope for, and Challenges to, Integration’, Special issue of Disasters, 30 (1): 19-38</p> <p>12. Mitch + 5 Regional Forum Report (see www.undp.org/surf-panama/docs/bcpr/mitch+5_regional_forum_report.pdf)</p> <p>13. Disasters by Design: a reassessment of natural hazards in the United States, Joseph Henry Press, Washington DC, Mileti D.S. 1999</p> <p>14. Disaster reduction and sustainable development: understanding the links between vulnerability and risk to disasters related to development and environment. Contribution to WSSD. January 2003 (http://www.unisdr.org/eng/risk-reduction/sustainable-development/DR-and-SD-English.pdf)</p> <p>15. Adaptation to Climate Change and Managing Disaster Risk in the Caribbean and South-East Asia, Report of a Seminar, Barbados, July 24 – 25, 2003, Prepared</p>	

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>by CDERA. http://enet.iadb.org/idbdocswebservices/idbdocsInternet/IADBPUBLICDOC.aspx?docnum=358823)</p> <p>16. 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. http://www.unisdr.org/eng/risk-reduction/climate-change/DRM-CC.pdf)</p> <p>17. Disaster preparedness programmes in India: A cost benefit analysis, Courtenay Cabot Venton and Paul Venton, 2004, Network Paper N°49 http://tilz.tearfund.org/webdocs/Tilz/Topics/Disaster%20preparedness%20in%20India%20a%20cost-benefit%20analysis.pdf)</p> <p>18. Shaw R. and Okazaki K. (2003): Sustainability in Grass-roots initiatives: focus on community based disaster management, 99 pages, UNCRD Publication'</p> <p>19. Kutch Ecological Plan, 2004, A CD-ROM compiling the Kutch initiatives, Abhiyan and EPC</p> <p>(Silvia Llosa, ISDR System)</p>	
E-20-24	A	0				<p>There seems to be some cross-over between this chapter and Chapter 7.6.4 which may need some coordination for consistency or redundancy. There are a number of useful references in Ch 7, eg. Wilbanks et al. (2005), and text that provide a more tangible idea of how sustainable development proceeds and possible synergies with climate change, at least in the urban development arena. Rees (1997) advocates the integration of conventional open space planning with multiple measures to promote sustainability, mitigation, and resilience/self-reliance, such as food production and carbon sinks. Reference: Rees, W.E. 1997. Is "sustainable city" an oxymoron? Local Environment, 2(3): 304-310. (Stephen Sheppard, University of British Columbia)</p>	Will exploit synergies.
E-20-25	A	1	1			<p>The title should have development in it or one has no idea what sustainability refers to. (Paul Vlek, University of Bonn)</p>	Cannot be changed.
E-20-26	A	1		2		<p>This chapter has to be re-structured to start with the concept of sustainable development which has to be defined. (Emma Tompkins, Oxford University)</p>	Will work on Section 20.1
E-20-27	A	1		2		<p>I would suggest a new structure for this chapter along the following lines: 1. what is sustainable development? What are the component parts of sustainable development? How far have we got in measuring sustainability and achieving</p>	Cannot change the PAO

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>sustainable development? 2. How will climate change affect different groups/countries ability to develop sustainably? 3. How will climate change affect equity, justice and development, access to resources in the developing world? 4. What development pathways are we considering and will we need to adapt them to take climate change into account? 5. Are climate change futures and sustainable development pathways compatible? 6. What is needed to enable us to embark on these sustainable transitions? How can we get there? 7. How can we make better decisions to enable us to move towards sustainability? What tools and methods exist, what options are available, which decision criteria should we use? 8. What can be done to shore up these pillars of sustainability to ensure that climate change does not affect sustainable development futures? 9. What structures and institutions are needed? (Emma Tompkins, Oxford University)</p>	
E-20-28	A	1		37		<p>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/ :</p> <p>Goklany, IM. 1995. Strategies to Enhance Adaptability: Technological Change, Economic Growth and Free Trade. Climatic Change 30: 427-449.</p> <p>Goklany, IM. 1998. Saving Habitat and Conserving Biodiversity on a Crowded Planet. BioScience 48 (1998): 941-953</p> <p>Goklany, IM. 2000a. Potential Consequences of Increasing Atmospheric CO2 Concentration Compared to Other Environmental Problems. Technology 7S: 189-213.</p> <p>Goklany, IM. 2002: The Globalization of Human Well-being, Policy Study, Policy Analysis, No. 447 (Washington, DC: Cato Institute).</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>Will return to consider yet again. Most are not exactly germane or were assessed in the TAR.</p>

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<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. (Indur Goklany, US Department of the Interior)</p>	
E-20-29	A	3	1	4	37	if the Executive summary is not re-written, I have the following comments: (Emma Tompkins, Oxford University)	Revised
E-20-30	A	3	1	4	37	<p>Comment on Executive Summary. A poorly drafted executive summary. A lot more attention needs to be paid to the linkages issue with SD, but text reflected in the ES actually states very little, or what is there, is almost tautological. The data on aggregate global impacts is so speculative that I don't understand why it's part of the Executive Summary at all. There is much too little attention paid in the Executive Summary to the content of 20.8, by far and away, the most useful part of this chapter, because it actually addresses the theme. The contention that climate change will not be an impediment to MDGs is, in my view, grossly misinformed and dangerously misleading. In the context of extreme events, including turbulent weather events, drought and flooding, it is clear that climate does egregiously affect MDGs and that climate change is making that more difficult, particularly for the most vulnerable nations of the African sub-Saharan, small island states, etc. The division of impacts along geo-political lines (eg. developed countries benefitting more from mitigation, etc., is also, in my view both highly speculative and adds absolutely nothing to a constructive dialogue around the issue. When it comes to climate change impacts, there are no 'developed' or 'developing' countries. What there are are areas that are less or more vulnerable to climate change and that this varies across and within countries and regions. (John Drexhage, International Institute for Sustainable Development)</p>	Revised thoroughly
E-20-31	A	3	3			<p>ADD; however, more developed nations may also experience extreme weather events beyond their capacity for defense or immediate adaptation, as seen with the hurricane Katrina. (Joe Ravetz, University of Manchester)</p>	Revised; point certainly made in two places in text.
E-20-32	A	3	5	3	5	<p>delete 'and' before 'environmental'; then after 'degradation' add 'and risk of natural hazards and conflicts' (Silvia Llosa, ISDR System)</p>	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-33	A	3	11	3	11	after 'resources', add 'information and technology' (this inclusion because it appears that the chapter restricts resources to their monetary aspect see p.9, l.50) (Silvia Llosa, ISDR System)	
E-20-34	A	3	12	3	12	after 'risk' add sharing and' (Silvia Llosa, ISDR System)	Revised
E-20-35	A	3	15	3	16	There are many different definitions of sustainable development (e.g. deep green sustainability) and adaptation (e.g. air conditioning), that may not be mutually enhancing. (Emma Tompkins, Oxford University)	Revised, but adopted the one used in the TAR and the Bruntland Report
E-20-36	A	3	15	3	15	This is where the term "adaptive capacity" is first introduced. A short definition, clarifying how it differs from climate adaptation, per se, would be useful. (John Drexhage, International Institute for Sustainable Development)	Definitions in glossary; provided in first place in text; not appropriate for ES
E-20-37	A	3	15	3	15	sustainable development can and should encourage (Silvia Llosa, ISDR System)	Revised
E-20-38	A	3	16			some development activities - sustainable/unsustainable? (Clair Hanson, IPCC TSU)	Revised
E-20-39	A	3	20	3	20	after 'impacts', add 'reducing vulnerability to hazards' (Silvia Llosa, ISDR System)	Revised
E-20-40	A	3	23	3	23	change 'hazards of current' to 'hazards associated with current' (Emma Tompkins, Oxford University)	Revised
E-20-41	A	3	23	3	28	The actual text in 20.8 is much more robust and useful than found in the Executive Summary, which seriously underestimates the critical role that participatory processes can and must play for adaptation to climate change to have any chance of being sustainable. (John Drexhage, International Institute for Sustainable Development)	Revised
E-20-42	A	3	23	3	23	add 'and extremes' after 'variability'; after 'through', add 'hazard assessment, vulnerability analysis and determination of acceptable risk levels by sector,' (Silvia Llosa, ISDR System)	Revised
E-20-43	A	3	24	3	24	before' programmes', add 'policies and' (Silvia Llosa, ISDR System)	Revised
E-20-44	A	3	26	3	28	rephrase as 'These opportunities may not always be sufficient' this paragraph could be completed by mentioning the need for inputs from different stakeholders in the form of research and practices. (Silvia Llosa, ISDR System)	Revised
E-20-45	A	3	27	3	27	replace 'counterproductive' by 'misdirected' (Silvia Llosa, ISDR System)	Not what we meant
E-20-	A	3	30	3	43	This data is so speculative as to be virtually useless. The simple claim about	Part of the PAO; Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
46						overall negative impacts could possibly stay, but again, wouldn't that be covered elsewhere in WG 2? This info and its linkages to the sd theme are not clear. (John Drexhage, International Institute for Sustainable Development)	
E-20-47	A	3	30	3	32	"Executive Summary" could be expanded with data as these relevant empahses are powerful. (P. H. Liotta, Pell Center for International Relations and Public Policy)	Space limitations prevent too much detail in ES
E-20-48	A	3	32			2 to 7 millions PER YEAR, more coastal flooding (Joe Ravetz, University of Manchester)	Revised
E-20-49	A	3	32			The coastal flooding victims are annually, which should be indicated. (Paul Vlek, University of Bonn)	Revised
E-20-50	A	3	34	3	43	It would be very helpful to indicate the extent to which those studies take into account the long-term effects of climate change, ie sea-level rise continuing for centuries, including disappearance of some low-lying countries. It might also be worthwhile bringing forward the specific proposal emerging from the recent literature of a declining long-term discount rate. (Andy Reisinger, IPCC SYR TSU)	Done in text; ES too short
E-20-51	A	3	43			the many uncertainties, assumptions and non quantifiable risks and values should be included in any policy application of the social cost of carbon. (Joe Ravetz, University of Manchester)	Revised
E-20-52	A	3	45	3	46	It might be worth adding that this is just the marginal increase, and that in addition the base will also compound over time. (Andy Reisinger, IPCC SYR TSU)	Not really a compounding issue.
E-20-53	A	3	45	3	46	The SCC would not necessarily rise over time if alternative energy technologies reduce the demand for carbon-using technology, and the demand for carbon drops to nil. (Emma Tompkins, Oxford University)	Revised
E-20-54	A	3	51	3	51	after 'change', add 'and climate variability' (Silvia Llosa, ISDR System)	Revised
E-20-55	A	3	51	4	3	These two sentences appear somewhat contradictory; it would be useful if the first sentence included an appropriate qualifier regarding time frames, eg "over the next several decades". (Andy Reisinger, IPCC SYR TSU)	Revised – targets versus goals
E-20-56	A	3		4		the Executive Summary summarises what is currently in this report, however, if the chapter can be re-structured, the Exec Summ would also need re-writing. (Emma Tompkins, Oxford University)	PAO prevents that
E-20-57	A	3		4		Some of the terms used in the executive summary are not defined making it difficult reading for policy makers (e.g. climate sensitivity, vulnerability index,	Revised, but definitions in glossary and text

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						urgent impact) (Paul Vlek, University of Bonn)	
E-20-58	A	4	1	4	3	we call attention to the links between disaster risk, knowing that 75% of disasters are climate-related, and MDGs. We invite you to take a look at figure 'Paths to attaining MDGs with or without disaster risk reduction (available at http://www.unisdr.org/eng/mdgs-drr/link-mdg-drr.htm). Conclusions of the DFID scoping study on links between disaster risk reduction, poverty and development, 2004 'Disaster risk reduction: a development concern' (available at http://www.unisdr.org/eng/mdgs-drr/dfid.htm) and of the UNDP 'Reducing disaster risk: a challenge for development' (2004)(available at http://www.unisdr.org/eng/mdgs-drr/undp.htm) suggests rewording of the conclusions. We suggest to replace 'most' on I.3 by 'some' (Silvia Llosa, ISDR System)	Revised
E-20-59	A	4	2	4	3	See Comment 4 (John Drexhage, International Institute for Sustainable Development)	?
E-20-60	A	4	5	4	31	These paras would benefit from some appropriate qualifiers. As I understand it, based on my reading of the chapter, the authors refer to one single paper by Yohe et al (2006). But this is not made clear here; instead these findings are presented if they were a general finding about climate change impacts, based on our sum of knowledge as assessed in the report as a whole. As far as sections 20.7.2 to 20.7.4 describe it, the Yohe et al paper uses a very basic and also subjective metric (local delta T plus expert judgement of national capacity). It is not good practice in the IPCC to present results from individual papers as generic findings unless they are absolutely seminal major works that in themselves summarise a large number of studies. I don't have the impression that the Yohe et al paper quite falls into this category. These paras should therefore be qualified by stating very clearly that this is based on one study, and what metric it used to come to its conclusions. Projecting national capacities forward by 50 years in itself is a daring exercise, and appropriate uncertainty language should be used to qualify the resulting findings over such a time frame. Right now, there is no reference to uncertainties; the wording used is based on "would" and "could". These statements are too significant to leave it at that. (Andy Reisinger, IPCC SYR TSU)	Revised
E-20-61	A	4	5	4	31	Can we really say any of this with any confidence? I would delete this, it does not seem very relevant to the chapter. (Emma Tompkins, Oxford University)	Revised
E-20-	A	4	8	4	8	insert a space between case and [Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
62						(Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	
E-20-63	A	4	10	4	13	The last sentence in this para is a rather strong statement, and I'm not sure that it is consistent with the assessment of eg chapter 18, which certainly does not come to such a strong conclusion. Eg the Yohe and Tol paper (2006), which finds that most significant impacts on human welfare could be avoided as long as concentrations remain below 850ppm. The authors need to qualify this statement appropriately (including by reference to the fact that this specific statement is the finding from one particular study; it is not an overall assessment of the findings of the WG2 report, which in my reading gives a far more mixed picture especially once changes in adaptive capacity, sectoral perspectives, and ranges of emission scenarios are taken into account). (Andy Reisinger, IPCC SYR TSU)	Revised
E-20-64	A	4	15	4	16	The first sentence, which states that up to 2050 mitigation would benefit developing countries, appears to be in contradiction with the statement in TS page 47 lines 5-6, which says that up to 2040 mitigation would hardly be noticeable. If mitigation hardly matters up to 2040, then the benefit of mitigation up to 2050 would surely be rather small, too. Somehow the authors need to reconcile these two sentences. (Andy Reisinger, IPCC SYR TSU)	Revised
E-20-65	A	4	15	4	28	Also see comment 4. The conclusions, even if they were not beyond the informed speculative, add absolutely nothing to the issue and in fact actually could contribute to further misunderstandings of this as a "northern" issue. The criteria for concluding conditions under which developing or developed countries would benefit more are questionable at best and certainly do nothing to support a SD perspective on climate change. Should be entirely deleted from text and ES. (John Drexhage, International Institute for Sustainable Development)	? Revised
E-20-66	A	4	16	4	19	The last sentence in this para is a rather strong statement, and I'm not sure that it is consistent with the assessment of eg chapter 18, which certainly does not come to such a strong conclusion. Eg the Yohe and Tol (2006) paper finds that most significant impacts on human welfare could be avoided as long as concentrations remain below 850ppm (and several SRES scenarios don't even get to such concentrations). The authors need to qualify this statement appropriately (including by reference to the fact that this specific statement is the finding from one particular study; it is not an overall assessment of the findings of the WG2 report, which in my reading gives a far more mixed picture especially once changes in adaptive capacity, sectoral perspectives, and ranges of emission scenarios are taken into account).	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Andy Reisinger, IPCC SYR TSU)	
E-20-67	A	4	21	4	24	The first sentence, which states that up to 2050 mitigation would benefit developing countries, appears to be in contradiction with the statement in TS page 47 lines 5-6, which says that up to 2040 mitigation would hardly be noticeable. If mitigation hardly matters up to 2040, then the benefit of mitigation up to 2050 would surely be rather small, too. Somehow the authors need to reconcile these two sentences. (Andy Reisinger, IPCC SYR TSU)	Revised
E-20-68	A	4	24	4	25	I don't understand the result that mitigation benefits industrialised countries MORE than developing countries. Perhaps the same, but why more? Please explain. Also, this statement is not actually contained in section 20.7.4 that the ES refers to (unless I missed it); if it is valid it needs to be derived and stated in the underlying chapter. (Andy Reisinger, IPCC SYR TSU)	Revised; but point is systems that are overwhelmed cannot adapt
E-20-69	A	4	26			negative/positive net effects? (Clair Hanson, IPCC TSU)	Yes, potentially
E-20-70	A	4	30	4	31	There is no section 20.7.5 in the chapter that the ES refers to. The sentence is not necessarily wrong, but it is a rather strong one that needs to be substantiated very robustly and carefully in the underlying chapter, and perhaps also be referenced to other chapters (eg small islands, polar regions, agriculture impacts in subtropics). (Andy Reisinger, IPCC SYR TSU)	Revised
E-20-71	A	4	33	4	37	This is by far and away the most relevant and important message on adaptation-sd linkage and needs to be considerably more elaborated and highlighted in the text and the ES. (John Drexhage, International Institute for Sustainable Development)	Done.
E-20-72	A	4	33	4	37	"Executive Summary" could be expanded to emphasize the particular vulnerability of coastal and littoral regions where vast portions of humanity will reside in the 21st century. (P. H. Liotta, Pell Center for International Relations and Public Policy)	ES is space constrained because entire chapter is severely constrained/
E-20-73	A	4	33			While discussing and acknowledging the synergies, an important point (not fully brought out) is that there is as yet little evidence that sustainable development (as typically conceived) can deliver adequate levels of climate change mitigation and adaptation. There is often in practice at least the implicit assumption or vague rationale for sustainable development among planners that it will address climate change, but there is usually no means to estimate the cumulative or fair-share contribution to targeted levels of mitigation or adaptation. Many new urbanism developments ignore renewable energy planning or food security, for example, and the development community rarely considers the need for future resilience in the	Tried to add this in text.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						face of continuously changing conditions. (Stephen Sheppard, University of British Columbia)	
E-20-74	A	4	34	4	34	add after community 'as well as risk reduction to both communities' (Silvia Llosa, ISDR System)	Revised
E-20-75	A	5	1	5	31	You must define sustainable development. Later in the chapter it is referred to as a desirable thing, and in 20.8.1. page 48, line 39, one of the authors suggest it includes social capital (yet this is not mentioned here). Perhaps if there is no consensus on this there could be discensus, whereby a variety of definitions with different names and descriptions are used, which the various chapter authors can refer to. Is it agreed upon by all authors that sustainable development is a good thing? (Emma Tompkins, Oxford University)	SD is clearly defined in lines 3 to 5.
E-20-76	A	5	1	5	31	There are several other approaches to understanding sustainable development, and one of these could have been used, for example: the one used by the UK Sustainable Development Commission has six elements: self support through life support (i.e. living within environmental limits); learning, innovating and adapting (i.e. being flexible enough to be able to take new information on board and using science responsibly); maintaining wellbeing (strong, healthy and fair society for all generations); visioning and choosing (i.e. directing the future instead of allowing it to happen); continuity and durability (i.e. having a long term vision); self-organising communities (i.e. identifying governance approaches that work in the cultural context). (Emma Tompkins, Oxford University)	Text revised to incorporate this; Text already includes 11 sources; can also cite Adger et al 2003—governance for sustainability; and IGES 2005 Sustainable Asia, illustrating challenge to operationalize and implement SD in Asia; other chapters cited for SD discussion to reduce overlap; also see response to comment #89
E-20-77	A	5	3	5	18	Sustainable Development also relates to participation in the decision process. (Peter Haas, University of Massachusetts)	Agree—text added on good governance.
E-20-78	A	5	6	5	9	Suggest this is cut as adds nothing to the discussion. Instead, please add that sustainable development as a concept is seriously problematic, in part because it is used in multiple ways in different contexts. As a consequence, it has come to mean everything, and therefore nothing. (Camilla Toulmin, International Institute for Environment & Development)	Disagree with this. Sustainable development has been useful for many countries in spite differing interpretations.
E-20-79	A	5	7	5	9	the issue here is not only what but also how to develop, or what to change rather than develop; changes in values, attitudes and behaviours are required, (Silvia Llosa, ISDR System)	The statement merely gives generic elements not their specific manifestation.
E-20-80	A	5	11	5	12	Delete the word 'while' and add 'in a way that preserves...'. SD should be more about integration and less about some empirical 'balance' device. (John Drexhage, International Institute for Sustainable Development)	Agree- text revised.
E-20-	A	5	13			After "real" add "and perceived" conflicts....many of the issues for SD are actually	Agree- text revised.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
81						issues of perception more than they are of reality. (John Drexhage, International Institute for Sustainable Development)	
E-20-82	A	5	14	5	18	Last two sentences should either be deleted or significantly altered. SD has NOT taken hold and has certainly not effectively permeated mainstream thinking. Your illustrations drive home that fact: the WSSD and the Earth Summit had Env and SD promoters in attendance for the most part, and not the mainstream planners and finance/industry officials/leaders who make the real development decisions. The concept of SD is fairly well known, but it has yet to take any real hold, with a few exceptions, in the development and economic growth communities. If it had truly taken hold, we would not be in the environmental and social state of stress that we are currently in. (John Drexhage, International Institute for Sustainable Development)	Text revised.
E-20-83	A	5	16	5	18	suggests that there is widespread public discussion of sustainable development. I fear this is misplaced optimism and reflects an uncritical view of how the world actually works today. (Camilla Toulmin, International Institute for Environment & Development)	Text revised
E-20-84	A	5	20	5	20	ERASE: "human/". Justification: The "social" term is enough to describe this sustainable development pillar because society is constituted exclusively by human beings and also, what matters in sustainability is the structure and patterns of human behaviour as a whole, so the social aspects of those human beings. (Ana Yabar Sterling, Universidad Complutense of Madrid)	Accepted— text revised.
E-20-85	A	5	21			under gird --> undergird or underpin (Clair Hanson, IPCC TSU)	Accepted-- text revised.
E-20-86	A	5	22	5	22	"the economic dimension aims at improving human welfare..." this is wrong. The whole point of economics is that it tends to focus on measurable aspects such as income and output, not welfare. Cut word welfare and insert term such as income. (Camilla Toulmin, International Institute for Environment & Development)	Accepted--text revised.
E-20-87	A	5	22	5	25	SD is here understood as improving (economics) and enriching. (social) , but... protecting the integrity and resilience of ecosystems (environmental), thus maintaining Also improving and maintaining. But the sense of SD is continuous functioning over time. See for instance P. 35 r. 29, "the current state of the art in casting adaptive capacity and vulnerability into the future is primitive". (Juan Llanes-Reguerio, University of Havana)	Text has been revised.
E-20-88	A	5	22	5	22	I don't think that the economic sense of SD is to improve welfare, but to grant a continuous flow of income over time, that's Hicksian Income (Hicks, Value and Capital, 1946, definition of income, see also Daly & Cobb 1992 "For the Common Good"). Improving welfare sounds good, perhaps what people want to listen.	Accepted-- text revised.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Juan Llanes-Reguerio, University of Havana)	
E-20-89	A	5	25	5	25	Others also suggest that sustainable development is about addressing injustice, forced migration and social disruption, e.g. O’Riordan, T. (2004), Transactions of British geographers 29(2) 234-247 (Emma Tompkins, Oxford University)	Text has been revised; add cite for O’Riordan
E-20-90	A	5	29	5	29	ERASE: “of science”. Justification: Is a particular choice of Kates at al to denominate their research work as “sustainability science”, the same right to Munasinghe et al to use the term sustainomics” but is not acceptable for AR4 to dispense the former such a high value or category because a new science or paradigm requires much more than mixing social sciences perspective of climate change with ecology and other natural science approaches (Ana Yabar Sterling, Universidad Complutense of Madrid)	Accepted—text revised.
E-20-91	A	5	33	6	36	I would propose a new framework, perhaps somewhat simpler than the one shown in Fig 20.1, I would see the three pillars of sustainability nested within a wider space which is affected by climate change, hazards, other global pressures. Then in a separate diagram I would describe pathways to sustainability that are influenced by myriad factors such as vulnerability, adaptive capacity, exposure to impacts etc... (Emma Tompkins, Oxford University)	We considered
E-20-92	A	5	33	6	36	Delete the diagram Figure 20.1 - this is not helpful - it seems as though you have tried to force linkages into a bad structure, I would explain sustainable development using the standard three pillars model without the forced linkages (Emma Tompkins, Oxford University)	We considered, and modified
E-20-93	A	5	33			should appear in first paragraph. (Peter Haas, University of Massachusetts)	Revised
E-20-94	A	5	35	5	35	“understanding how and when” – it is not clear what this refers to (Silvia Llosa, ISDR System)	Revised
E-20-95	A	5	35			how and when? (Clair Hanson, IPCC TSU)	Revised
E-20-96	A	5	36			those --> these (Clair Hanson, IPCC TSU)	Revised
E-20-97	A	5	40	5	40	ERASE “adaptation” Justification: term duplication. (Ana Yabar Sterling, Universidad Complutense of Madrid)	Revised
E-20-98	A	5	40	5	43	incomprehensible. If you retain figure 20.1 on page 2, you must make it much clearer. (Camilla Toulmin, International Institute for Environment & Development)	Tried
E-20-	A	5	40	5	42	I disagree, can’t adaptation to climate change contribute to each pillar directly, e.g.	Yes...but also to the connections which lead

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
99						investments in sandbags, community based resource management, mangrove rehabilitation, each one is increasing the capacity for sustainable development (Emma Tompkins, Oxford University)	to the pillars.
E-20-100	A	5	40	5	40	The sentence should read: "The arrows leading from the centre indicate that adaptation to climate change can influence the..." (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Revised
E-20-101	A	5	40	5	40	Revise: "adaptation to climate change adaptation" (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Revised
E-20-102	A	5	40			adaptation repeated (Clair Hanson, IPCC TSU)	Revised
E-20-103	A	5	40			Editing comment: 'adaptation' repeated twice (Irene Lorenzoni, University of East Anglia)	Revised
E-20-104	A	6	0	7	0	should questions precede determinants? (Peter Haas, University of Massachusetts)	Revised
E-20-105	A	6	1	6	21	figure 20.1: in general we found placement not to be very clear. We suggest changing 'responding to hazards' to 'reducing disaster risk'; we would favour moving into the triangle as disaster risk reduction has strong linkages to all three pillars and as argued later in the comments disaster risk reduction is a part of adaptation to climate change. However at least it should come closer to social and economic rather than, as is now, between economic and ecological. finally 'ecological dimension' should be changed to 'natural environment' or 'environmental' (Silvia Llosa, ISDR System)	We reworked the figure
E-20-106	A	6	39			Given that the discussion in this section is very theoretical and abstract, it would become more graspable if some real examples were included, or at least references to some case studies were made. Questions raised are too isolated from other factors that are driving vulnerability/adaptive capacity (just to mention one example: food aid dependency). In particular the meaning of sentence in l. 38 p. 7 is obscure: "...adaptive capacity essentially describes the space within which decision-makers might find feasible adaptation options" . We would like to call your attention to what may read like jargon such as 'derivative allocation of decision-making authority' on p.7, l.1 (what does it mean?), if this does not imply level of democracy it could be added in a clearer way. The list omits accountability and participation in decision making. (Silvia Llosa, ISDR System)	No room for examples, really, whose selections are lightning rods for why not this or that. Sorry
E-20-	A	6	44	6	44	The concept and definition of adaptive capacity as a generic concept and its	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
107						differences from adaptation in a climate change context should be elaborated here. (John Drexhage, International Institute for Sustainable Development)	
E-20-108	A	6	48	6	48	cut " organising" - just use the phrase "a list" (Camilla Toulmin, International Institute for Environment & Development)	Revised
E-20-109	A	6	50	7	10	eventhough point 2. addressing resources probably includes information, we think that specific emphasis should be added to information management and dissemination (Silvia Llosa, ISDR System)	A separate category
E-20-110	A	7	1	7	10	This articulation of adaptive capacity is critical to the rest of the section as it helps the reader understand the linkage between efforts related to sustainability and those pertaining to climate change adaptation. Given the importance of adaptive capacity in this section. it requires considerably more detail and elaboration on each of the eight points of Yohe and Tol.. Should also include other variations on these determinants as presented by Smit, B., Pilifosova, O., Burton I., Challenger B., Huq S., Klein R.J.T. and Yohe, G. (2001): Adaptation to climate change in the context of sustainable development and equity; in Climate Change 2001: Impacts, Adaptation and Vulnerability, (ed.) J.J. McCarthy, O.F. Canziani, N.A. (John Drexhage, International Institute for Sustainable Development)	Tried to make antecedent to TAR more explicit
E-20-111	A	7	1	7	10	should the issue of human rights be added? Risk management is overlooked in the list (Silvia Llosa, ISDR System)	Human rights in social capital; risk management is the risk-spreading bit
E-20-112	A	7	2	7	2	Table 12.1. Europe - Comment: Northwards expansion of a serious insect pest constituting a public health hazard, the pine processionary moth, could be mentioned - Battisti, A. 2004. Forests and climate change - lessons from insects. Forest@, 1: 17-24 (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	?
E-20-113	A	7	3	7	3	why include "personal security"? Cut Lines 33-35: cut. This adds nothing to the argument Lines 37-43 - all very vague and largely meaningless. Too many words. Try to re-write in simple terms. (Camilla Toulmin, International Institute for Environment & Development)	Revised
E-20-114	A	7	16	7	25	we question the use of population: should it be replaced by community which implies more than just people in questions 4 and 5 instead of 'elements', we propose 'development sectors' (Examples include development sector specific disaster risk reduction identification, acceptance of acceptable risk levels, and polices, programs and projects that achieve those level) on l. 5 add risk sharing to risk spreading. as in the case of the previous list, disaster risk management is overlooked	This is what that literature used; but revised anyway.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Silvia Llosa, ISDR System)	
E-20-115	A	7	17	8	37	<ul style="list-style-type: none"> · Strengthen national institutions responsible for the implementation and enforcement of MEAs and more generally for the three pillars (economic, social, environmental) of sustainable development. · Stress the concept of good governance (including transparent and non-corrupt democratic institutions and processes) as one of the vital foundations for sound environmental management and for the achievement of sustainable development. · Endorse and assist in implementing UNEP's Guidelines on Compliance with and Enforcement of Multilateral Environmental Agreements, consistent with the U.S. Environmental Protection Agency's recommendation. · Advocate at WSSD and beyond that enforcement of and compliance with MEAs must be a priority for the 21st century as the world moves forward to achieve sustainable development. · Take a leadership role at WSSD and beyond, and back up this leadership by ratifying major environmental treaties including the Basel Convention on the Transboundary Movement of Hazardous Waste, the Convention on Biological Diversity and its Biosafety Protocol, the Stockholm Convention on Persistent Organic Pollutants (POPs), the Rotterdam Convention on Prior Informed Consent for Certain Hazardous Chemicals and Pesticides in International Trade (PIC Convention), the Bonn Convention on Migratory Species and the Kyoto Protocol on Climate Change. · Encourage an appropriate division of labor and competencies between MEAs and the WTO, and affirm that both systems should support the three pillars - social, environmental and economic - of sustainable development. They should reaffirm that, in the first instance, MEAs are the preferable institution for defining trade-related environmental measures and for resolving conflicts regarding their use. · Affirm that MEAs and the WTO are equal bodies of law, and that trade measures pursuant to MEAs are consistent with WTO rules. Governments should identify mechanisms to ensure that trade liberalization is accompanied in parallel by effective strengthening of environmental governance, at both the national and international levels. · Strengthen unilateral and multilateral funding mechanisms, so that they are stable, predictable and adequate. This is a prerequisite for improved international environmental governance. · Enhance synergies and linkages between MEAs, as well as between MEAs and other environmental bodies, in order to implement capacity-building programs related to the development of national legislation that supports the implementation 	

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						of conventions and protocols. · Sponsor regional and sub-regional workshops that aim to share information and experiences, develop national legislation and regulations, and train customs officials and other government entities in enforcement processes and methods, as well as develop cost-effective and long-term training programs through the International Network for Environmental Compliance and Enforcement (INECE) and other such organizations. (Leila Devia, National Industrial Technology)	
E-20-116	A	7	33	7	35	this phrase could be rewritten to be clearer and make explicit the link between decision-making and action or implementation. In addition to capacity to respond, capacity to reduce risk and vulnerability to external stress should be added (Silvia Llosa, ISDR System)	Revised
E-20-117	A	7	35			Comment: could refer to O'Brien, K., Eriksen, S., Sygna, L. and Naess, L.O. (2006) Questioning complacency: climate change impacts, vulnerability and adaptation in Norway, <i>Ambio</i> , 35(2): 50-56. (Irene Lorenzoni, University of East Anglia)	Done, but revised
E-20-118	A	7	46	8	37	This section has to address the other global issues that have enormous potential for disruption of human wellbeing and that when combined with climate change, can bring about significant changes in societies globally , i.e. trade patterns, globalization, migration, land use change, changing technology (e.g. nanotechnology). At present the focus appears to be solely on the MEA. There is just one paragraph on globalization, but there is also no mention of one of the key papers in this area by O'Brien and Leichenko (2000) on 'Double exposure': see O'Brien, K. L. and R. M. Leichenko (2000). "Double exposure: assessing the impacts of climate change within the context of economic globalization." <i>Global Environmental Change</i> 10(3): 221-232. See also O'Brien, Karen L. & Leichenko, Robin M. (2003) <i>Winners and Losers in the Context of Global Change</i> . <i>Annals of the Association of American Geographers</i> 93 (1), 89-103. See also other work on this issue by O'Brien and others (Emma Tompkins, Oxford University)	Good point. Will address this in revisor by discussing socio-economisch stressors and adding references.
E-20-119	A	7	48	8	37	General comment on Section 20.3.1. The title of the section indicates that it will discuss multiple stressors, but then only focuses on the multiple stresses on ecological systems. Climate change of course has impacts on the social, ecological and the economic, and vice versa. At a minimum, it should be recognized that the ecologic changes taking place around the world and captured in the MEA are occurring within a background that includes economic issues (e.g. trade, investment, financial access) and social issues (e.g. HIV-AIDS pandemic, conflict,	Good point. Will address this in revisor by discussing socio-economisch stressors and adding references.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						income disparity etc.). (John Drexhage, International Institute for Sustainable Development)	
E-20-120	A	7	48			sections 20.3.1 and 20.3.2 do not address the urban system/ built environment. Climate change impacts will be severe for urban centers, especially in developing countries. Not much work has been done on the impacts of climate change on the built environment, but this crucial problem is worth mentioning (Silvia Llosa, ISDR System)	Good point. Will address this in revisor by discussing socio-economisch stressors and adding references.
E-20-121	A	8	9	8	9	cut century, insert millennium (Camilla Toulmin, International Institute for Environment & Development)	OK
E-20-122	A	8	14	8	28	the MEA is referred to both as MEA (2005) and MEA (2006) I assume the latter is a typo? (Emma Tompkins, Oxford University)	Will fix for correct reference. Also for MA rather than MEA when referring to Millennium Assessment.
E-20-123	A	8	17		26	It is not clear over what period exactly these changes have taken place (20 years?) (Paul Vlek, University of Bonn)	Will clarify
E-20-124	A	8	22	8	22	Delete "changed substantially" and change to "substantially intensified" (John Drexhage, International Institute for Sustainable Development)	OK
E-20-125	A	8	22	8	26	In the same page there is a time frame of 30 other 300 years (r. 6-15). But here, food production has increased 2.5 times, with respect to what year? . The same for other examples. Please provide and approximated time frame for better understanding. If you are trying to explore exponential growth see M. King Hubert, " Exponential growth as a transient phenomena" (Juan Llanes-Reguerio, University of Havana)	Will clarify
E-20-126	A	8	28			MEA (2006) --> (2005) (Clair Hanson, IPCC TSU)	Will fix for correct reference. Also for MA rather than MEA when referring to Millennium Assessment.
E-20-127	A	8	29	8	29	cut "and importance" ... too many unnecessary words Line 44 cut brackets around sustainable - why are they there? (Camilla Toulmin, International Institute for Environment & Development)	OK
E-20-128	A	8	30	8	30	I assume that coastal populations as well as coastal ecosystems are also at risk? (Emma Tompkins, Oxford University)	Yes, will make clear
E-20-129	A	8	30	8	31	Strongly disagree - authors clearly are not taking into account extreme events. These events are consistent with climate change scenario impacts. Should be deleted. (John Drexhage, International Institute for Sustainable Development)	MA did take this into account. Judgment was made on issues that could clearly be identified with climate change
E-20-130	A	8	32	8	32	How can climate change be the only driver that will grow? Clearly other drivers will also grow as alluded to in your previous paragraph. (John Drexhage, International Institute for Sustainable Development)	Will clarify to make clear that pollution issues also are likely to grow substantially over the range of ecosystems

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-131	A	8	33	8	33	abstraction - Comment: not clear, do you mean extraction ? (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	This phrase is not in this lline, so cannot respond
E-20-132	A	8	33			are should be is (Paul Vlek, University of Bonn)	Will make sure English is correct
E-20-133	A	8	40	9	50	Section 20.3.2 Factors and literature mentioned is related to development but I don't see the link to "sustainable development". Like " plants located in cities where the fraction of colleague graduates...". (Juan Llanes-Reguerio, University of Havana)	Revised
E-20-134	A	8	40			the sub-section 20.3.2 appears to me to be somewhat out of context, and not necessary. If it is supposed to provide some background information on the necessity of implementing sustainable development, it does not do so. I fail to see the relevance of this sub-section, and fear it does not add to the information flow of the chapter. Removing it may be pertinent. If it is left in the chapter, linking the information to specific examples or cases of sustainble development may help. (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Revised
E-20-135	A	8	42	8	45	A. Strike "economic" on line 42. As references, add on line 45, e.g., Goklany (1995, 2000a) B. Add a new sentence on line 45 to read as follows: "Moreover, Goklany (2006a) noting that determinants of adaptive and mitigative capacities (Yohe 2001), such as availability of technological options, and access to economic resources, social capital and human capital, largely overlap and underlie various indicators of sustainable development (e.g., per capita income; and various public health, education and research indices) provides a rationale and approaches for developing integrated strategies and measures to concurrently advance adaptation, mitigation and sustainable development." References: Yohe, G.: 2001, Mitigative capacity: the mirror image of adaptive capacity on the emissions side, Climatic Change 49, 247-262 C. Start a new para with the following sentence that begins: "Much of the recent..." (Indur Goklany, US Department of the Interior)	Revised
E-20-136	A	8	42	8	45	The linkages need to be more clearly and directly presented. It is not enough here to just say that the factors promoting SD and adaptive capacity are similar. Use each of the determinants listed on the previous page to illustrate why this is so. (John Drexhage, International Institute for Sustainable Development)	Revised hopefully to make the point more explicitly
E-20-137	A	8	42			This section observes that 'sustainable development' may coincide with adaptive capacity, and refers to the development literature in terms of human capital. This could usefully refer to the '5 capital' model of Porritt (2005) – human,	Done

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						manufactured, social, natural and financial. Moreover it should take account of the reality that 'development' as interpreted by World Bank and many other institutions, can be seen as reproducing an international division of capital, labour and dependency between developed and developing nations (Stiglitz 2002). In turn this multiple dependency can be seen as reducing indigenous adaptive capacity, even while it may result in imports of machinery etc to developing nations. Also, The section focuses on primary – based developing countries, and as yet omits to mention developed and transitional economies. Building of adaptive capacity in more affluent and service-based nations could have reverse implications for the developing nations, e.g. in outsourcing activities such as cash crop production. (Joe Ravetz, University of Manchester)	
E-20-138	A	8	46	8	46	Line 46: human capital externalities? What is this meant to mean? Suggest you replace with "investments in human capital" - its got nothing to do with externalities (Camilla Toulmin, International Institute for Environment & Development)	Revised
E-20-139	A	8	48	8	48	use of word "plant" is confusing - change for "enterprise" (Camilla Toulmin, International Institute for Environment & Development)	Revised
E-20-140	A	8	48	8	48	"...showed that plants" – what kinds of plants? Industrial plants? This phrase comes out of context and needs clarification (Silvia Llosa, ISDR System)	Revised
E-20-141	A	8	48			the word "plants" should be replaced with "industries", or "factories", or another terminology to specify the exact meaning. ("Plants" is mainly associated with the biological term.) (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Revised
E-20-142	A	8	48			what kind of plants? Do you mean businesses (Clair Hanson, IPCC TSU)	Revised
E-20-143	A	8	50	8	50	meaningless phrase on "successful application of financial structures..." clarify or cut. (Camilla Toulmin, International Institute for Environment & Development)	Revised
E-20-144	A	9	21	9	22	... therefore adapt more slowly to climatic changes than managed systems." Comment: This is a controversial statement which can only be accepted if backed by references. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	In the MEA
E-20-145	A	9	37	9	37	The sentence should read: "looked across transition countries in Central Europe and the former Soviet Union and observed" (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University	ok

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Sao Paulo)	
E-20-146	A	9	37			1st across --> at (Clair Hanson, IPCC TSU)	Ok
E-20-147	A	9	41	9	41	Typo - 'upon on' - there are a few of these - I will not point anymore out as I assume you will be changing the chapter again (Emma Tompkins, Oxford University)	Ok – hope so
E-20-148	A	9	42	9	42	add 'list of' between 'long' and 'literature' (Silvia Llosa, ISDR System)	Ok
E-20-149	A	10	2			Section 20.3.3: 1. Explicit the need to include climate variability issues in local and national development plans. This suggestion is important because most of the development related work is based on city or district level development plans through their development budgets. As long as climate risk reduction measures are not incorporated into the development budget, longer term efforts cannot be sustained. 2. Emphasize micro-adaptation or community-based adaptation. Focussing on PMA (proactive micro adaptation) as the main vehicle for community-based initiatives is a recent trend. (ref: IGES (2005): Asian Perspectives on Climate Regime Beyond 2012: Concerns, Interests and Priorities). 3. Focus on livelihood security as the link between climate change and development through disaster risk reduction. Successful micro-level adaptation has been practiced to cope with floods and cyclones in Central Vietnam. (ref: Shaw R. (2006): Community-based climate change adaptation in Vietnam: inter-linkage of environment, disaster and human security, In: Multiple dimension of global environmental changes, edited by S. Sonak, TERI publication, 521-547) (Silvia Llosa, ISDR System)	Add cite for IGES, Shaw (in Sonak), IUCN— Bangladesh adaptation study
E-20-150	A	10	4	10	8	The sentence starting on line 4 needs to be explained (simply citing the IPCC 2001a report is not adequate for this important sentence). Additionally, the analytical framework for demonstrating the two-way linkages is not clear. A reader would be expecting the authors to use the determinants of adaptive capacity cited at the top of page 7 as the way to organize this section and illustrate the linkages. As it is written now, it is not very systematic or analytic, and thus is not very convincing or helpful. (John Drexhage, International Institute for Sustainable Development)	See comment # 149, 151
E-20-151	A	10	4			A 'Two way causality' is difficult to argue clearly, as both terms have multiple and very fuzzy meanings, open to interpretation by different actors and sectors. It would make more sense to focus on the concept of 'transitions', and the socio-cultural perspectives on multiple and inter-dependent transitions in economic, social,	Add cite to Chapter 17, also Brooks et al., Tompkins and Adger; already cited Haddad elsewhere but can also cite here; Tompkins and Adger identify literature related to

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						institutional, technological and spatial dimensions, of which climate change is one transition dimension (Ravetz 2000: Rotmans & de Vries 2001). A cultural theory perspective on adaptation responses shows how such multiplicity can work as a dynamic factor over time: e.g. in a cycle from risk averse to opportunity seeking activity (Thompson et al 1990). (Joe Ravetz, University of Manchester)	cultural theory when discussing institutional response to climate change; Rotmans and de Vries applied cultural theory in the TARGETS integrated assessment model, already reviewed in WG3 of the TAR; updated discussion on IA models is found in WG3 of the 4 th assessment.
E-20-152	A	10	6	10	7	the statement that "development paths...affect the impacts of climate change" is just wrong. This should be changed to "...affect the severity of the impacts that climate change will have not only through..." (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Revised
E-20-153	A	10	10	10	10	Rewrite the beginning of the sentence to read as follows: "Swart et al. (2003) and Swart and Munasinghe (2005) – and, before that, <i>Goklany (1995, 2000a)</i> – argued that..." [additional language is in <i>italics</i> . (Indur Goklany, US Department of the Interior)	Revised
E-20-154	A	10	12	10	12	change the word "in" to "of" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Ok
E-20-155	A	10	12	10	14	"Until recently...": the temporal description is inaccurate here. Since the inception of the UNFCCC, adaptation and sustainable development have been linked (cf. Schipper, E.L.F. (2006) 'Conceptual History of Adaptation to Climate Change under the UNFCCC' Review of European Community and International Environmental Law (RECIEL) 15 (1): 82-92.) (Silvia Llosa, ISDR System)	Revised
E-20-156	A	10	16	10	16	"...only carbon dioxide emissions are the only reference to climate change..." should be changed to "...only carbon dioxide emissions are referred to in the context of climate change..." (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Revised
E-20-157	A	10	16	10	16	The sentence should read: "within development programs: indeed, carbon dioxide emissions are the only reference to climate..." (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Revised
E-20-158	A	10	20	10	20	"...could differ from historic experience." should be reworded to "...could differ from dealings with past [previous or historical] climate adaptation experiences". (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						CIARN))	
E-20-159	A	10	22	10	24	The examples should make clearer that a systematic assessment of exposure and susceptibility to climate-related hazards for different groups of people associated with an identification of options for reducing this vulnerability has to be part of the process of designing development interventions. This only will lead to true sustainable development that reduces poverty. (Silvia Llosa, ISDR System)	Revised
E-20-160	A	10	27	10	28	Strike: "...and could lead to a loss of – cultures." This is speculative, and it could be argued with equal justification that technology could actually strengthen cultures: witness, for instance the effect oif the internet in allowing cultures and groups to establish identities and connections. As an expatriate, I can testify the new technologies – e.g., the internet and e-mail – can actually strengthen cultural ties. . (Indur Goklany, US Department of the Interior)	Revised
E-20-161	A	10	28	10	28	remove the "-" before the word "cultures" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Revised
E-20-162	A	10	28			Editing comment: remove '-' ? (Irene Lorenzoni, University of East Anglia)	Revised
E-20-163	A	10	32	10	34	At the end of the sentence add the following references: Goklany (2005a, 2006a): (Indur Goklany, US Department of the Interior)	Revised
E-20-164	A	10	32	10	32	after 'vulnerabilities' add 'and risk' (Silvia Llosa, ISDR System)	Revised
E-20-165	A	10	35	10	39	Many of the same points have also been made in Goklany (2000, 2003, 2005). (Indur Goklany, US Department of the Interior)	Ok
E-20-166	A	10	38	10	38	insert "are" in the sentence "...to include factors that are critical..." (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Revised
E-20-167	A	10	38	10	38	The sentence should read: "a particular stress (such as climate change) to include factors that are critical in a broader development" (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Revised
E-20-168	A	10	38			insert 'are' before 'critical' (Clair Hanson, IPCC TSU)	Revised
E-20-169	A	10	40	10	40	national goals and aspirations: how to take account of the fact that local goals and aspirations can be different from national goals and aspirations? (Silvia Llosa, ISDR System)	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-170	A	10	48	10	51	It's not clear that this sentence is true as a general proposition. Accordingly, we recommend: (A) modifying this sentence to read as follows: "Ford et al. (2006) showed that <i>under some circumstances</i> unequal acquisition ...between generations" and (B) striking "the result can be increased vulnerability to a myriad of external stresses." (Indur Goklany, US Department of the Interior)	Considered in the thorough revision of this section.
E-20-171	A	10	48	10	51	Is this sentence worth keeping, nothing new, unique or surprising? For more value-added conclusions see Adger et al.s work on Justice and Equity in Adaptation (Tyndall, 2003) from Tyndall Seminar "Justice in Adaptation to Climate Change", 7-9 September, 2003, University of East Anglia, Norwich. (Silvia Llosa, ISDR System)	Revised ... included here or elsewhere.
E-20-172	A	10	49			weakening --> weaken (Clair Hanson, IPCC TSU)	Revised
E-20-173	A	10	49			Editing comment: should 'weakening' be 'weaken'? (Irene Lorenzoni, University of East Anglia)	Revised
E-20-174	A	10	51	11	3	The references do not contain a citation to Belliveau. In any case, this is unlikely to be true as a general proposition. Consider, for example, trade can enhance adaptive capacity (or adaptability) whether or not it explicitly considers climate (see, e.g., Goklany 1995). (Indur Goklany, US Department of the Interior)	Fixed
E-20-175	A	10	51			a myriad of external' --> 'myriad external' (Clair Hanson, IPCC TSU)	Revised
E-20-176	A	10				Link between sustainability and adaptive capacity: While it is correct that MDGs do not recognize the need for adaption and the main emphasis has been on mitigation efforts, it is important to also recognize that this changing. In 2003, ten bi- and multilateral agencies jointly co-authored the report "Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation", which was signed by heads of agencies. The report argues that climate change threatens sustainable progress towards and especially beyond the MDGs and urges the mainstreaming of adaptation measures into the development context. The co-authoring agencies included: The African Development Bank (AfDB), Asian Development Bank (ADB), the UK Department for International Development (DFID), the Directorate General for Development of the EC, the German Federal Ministry for Economic Cooperation and Development (BMZ), the Organization for Economic Cooperation and Development (OECD), the United Nations Development Program (UNDP), the United Nations Environment Program (UNEP), and the World Bank.	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Frank Sperling, World Bank)	
E-20-177	A	11	2	11	3	not sure what this means - clarify or cut (Camilla Toulmin, International Institute for Environment & Development)	Revised and hopefully clarified
E-20-178	A	11	27			Figure 20.2. The quality (lines resolution and characters printing) of the figure should be strongly improved (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Revised
E-20-179	A	11	32	11	38	the issue of adaptation to climate change is being confused with mitigation of GHG. The author is discussing mainstreaming adaptation into development planning, and then goes on to cite a mitigation example of sequestering carbon. This will be very confusing to most stakeholders who are not quite sure what adaptation is in the first place. (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Revised, but the development literature is strong on mitigation and weak on adaptation.
E-20-180	A	11	32	11	34	equally important is to recognize the concept of living with risk. This means that climate naturally fluctuates in a variety of often unpredictable ways and is best coped with, now and in the future, by developing a culture of resilience in livelihoods, infrastructure and socio-economic and environmental policy. (Silvia Llosa, ISDR System)	Revised
E-20-181	A	11	33	11	33	Replace "mainstreaming" with "integrating". A lot less 'baggage'. (John Drexhage, International Institute for Sustainable Development)	But mainstreaming is a term that PAO undertext wanted to consider
E-20-182	A	11	34	11	34	after the word 'when.' we propose the following addition "Mainstreaming adaptation into development planning will be more likely if the traditional development sectors from agriculture to water resources play a lead role through their planning processes to address disaster risk reduction." (Silvia Llosa, ISDR System)	Revised
E-20-183	A	11	35	11	36	this is again nothing new or unique and was described in earlier publications including Anderson, M.B., P.J. Woodrow (1991) 'Reducing Vulnerability to Drought and Famine: Developmental Approaches to Relief' Disasters, 15 (1) 43-54 and Anderson, M.B., P.J. Woodrow (1998) Rising From the Ashes: Development Strategies in Times of Disaster, Lynne Rienner Publishers: Boulder, CO. (Silvia Llosa, ISDR System)	Revised
E-20-184	A	11	36	11	38	the carbon sequestration example is oddly placed here and does not link well with sentences before and after (Silvia Llosa, ISDR System)	Revised, and likely deleted.
E-20-185	A	11	37	11	38	explain why there are possible negative aspects of carbon sequestration for biodiversity - provide an example (Camilla Toulmin, International Institute for Environment & Development)	Revised – but monoculture

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-186	A	11	37	11	38	add "potential" before "negative effective". And at the end of the sentence, add: "depending on the sequestration activity being pursued". (John Drexhage, International Institute for Sustainable Development)	Revised
E-20-187	A	11	38	11	41	these two sentences are not clear and have poor logic. An elaboration of the points and ideas is necessary. (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Revised
E-20-188	A	11	39	11	39	after the word 'disaster', the PROCLIM project of the CAM in Peru could be mentioned (see http://www.conam.gob.pe/proclim/ingles/index.htm) (Silvia Llosa, ISDR System)	Will try, but a long list of illustrations is problematic
E-20-189	A	11	40	11	43	These are interesting questions, that it would have been interesting to answer in this chapter. (Emma Tompkins, Oxford University)	Without being policy prescriptive?
E-20-190	A	11	41	11	43	Redraft last sentence to read clearer. Suggestion: "It is critical to design policy interventions in a way that reduces these losses in ways that could still meet the broader objectives of sustainable development." (John Drexhage, International Institute for Sustainable Development)	Revised
E-20-191	A	11	41	11	43	“due to...different factors?” – again this is nothing new, and there has already been a lot of thinking on this issue. Population growth, failed development paradigms, and other factors are well known causes of vulnerability to risks. This knowledge needs to be reflected here. Some reference to previous literature, even if it is from 1991 or 1998 (Anderson, M.B., P.J. Woodrow (1991) ‘Reducing Vulnerability to Drought and Famine: Developmental Approaches to Relief’ Disasters, 15 (1) 43-54 and Anderson, M.B., P.J. Woodrow (1998) Rising From the Ashes: Development Strategies in Times of Disaster, Lynne Rienner Publishers: Boulder, CO.) could be added here because it is extremely relevant still today. In addition the question mark at the end of the paragraph may give a misleading impression that nothing is being done yet to address the causes of recent climate-related disasters. The disaster risk reduction community including the recent adoption of the Hyogo Framework for Action deals with policies and practices that contribute to lower levels of risk. This section 20.3.3 could also note that since climate-related risks depend on the human circumstances of vulnerability as much as on the originating hazard, a primary focus of disaster risk management including adaptation must be on the human factors that raise or compound the risks, including the broad context of environmental and economic circumstances (see Basher and Briceno, 'Climate and disaster risk reduction in Africa' (2005) in 'Climate change and Africa' Pak Sum	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Low (ed.) we also want to note that , trend analysis and event analysis are different, and it is possible to unpick the causal factors (to some extent) for individual events. (Silvia Llosa, ISDR System)	
E-20-192	A	11	47	11	49	are political threats leading to internal and external conflicts not to be added? (Silvia Llosa, ISDR System)	Perhaps in the revision if in the literature.
E-20-193	A	11	47	11	47	“costs of hazards” – in fact, it is the costs of the adverse effects of hazards, not the hazards themselves (Silvia Llosa, ISDR System)	Ok
E-20-194	A	11	50	11	50	cut brackets around (over) utilisation - not needed (Camilla Toulmin, International Institute for Environment & Development)	Ok
E-20-195	A	12	9	12	9	Typo error: "makers must balance hydroelectricity..." (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Thanks
E-20-196	A	12	9			remove 'of' (Clair Hanson, IPCC TSU)	Ok
E-20-197	A	12	10	12	10	clarify phrase - "current flow deficit levels..." makes no sense (Camilla Toulmin, International Institute for Environment & Development)	Revised
E-20-198	A	12	15	13	41	This section on environmental quality is nicely written and it would have been nice to see two other 'matching' sections on economic growth, and social well-being - then it would have been possible to address some of the issues of equity, decision making, governance etc... Unfortunately as it stands, this section appears misplaced within this chapter and not of direct relevance to the other topics discussed herein. (Emma Tompkins, Oxford University)	It has to be here because of the Plenary Approved structure
E-20-199	A	12	15			this section could assess/refer to sources cited in the forthcoming ProVention Consortium guidance note on incorporating hazards and disasters in environmental assessment. This is still in draft form that may be obtained from David Peppiatt at ProVention (david.peppiatt@ifrc.org) (Silvia Llosa, ISDR System)	This sort of material has been incorporated in the revised 20.5
E-20-200	A	12	18	12	18	Give the original reference of the Brundland Commission works, rather than Kates et al., 2005 (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	OK
E-20-201	A	12	20	12	20	in stead of "7the", change to "7th" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	editorial
E-20-	A	12	20			7the --> 7th	editorial

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
202						(Clair Hanson, IPCC TSU)	
E-20-203	A	12	32	12	34	“Huq...” – this point has already been made earlier in the chapter. Move these refs there (Silvia Llosa, ISDR System)	editorial
E-20-204	A	12	33	12	33	"(sustainable development)" (Camilla Toulmin, International Institute for Environment & Development)	editorial
E-20-205	A	12	35	12	35	Revise: "pertains" (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	editorial
E-20-206	A	12	38	12	50	“In many countries...” (l. 40-42) – this sentence could be edited for better understanding instead of 'managers' the paragraph could refer to sectors which manage natural resources' (Silvia Llosa, ISDR System)	editorial
E-20-207	A	12	38		51	One shouldnot refer to these positive "revisions in practises and procudures"without also refering to the recalcitrant nature of some others. Farmers and industry remain a mixed lot in this regard. (Paul Vlek, University of Bonn)	Accepted
E-20-208	A	12	40	12	40	remove the second "." between "resources" and "In" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Editorial
E-20-209	A	12	40	12	40	Typo error: "sustain environmental resources.." (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	editorial
E-20-210	A	12	40	12	40	Revise: ".." (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	editorial
E-20-211	A	12	44	12	44	Cancel ")" after "industry" (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	editorial
E-20-212	A	12	44			delete) (Clair Hanson, IPCC TSU)	editorial
E-20-213	A	12	47	12	49	20.4.: WHY is climate change sledom included in the list of stressors that might influence sustainability. This chapter clearly establishes connections yet does not address this failign directly here. Expanded comments would be useful. (P. H. Liotta, Pell Center for International Relations and Public Policy)	There is no real evidence to explain why
E-20-214	A	12	48	12	48	after 'sustainability', the following could be added “particularly in the water sector and those sectors that use water.” (Silvia Llosa, ISDR System)	OK

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-215	A	13	2	13	2	Replace "and" by "an" (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Editorial
E-20-216	A	13	2			There is emerging literature and research on the links between climate change and sustainable forest management, beyond the role of forests in carbon sequestration. For example, there is the work of Williams, Parkins, et al. on community resilience in forest dependent communities affected by the unprecedented mountain pine beetle infestations in BC, biodiversity impacts of climate change on indicator species by Kathy Martin and Sally Aitken, forest health/productivity impact assessment by David Spitelhaus and David Price, and several publications on the subject by John Innes at UBC. It is true that most SFM frameworks and certification processes have not yet comprehensively factored in impacts of, adaptation to, and mitigation of climate change. Forest ecosystem models, which routinely run out 200 years or so to capture two forest rotations, are only now beginning to factor in climate change drivers and evaluation criteria. Some of these issues are described in a report by McKinnon and Sheppard, 2005. With more time, more specific references could be provided if they are helpful. See reference: McKinnon, G., and S.R.J. Sheppard. 2005. Facilitating dialogue and action on climate change in British Columbia's forest sector. Unpublished report prepared for C-CIARN. January 2005. (Stephen Sheppard, University of British Columbia)	Text changed
E-20-217	A	13	10	13	12	broadest sense? Meaning unclear (Silvia Llosa, ISDR System)	Editorial
E-20-218	A	13	15			organization or firm? (Peter Haas, University of Massachusetts)	Text changed
E-20-219	A	13	18	13	18	line 18 clarify what is meant by "expansive" (Camilla Toulmin, International Institute for Environment & Development)	Text changed
E-20-220	A	13	24	13	41	the increasing losses of life and infrastructure (including crops) to atmospheric, hydrologic and geologic events which are being documented by various international indicators as well as national public and NGO disaster impact reports could be included in this discussion (Silvia Llosa, ISDR System)	The text has been revised
E-20-221	A	13	29	13	29	INCLUDE after "change.": The political structure and the effectiveness of coordination mechanisms between federal, state and local governments or the governance structure of every country does matter in the implementation of climate change legislation. Justification: There is not explicit consideration on the effects of regulatory instruments and legislation over sustainability coming from those elements: federal	Good comment

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						or central political structure of the nations, shape and extension of governance diversity, mechanisms more or less efficient to spread information and commitments between levels of public agencies and governments, etc. (Ana Yabar Sterling, Universidad Complutense of Madrid)	
E-20-222	A	13	29	13	32	ERASE: Heiskanen, et al..... to adapt to climate change”. Justification: To mention that Directive far from research context mentioned is misleading and unfair to the EU more recent efforts in favour of climate change adaptation. Take into account the Directive have been approved before Gotemburg European Council (2001) –the most valuable EU summit to integrate sustainability in all sectors and policies to Lisbon Development Strategy within community -, their 5th and 6th Environmental Programmes and the Climate Change European Programme, etc. (Ana Yabar Sterling, Universidad Complutense of Madrid)	Text changed
E-20-223	A	13	29	13	32	this is not the principal purpose of the EU water directive. It reads in a very confusing way. Try and clarify. (Camilla Toulmin, International Institute for Environment & Development)	Text changed
E-20-224	A	13	32			Comment: after the reference to Heiskanen et al (2004) it may be useful to reference the EEA more widely, in a recent report (2005) where it acknowledges that EU environmental policies do not include considerations about climate change to a great extent; however, examples exist of adaptation initiatives in individual member states (are some of these perhaps referred to in 4AR ch 17?) Reference: European Environment Agency (2006) Vulnerability and adaptation to climate change in Europe. Luxembourg: Office for Official Publications of the European Communities. (Irene Lorenzoni, University of East Anglia)	Text changed
E-20-225	A	13	35	13	35	add 'and customers' after 'employees' (Silvia Llosa, ISDR System)	Text changed
E-20-226	A	13	39		41	This statement better reflects what is happening (Paul Vlek, University of Bonn)	No response needed
E-20-227	A	13	44	13	49	To start with, we suggest rephrasing the title to read: 'Implications for disaster risk reduction'. "Hazard management" [hazards themselves cannot be managed but their consequences and risks of being affected by them are] and "disaster management" are no longer used and have been replaced since 2000 by "disaster risk management" or "disaster risk reduction" depending on the context. Disaster risk management means the systematic, proactive process of identifying, analysing and responding to risk, mainly to minimize the probability and consequences of adverse events. Its use is appropriate at the operational/practical level. At the	Thanks for this: we have substantially changed section 20.5 in light of these and other comments by Llosa

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter- Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>conceptual/theoretical level, disaster risk reduction is used. It encompasses all of the policies and practices that contribute to lowering levels of risk. For further information, see the key terminology on disaster risk reduction at the www.unisdr.org and in 'Living with risk' (UNISDR 2004). We don't concur with the first sentence which does not reflect the reality of the disaster risk reduction community. We suggest the following to replace the introductory sentences (i.e. lines 46 to 49): 'Societies have always responded to risks from natural hazards events and resulting disasters. While in the past, more emphasis was placed on humanitarian response and relief activities, today much greater attention is paid to risk and vulnerability as crucial elements in reducing the negative impacts of hazards, and thus essential to achieve sustainable development. A strategic and systematic approach to reducing vulnerabilities and risks to hazards has evolved over the past 30 years to coalesce around the concept of disaster risk reduction. The "Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters" adopted in 2005 provides guidelines to assist the efforts of nations and communities to become more resilient to and cope better with the hazards that threaten their development gains. Disaster risk reduction encompasses all of the policies and practices that contribute to lowering levels of risk and has five priorities for action:</p> <ol style="list-style-type: none"> 1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation 2. Identify, assess and monitor disaster risks and enhance early warning 3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels 4. Reduce the underlying risk factors 5. Strengthen disaster preparedness for effective response at all levels' <p>(see http://www.unisdr.org/eng/hfa/hfa.htm) (Silvia Llosa, ISDR System)</p>	
E-20-228	A	13	44	15	50	<p>Thinking in this area has progressed significantly since this chapter outline was drawn up. Since 2001 there has been a lot of discussion on how climate change adaptation and disaster risk community could join together. Since then there have been many events which have done exactly this, such as the UN workshop on linking climate change adaptation and disaster risk reduction (see http://www.onu.org/cu/havamarisk/papers_cchange3/papers.html) where 12 papers were presented - many of these have now been published. There have also been joint publications such as the special issue of Disasters edited by Thea Hihorst and Madeleen Helmer, see DISASTERS 30 (1): 49-63 MAR 2006, the emergence of</p>	As above: all this is now included

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>the Linking Climate adaptation network (http://www.linkingclimateadaptation.org/), which has held online conferences on adaptation, disasters, development and risk, for many published references in this area see: http://www.eldis.org/climate/adaptation/themes/drr.htm I would invest significantly more time describing the range and depth of research that has come out of this area. (Emma Tompkins, Oxford University)</p>	
E-20-229	A	13	44			<p>Of relevance: On behalf of the inter-agency Vulnerability and Adaptation Resource Group (VARG) the discussion paper "Disaster Risk Management in a Changing Climate" (Sperling F. and F. Szekely, 2005) was prepared for World Conference on Disaster Reduction. The paper explores the conceptual synergies and differences between disaster risk management and adaptation to climate change. Focused on vulnerability reduction, it recognizes that development processes provide the integrative framework for risk management. Given that the majority of disasters are of hydro-meteorological origin, disaster risk management can in some cases benefit long-term adaptation to climate change. However, the paper also argues that superimposed effects of climate change may also imply that past experience upon which disaster risk planning efforts have previously been based on may only be of limited use. There superimposed effects require flexibility and the continuous re-evaluation of risk and re-adjustment of measures to avoid solutions which may provide short-term reductions of vulnerability, but prove mal-adaptive in the long-run. (Frank Sperling, World Bank)</p>	As above
E-20-230	A	13	44			<p>We believe this section is at an awkward somewhat 'unannounced' place and is too short. It does not discuss the linkages between development and risk sufficiently. This section could be lengthened to reflect the huge body of knowledge of this field. There could be specific discussion on the fact that risk and hazards literature and research has been around for much longer than adaptation and climate change research and literature. This is pertinent because links between them have only been made relatively recently (the UNDP Havana Risk Workshop in 2002 being a milestone). Nowadays the division into preparedness and recovery is less obvious and the concept of risk management and reduction is the one advocated. If the division is maintained the section should explain the enormous efforts it has taken to shift emphasis on risk reduction and the political reasons why relief/recovery is preferred. The section could also bring out the paradox that disaster recovery offers to sustainable development processes. For this and other reasons that are detailed throughout the ISDR system's comments on the various AR4 chapters, we would</p>	As above

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>strongly recommend that the disaster risk reduction concept be the thread to rewrite this section. Disaster risk reduction is now widely recognised as being a form of adaptation itself. It puts part of adaptation to climate change into practice. Increasing the capacity of human populations to address hazard events equals direct application of adaptation to climate measures.</p> <p>A significant part of the section is devoted to Katrina experiences, however little or no reference is made to other hydro-meteorological disasters.</p> <p>We also call your attention to the following issues related to sustainability that are not addressed:</p> <ol style="list-style-type: none"> 1) role of local institutions (both formal and informal) in sustaining efforts at community level, 2) importance of integrating community initiatives in government policies and practices to scale-up efforts, 3) role of local change agents in grass-root implementation, and 4) synergy of grass-root efforts with development policy <p>We propose for your consideration, in an attached file named 'Examples chap20.5', different boxes that would illustrate section 20.5</p> <p>(Silvia Llosa, ISDR System)</p>	
E-20-231	A	13	49	13	49	<p>add in the parenthesis 'wildfires,etc...'</p> <p>(Silvia Llosa, ISDR System)</p>	As above
E-20-232	A	13	50	13	50	<p>After 'huge' add 'and has existed significantly longer than discussions on adaptation or climate change'; replace 'mechanisms' by 'forces'</p> <p>(Silvia Llosa, ISDR System)</p>	As above
E-20-233	A	13	51	13	51	<p>technical' would be more inclusive than 'engineering' alone</p> <p>(Silvia Llosa, ISDR System)</p>	As above
E-20-234	A	13	51	14	1	<p>we suggest following rephrasing 'distinctive factors that determine people's vulnerability and exposure to hazards.'</p> <p>(Silvia Llosa, ISDR System)</p>	As above
E-20-235	A	14	4	14	6	<p>we suggest the following rephrasing 'A further dimension on these subjects is found in the growing literature on the linkages between hazard management and sustainable development, as elaborated below. However, there is considerably less literature linking hazards management with sustainable development and climate change.' Regarding the last sentence, a recent article deals specifically with this and came out in a special issue of Disasters in March this year: Schipper, L., M. Pelling (2006) 'Disaster Risk, Climate Change and International Development: Scope for, and Challenges to, Integration', Special issue of Disasters, 30 (1): 19-38</p>	As above

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						In this regard, we would like to mention the extensive literature on natural hazard and development linkages – reports from the review of the Mitch Hurricane on Central America come to mind (see www.undp.org/surf-panama/docs/bcpr/mitch+5_regional_forum_report.pdf), Disasters by Design: a reassessment of natural hazards in the United States, Joseph Henry Press, Washington DC, Mileti D.S. 1999, the emerging literature from the Hurricane Katrina experience, etc (Silvia Llosa, ISDR System)	
E-20-236	A	14	9			we suggest rephrasing the title to 'Disaster risk management'. By opposition to disaster risk reduction, disaster risk management is used at the operational/practical level. Some non climate change practitioners question the overused word of sustainability. 'Viable disaster risk management' is an alternative title (Silvia Llosa, ISDR System)	As above
E-20-237	A	14	11	14	35	The paragraph should be structured around the priority areas for action of disaster risk reduction, (this is the latest internationally agreed framework for disaster risk reduction implementation) which encompass what is called here 'pre-event' and 'emergency' measures. We propose 'Disaster risk management means the systematic, proactive process of identifying, analysing and responding to risk, mainly to minimize the probability and consequences of adverse events. The concept of risk is very useful in disaster policy, as it offers a fundamental measure of the conditions that need to be managed. (see Basher and Briceno (2005) in 'Climate change and Africa', Pak Sum Low (ed.), Cambridge University Press). To manage risks, activities classified under the above priority areas [see comments for p.13, 44-49] include 1. creating effective, multi-sector national platforms to provide policy guidance and to coordinate activities; integrating disaster risk reduction into development policies and planning, such as Poverty Reduction Strategies; and, ensuring community participation, so that local needs are met; 2. national and local risk assessments and people-centered early warning systems; 3. information management and exchange, education and training, research and public awareness; 4. environmental and natural resource management, social and economic development practices (including insurance), land use planning and other technical measures (including engineering works); and 4. contingency planning, emergency funds, disaster response. [As an alternative we propose to reproduce in this paragraph the diagram found on p.15 of 'Living with risk' UNISDR 2004.] Effective disaster risk reduction measures would not lead ...' and then continue The paragraph could also mention that the framework addresses implementation and follow-up requirements, including baselines assessments of disaster risk	As above

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						reduction status and reviewing progress. (Silvia Llosa, ISDR System)	
E-20-238	A	14	12	14	12	replace 'they' by 'specific examples' (Silvia Llosa, ISDR System)	As above
E-20-239	A	14	12	14	12	replace 'loss' by 'damages' because by definition losses are already gone (Silvia Llosa, ISDR System)	As above
E-20-240	A	14	13	14	15	We suggest the following rephrasing starting from 'building... '...construction practices which reduce susceptibility of infrastructure to damage; systematic planning procedures and land use practices which encourage wise use of hazard-prone areas; the development of forecasting and people-centered early warning systems; and the use of insurance to spread, transfer or otherwise offset any major losses' (Silvia Llosa, ISDR System)	As above
E-20-241	A	14	15	14	18	we suggest splitting the sentence not to loose sens of what is driven at: "Effective disaster risk reduction measures should not lead to an increase in exposure (e.g. by encouraging development in risk zones), nor should it benefit or harm particular sectors of the community differently. It is crucial that beneficial practice not increase exposure to other hazards and threats [note that hazards and threats could be replaced by risks], nor increase exposure to "downstream" communities. (Silvia Llosa, ISDR System)	As above
E-20-242	A	14	23		51	() not [] (Clair Hanson, IPCC TSU)	Editorial
E-20-243	A	14	27	14	28	we suggest the following rephrasing "Emergency measures" are those actions taken immediately prior to and from the onset of a disaster crisis or hazardous event (i.e. that may not yet have become a disaster. They are initiated precisely at the onset and during the acute phases of ... and if successful can in fact prevent a disaster – say be evacuating people in good time), and include the provision of emergency assistance and disaster relief. (Silvia Llosa, ISDR System)	As above
E-20-244	A	14	31	14	31	add 'by contrast,' after 'However,;'; replace 'enhance' by 'widen' (Silvia Llosa, ISDR System)	As above
E-20-245	A	14	35	14	35	replace 'enhance' by 'increase' because enhance has a nuanced sense of 'to improve', not only to increase, which is what is meant here (Silvia Llosa, ISDR System)	As above
E-20-246	A	14	38	14	38	should be "world's" not "worlds" (Camilla Toulmin, International Institute for Environment & Development)	editorial
E-20-	A	14	41	14	44	Don't understand the point that you are trying to make here. The point isn't that the	The example has been removed

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
247						investment in New Orlean's levy system was too great, the point is that it still wasn't large enough because it was only built to address Category 3 storms. (John Drexhage, International Institute for Sustainable Development)	
E-20-248	A	14	43	14	43	“as revealed along the Gulf Coast” – in fact – again – this is not a new findings, but this evidence “reinforces” existing knowledge. Therefore we suggest replacing “revealed” by “reinforced by” – this is common knowledge and the recent US hurricanes just confirmed this knowledge (Silvia Llosa, ISDR System)	The example has been removed
E-20-249	A	14	44	15	2	This should be a separate paragraph, and should be a main conclusion in the Executive Summary. The lessons of Katrina, re: socio-economic status, should be a major point in the discussion on adaptation - sd linkages. (John Drexhage, International Institute for Sustainable Development)	The example has been removed
E-20-250	A	14	48	14	48	Typo error: "destroyed in Louisiana..." (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Editorial
E-20-251	A	14	50			was --> were (Clair Hanson, IPCC TSU)	Editorial
E-20-252	A	15	1	15	2	there is a confusion here between renters and home-owners which needs clarification. You could note that at least renters do not suffer capital losses, unlike those owning their own homes. (Camilla Toulmin, International Institute for Environment & Development)	The text has been changed
E-20-253	A	15	4			(but --> (and (Clair Hanson, IPCC TSU)	Editorial
E-20-254	A	15	5	15	5	we suggest following rephrasing “sustainable” approaches in hazard risk management (Silvia Llosa, ISDR System)	See general comment on response to Llosa
E-20-255	A	15	6	15	12	You may want to review or cite the following paper which is not a study per se but was prepared for WSSD and explores the linkages between vulnerability and risk to disasters related to development and environment, including climate change. The title is 'Disaster reduction and sustainable development: Understanding the links between vulnerability and risk to disasters related to development and environment'. Contribution to WSSD. January 2003 (http://www.unisdr.org/eng/risk-reduction/sustainable-development/DR-and-SD-English.pdf) (Silvia Llosa, ISDR System)	See general comment on response to Llosa
E-20-256	A	15	6	15	6	the meaning of “affect the performance and benefits of sustainable measures” is unclear and needs to be explained	See general comment on response to Llosa

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Silvia Llosa, ISDR System)	
E-20-257	A	15	9		12	repetition of p13 ln 8-10 (Clair Hanson, IPCC TSU)	Editorial
E-20-258	A	15	9		12	This summary of Kundzewicz is too simplistic and too categorical about the preferability of non-structural management measures. There are circumstances in which this is so and also situations in which 'land use planning' is not an option for dealing with large existing concentrations of people and capital stock and 'property-scale proofing' is an inadequate option - e.g. large areas of Netherlands or Chinese mega-cities. (Edward Clay, Overseas Development Institute)	Text revised
E-20-259	A	15	10	15	10	property scale' too short handed for the non initiated (Silvia Llosa, ISDR System)	Text revised
E-20-260	A	15	12	15	12	in front of 'to climate change', add 'in responding' (Silvia Llosa, ISDR System)	Text revised
E-20-261	A	15	13			in between sections 20.5.1 and 20.5.2 we propose in an attached file named 'DRR box chap20', a text to be presented in a box containing selected disaster reduction tools that can be useful in climate change adaptation (Silvia Llosa, ISDR System)	Thanks – but we have a space problem. The sentiments are included in the revised 20.5
E-20-262	A	15	15	15	50	There is no mention of business efforts related to building adaptive capacity, and these are particularly interesting and insightful (e.g., UK water companies, hydro-electric utilities in North America). Recommend including some business examples here and also some of the frameworks developed to help business assess risk and build adaptive capacity (e.g., UK Tyndall Centre for Climate Research's adaptive capacity toolbox and the UK Climate Impacts Program risk assessment framework. This would make this section much more concrete and pragmatic. (John Drexhage, International Institute for Sustainable Development)	Incorporated
E-20-263	A	15	15		50	"There are three related, but different concepts employed: climatic variability, climate risk and extreme weather events (implied through references to hazards (e.g. line 23) . Climatic risks and extreme weather are not synonyms. Where the latter are a form of exogenous shock, then capacity building and distribution of relief (line 22) are not necessarily alternatives. Indeed capacity building may include ensuring an effective relief system is part of societal coping with such shocks. In lines 36-39 the authors talk about coping with variability when they may also need to distinguish extreme weather events. This section should be reconsidered to clearly distinguish increasing variability e.g. in rainfall that is then reflected in adaptive agricultural practices (line42-46) and actions concerned with frequency of extreme, potentially lethal and physically damaging events."	Text revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Edward Clay, Overseas Development Institute)	
E-20-264	A	15	19			who/what is emphasised? (Clair Hanson, IPCC TSU)	Text revised
E-20-265	A	15	19			The citation for Goklany (2003) does not appear in the references section: It is: Goklany, I.M.; 2003. Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation, Energy & Environment 14: 797-822. (Indur Goklany, US Department of the Interior)	Goklany citation added
E-20-266	A	15	20	15	21	“measures designed to reduce vulnerability are also sustainable” – this is a tautology – you can only reduce vulnerability if it is through sustainable interventions; In this discussion, you may consider the following: The risk management approach to climate change represents a paradigm shift in recent years in the nature of responses to the increased hazards that are expected to occur as a result of climate change: a shift from preparedness and response to risk assessment, vulnerability reduction and capacity enhancement. (ref: Adaptation to Climate Change and Managing Disaster Risk in the Caribbean and South-East Asia, Report of a Seminar, Barbados, July 24 – 25, 2003, Prepared by CDERA; available at http://enet.iadb.org/idbdocswebservices/idbdocsInternet/IADBPUBLICDOC.aspx?docnum=358823 (Silvia Llosa, ISDR System)	Text revised
E-20-267	A	15	21	15	21	... measures ... already exist.' needs to be drawn out for meaning. Is the meaning that the knowledge of such measures exist? It does not say whether they are used or implemented (Silvia Llosa, ISDR System)	Text revised
E-20-268	A	15	23			() not [] (Clair Hanson, IPCC TSU)	Editorial
E-20-269	A	15	25	15	25	delete 'some' before land use measures (Silvia Llosa, ISDR System)	Editorial
E-20-270	A	15	25			Comment: this paragraph addresses some of the literature about vulnerability reduction and climate change adaptation. Several papers on this topic, stemming from in-depth research in the Cayman Islands have been published by Emma Tompkins. One that I would suggest referencing here relates to the evolution of governance in the Cayman Islands over a period of more than 10 years, increasing institutional resilience and contributing to increased adaptive capacity. Indirectly these also contribute to the islands' sustainable development. The author's point reflects comments in this paper with regard to the need to prioritise climate change in policy. Reference: Tompkins, E. (2005) Planning for climate change in small	Text revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						islands: Insights from national hurricane preparedness in the Cayman Islands. GEC, 15(20):139-149. (Irene Lorenzoni, University of East Anglia)	
E-20-271	A	15	28	27	31	suggest rephrasing 'such as a realigned river channel or a protective flood embankment. Similarly, climate variations could alter the effectiveness of building codes based on specific return period designs, such as those for 10 year return period wind speeds. Finally, variable climate could alter the area exposed to potential hazards, with the consequence that development previously considered to be "safe" could become situated in a newly designated area of risk.' (Silvia Llosa, ISDR System)	Text revised
E-20-272	A	15	36	15	40	We propose several additions for your consideration: Disaster risk reduction practices produce information that climate change adaptation specialists can transform into knowledge about how climate trends are developing at local level. This means real time information not projections that can fuel improvements in climate change science and lessen heavy reliance on computer models. Statistics about emergency interventions may provide raw data to analyze real change in specific areas of the world. Such data are centred upon impacts from extreme climate events and thus are directly applicable for adaptation to climate change purposes. The VARG discussion paper 'Disaster Risk Management in a Changing Climate' by F. Sperling and F. Szekely (2005) (www.unisdr.org) can be quoted in this paragraph. The paper addresses the important synergies that exist between the policy frameworks and practical methodologies for disaster risk management and the course recent scientific advances suggest will be required for adaptation to climate change. The paragraph could also mention the existence of the ISDR Inter-agency task force Working Group on climate change and disaster risk reduction. It is co-chaired by WMO and UNDP and supported by the UNISDR secretariat. It focuses on the promotion of an integrated approach to climate risk and comprises 14 UN agencies, regional and nongovernmental organizations. It is currently working on: 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 (being finalized); a paper on terminology and concepts important to climate change and DRR work, to begin bridging the conceptual divide between the two communities; production of the DR+CC Infolink newsletter, which highlights developments on the linkage between disaster reduction and climate change (see: http://www.unisdr.org/eng/risk-reduction/climate-change/rd-cch-infolink4-05-eng.htm); three country case studies on current disaster risk reduction practices and climate change adaptation, a project	See above general comments re Llosa

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						of the VARG. The Working Group's current and planned activities promote the linkage of disaster reduction and climate change efforts, as expressed in the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. (full document on www.unisdr.org, see paragraph 19 of Priority for action 4 and chapter IV) (Silvia Llosa, ISDR System)	
E-20-273	A	15	36	15	36	is 'current' needed? Instead of 'build learning' 'provide insights' (or knowledge) (Silvia Llosa, ISDR System)	Text revised
E-20-274	A	15	36		50	A word of caution should be inserted that the scale and pace of climate change may overwhelm any coping capacity based on current climate variability (Paul Vlek, University of Bonn)	Text revised
E-20-275	A	15	40	15	40	NAPAs actually stands for National Adaptation Plans of Action (John Drexhage, International Institute for Sustainable Development)	Editorial: text removed
E-20-276	A	15	40	15	40	NAPA acronym is wrong they are National Adaptation Programmes of Action (Silvia Llosa, ISDR System)	Editorial: text removed
E-20-277	A	15	41	15	41	instead of 'there is emphasis' 'emphasis is given' (Silvia Llosa, ISDR System)	Editorial
E-20-278	A	15	41			what is meant by "enhancing indigenous knowledge systems" (Paul Vlek, University of Bonn)	Text revised
E-20-279	A	15	43	15	47	Sentence in not grammatically correct. (John Drexhage, International Institute for Sustainable Development)	Text revised
E-20-280	A	15	43	15	47	This sentence may need to be recomposed, The syntax is mixed up with too much multiple information in it. Various subject elements could be seperated to be composed in at least two sentences. (Silvia Llosa, ISDR System)	Text revised
E-20-281	A	15	47	15	47	replace 'new or increased' by 'altered' (Silvia Llosa, ISDR System)	Text revised
E-20-282	A	15	49	15	49	Typo error: "This translation of knowledge..." (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Text revised
E-20-283	A	15	49	15	49	after 'exposed to' add 'the frequent occurrence of these same hazards' (Silvia Llosa, ISDR System)	Text revised
E-20-284	A	15	49			insert 'and' between 'knowledge' and 'was' (Clair Hanson, IPCC TSU)	Text revised
E-20-285	A	15	50	15	50	NAPA primer: can more references be provided? (Silvia Llosa, ISDR System)	Text revised
E-20-	A	16	1			the discussion of regional and global impacts needs to look at alternative	There is no data on alternative boundaries

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
286						boundaries to the nation-state. In particular it should consider urban systems which now contain half the world population, and in developed nations, up to 90%. There is a recent literature on urban adaptation strategies: (Roaf 2005); and the beginnings of investigation on the resource inter-dependency of urban systems across the global economy (Ravetz 2006) (Joe Ravetz, University of Manchester)	(apart from the water studies which are based on catchments)
E-20-287	A	16	20	16	21	Change "...social and economic state of the world" to "...social, economic and technological state of the world." Also, add as a citation, Goklany (2006a). (Indur Goklany, US Department of the Interior)	Done
E-20-288	A	16	20	16	20	add 'environmental' to 'economic and social' state (Silvia Llosa, ISDR System)	Done
E-20-289	A	16	21	16	22	Can you explain why in Scenario A2 there are more people to be impacted? Is this due larger population increase? (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Yes – text states this
E-20-290	A	16	24			Add a new paragraph as follows: "An important shortcoming of such impact assessments is that they do not fully account for changes in adaptive capacity over time due to changes in the level of economic development or secular changes in technological prowess. Both can affect the level of impacts in the absence of explicit policy changes because changes in adaptive capacity can affect spontaneous or autonomous adaptation (Goklany 2005c, 2006a). As a consequence, there is a tendency to overestimate the impacts of climate change if future worlds are also projected to be wealthier and more technologically advanced per the SRES, and impacts assessments are internally inconsistent with the SRES scenarios used to drive climate change." (Indur Goklany, US Department of the Interior)	No – this is a misinterpretation, but the text has been revised to prevent such a misinterpretation
E-20-291	A	16	27	16	28	how an increase in runoff can lead to a decrease in stress is not clear to me. Is this because it will provide more opportunities for water harvesting, and higher river flows which will provide more water? In some places, an increase in runoff is associated with higher rates of erosion, and therefore more potential loss of farmland, more silting of waterways, and a loss of aquatic life. Therefore, it should not be assumed that increases in runoff is always a beneficial outcome, if indeed this is what is meant. (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Good point – text revised to emphasise this still more
E-20-292	A	16	28	16	28	why does increased runoff decrease stress? Surely the wrong way round. (Camilla Toulmin, International Institute for Environment & Development)	See above

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-293	A	16	28	16	30	Replace the sentence, “Simply calculating ... different geographic regions.” with the following: “Calculating the ‘net’ impact of climate change, however, is <i>complicated, particularly</i> where ‘winners’ and ‘losers’ are in different geographic regions.” What is <u>misleading</u> is showing, as is done in current Tables 20.2 through 20.4, the number of people exposed to increased stress without also showing the numbers for whom stress would be reduced. It would be no less misleading if these tables were to provide estimates of the latter but not the former. I would recommend that either (a) these tables indicate the net change (i.e., numbers with increase in stress minus numbers with reduced stress) along with a note that the different groups don’t necessarily live in the same regions or (b) a new row showing separately the millions for which water stress would be reduced. (Indur Goklany, US Department of the Interior)	Disagree – but the text has been revised slightly to emphasise why net numbers are not presented
E-20-294	A	16	34			Comments on Table 20.2. (A) As noted in the previous comment, the entry for “water resource stress” is misleading, at best. It only provides an estimate of the millions of people exposed to increasing stress, but it does not account for the millions that would experience lower water stress. See Goklany (2005), which is based on Arnell (2004). (B) The entry for hunger is based on the assumption that there are no direct CO2 effects on crop productivity. This is misleading. There is a greater likelihood that there will be some positive direct CO2 effects than none at all. Therefore, at the very least, a range should be provided bracketing the two extremes. There should also be a note stating that the analysis did not consider the full range of adaptation options that could be available in the wealthier and more technologically advanced worlds depicted by the various SRES scenarios (see Goklany 2005c, 2006a). {References are provided above.} (Indur Goklany, US Department of the Interior)	Disagree with the first statement CO2 effects included in revised table
E-20-295	A	16	34			Table 20.2. These estimates require more caveats. Parry assume that hunger is driven by a lack of food, even though Sen (1981) has shown that hunger is because of a lack of access to food. Arnell’s model omits adaptation. The discussion on page 17 has the same problem. Impact estimates without adaptation are just silly, and best not reported. (Richard Tol, Hamburg University)	Disagree with this comment. There are sufficient caveats. The hunger numbers are not driven by lack of food, but by changes in price
E-20-296	A	16				T20.2: here additional at risk from flooding is 2-30 million. In ES it states 2-7 million (Clair Hanson, IPCC TSU)	Now consistent
E-20-297	A	17	1			Comments on Table 20.3. The above comments on Table 20.2 are all applicable to this table as well.	See E-20-294

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(A) As noted in the previous comment, the entry for “water resource stress” is misleading, at best. It only provides an estimate of the millions of people exposed to increasing stress, but it does not account for the millions that would experience lower water stress. See Goklany (2005c), which is based on Arnell (2004). (B) The entry for hunger is based on the assumption that there are no direct CO2 effects on crop productivity. This is misleading. There is a greater likelihood that there will be some positive direct CO2 effects than none at all. Therefore, at the very least, a range should be provided bracketing the two extremes. There should also be a note stating that the analysis did not consider the full range of adaptation options that could be available in the wealthier and more technologically advanced worlds depicted by the various SRES scenarios (see Goklany 2005c, 2006a). (Indur Goklany, US Department of the Interior)	
E-20-298	A	17	1			Table 20.3. Indicate that the values are in "millions of people" (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Done
E-20-299	A	17	14	17	16	This sentence is misleading because it does not note that simultaneously there would/should be a reduction in the number of people that experience a reduction in water stress. See previous comments. (Indur Goklany, US Department of the Interior)	Sentence revised
E-20-300	A	17	21	23	6	If this section has to remain in this chapter then I would suggest that there needs to be a sub-section explaining why sustainable development issues are not dealt with at the aggregate level, and how it is the detail within these aggregate figures that is needed to understand the implications for sustainable development. Also, if this section remains, there needs to be some reference here to the implications of these potential aggregate impacts on the pillars of sustainable development. For this I would use one of the many frameworks that exist, that should have been spelt out in the introduction, e.g. what are the implications of these potential global and aggregate impacts on: living within environmental limits; learning, innovating and adapting; maintaining wellbeing; visioning and choosing; continuity and durability; self-organising communities. There is no need for anything on the social cost of carbon in this section. If this section remains I would delete everything from section 20.6.2 on page 17, line 21 to page 23 line 6. (Emma Tompkins, Oxford University)	Hard to know what to do with this and the next comment. No governments have suggested deleting the section. No argument is given in the review as to why the SCC is not needed or useful.
E-20-301	A	17	21	23	6	Delete this entire section. This section seems entirely misfocussed. If this chapter could be restructured I would not include this section at all. Sustainable development and adaptation is almost never dealt with at the global level or in the aggregate. Hence the data contained in this chapter is not useful in any way. (Emma Tompkins, Oxford University)	See above.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-302	A	17	21			the social cost of carbon: this is one of the most crucial questions: the recent UK results of Downing et al is being criticized and further investigation is in the pipeline. Basically the ECI report sets a lower limit, admits there is no plausible upper limit, and then proposes a 'working' SCC as twice the lower limit: this is now being adopted as if 'scientifically derived' by many departments of government. It also admits that non-economic impacts such as biodiversity loss do not fit easily into any economic frame, and then quotes a range of 0-1.5% of GDP. The wider field identified by Watkiss et al provides the context to this issue, and particularly the probability of multiple stresses and large scale discontinuities, but the interpretation is again open to a wider debate than the text allows. The implication is that the SCC where necessary should be expressed clearly and transparently in social cost terms alongside economic cost terms. (Joe Ravetz, University of Manchester)	We state that Downing et al didn't specify an upper limit. Watkiss et al is given prominence, including a figure, later in the section.
E-20-303	A	17	23	17	32	If this section remains: the critique of the social cost of carbon also has to be included, i.e. why should it not be used, what are the problems with it, and what issues arise in the way it deals with problems of intergenerational equity? The SCC method makes many implicit assumptions about sustainable development that the authors of this chapter have not done, e.g. through the use of the discount rate and equity weights, these have to be stated explicitly if this section remains, i.e. "it is assumed that future generations" (Emma Tompkins, Oxford University)	These issues are covered in section 20.6.2.3 and later in section 20.10
E-20-304	A	17	23	19	26	Chapter 4, section 4.6.2 states "There are no factual studies that have established the effectiveness and costs of adaptation options in ecosystems. This makes a comprehensive assessment of the avoided damages and costs impossible." See also section 4.5. These two sections are not compatible with section 20.6.2. (Emma Tompkins, Oxford University)	Section 20.6.3.2 and figure 20.5 point out that the estimates are not comprehensive.
E-20-305	A	17	28	17	32	The procedure used for estimating the social cost of carbon needs to be clarified. In particular it is not clear whether or how changes in future adaptive capacities (due to economic development, secular changes in technology, and in social and human capacity) are accounted for in estimating future impacts, as they should be (see, e.g., Goklany 2006a). (Indur Goklany, US Department of the Interior)	Dealt with under gov comments.
E-20-306	A	17				T20.3: are these millions of people? Please state in caption or column headings (Clair Hanson, IPCC TSU)	Text clarified Ok
E-20-307	A	17				20.6.2: what is discounting? (Clair Hanson, IPCC TSU)	Added to glossary
E-20-	A	18	1	18	11	A. The information provided in Table 20.4 and the surrounding text fails to provide	Disagree with these comments. The text

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
308						<p>information that is critical to the understanding of the relationship between climate change and sustainable development – the topic of this chapter. This information, which is also available in Arnell et al. (2002) -- the same source used to construct this table -- is the millions of people that are exposed to the stresses highlighted in this table (i.e., the population at risk) in the absence of climate change. This information should be included in an additional column. This compilation has already been done by Goklany (2005a) for the 2080s. It shows that for hunger, water stress and malaria (which inexplicably is not included in this table, although the data are available in Arnell et al), the population at risk in the absence of climate change exceeds the population at risk under the “unmitigated” or the S750 and S550 cases. This suggests that for these stresses through the 2080s (at least), non-climate change related factors are more important than climate change. Second, existing hurdles to sustainable development would outweigh additional hurdles due to climate change (through 2085, at least).</p> <p>B. The implications of the relative magnitude of the populations at risk for the hazards noted above with and without climate change should be noted in the text (see Goklany 2005a).</p> <p>C. I would add impacts on malaria to this table (see above). Notably, the population at risk of malaria in the 2080s, according to Arnell et al. (2002), is higher under the S550 scenario than under the S750 scenario. See Goklany (2005a).</p> <p>D. As noted previously, providing only information on the millions of people for whom water stress is increased without providing a parallel estimate of the millions for whom water stress would be reduced is misleading.</p> <p>(Indur Goklany, US Department of the Interior)</p>	<p>makes the caveats clear. The malaria numbers are deliberately excluded as they are no longer believed to be reliable</p>
E-20-309	A	18	1	18	5	<p>How the conclusion on beneficial effect of CO2 enrichment on crop is demonstrated. I understand Table 20.4 doesn't help. (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)</p>	Text revised
E-20-310	A	18	3	18	5	<p>Is this actually still the latest science? There have been some recent findings, I believe, which concludes that the claims on soil enrichment from CO2 fertilization are in fact seriously exaggerated. (John Drexhage, International Institute for Sustainable Development)</p>	Text revised
E-20-311	A	18	8			<p>Table 20.4. Not clearly presented. It would be probably better with 3 more columns in order to compare the results from the 2050s with the results from the 2080s. (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)</p>	Table revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-312	A	18	9	18	10	Table 20.4. If this section remains: I would use ranges for population at risk of hunger for S750 and S550 as has been done for unmitigated. (Emma Tompkins, Oxford University)	No data
E-20-313	A	18	9	18	14	Comment on Table 20.4 and Comment on Section 20.6. This section needs to be seriously rethought and possibly deleted for two reasons. First of all, one would assume that much of the information included in this section overlaps with information provided in previous chapters of WG2. Secondly, while your chapter notes that the estimates of the social cost of carbon are based on (at best) limited knowledge, but then to suggest that they should therefore be used to determine the rate at which carbon taxes are set is more than a bit of a leap. Moreover, global estimates do not reflect the local costs of climate change, where they will be borne. And how do these findings relate to sustainable development other than to suggest that the impacts of climate change will have a social cost? This entire section appears to be a case of inserting some a piece of questionable relevance to the chapter with data/information that is so speculative and wide ranging as to be of even less utility. This section needs to be completely rethought - if there is anything to be stated/elaborated on here (in the context of the theme of the chapter - sd and impacts/adaptation) it is the point raised on pager 22, lines 11 - 17. Namely, that the non-market damages of climate change are not yet sufficiently part of the literature. This is also an important point to raise for the Executive Summary. (John Drexhage, International Institute for Sustainable Development)	The section has to be here, but we've made it more clear
E-20-314	A	18	9	18	10	In Table 20.4, second row, first column is filled with 2050. What does this means? In Table 20.4, eight row, 2nd column the value is -3 to 9. What is the meaning of a negative value? (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Table revised
E-20-315	A	18	14	19	26	A better context is needed for this section. Why is it here? How does it relate to sustainability? (Silvia Llosa, ISDR System)	Plenary Agreed structure
E-20-316	A	18	26	23	6	The procedures used for estimating the social cost of carbon in the various exercises noted on these pages needs to be clarified. This should be accompanied by a critical evaluation of these procedures, how accurate they are likely to be and what that implies for the results noted herein. In addition it is not clear whether or how changes in future adaptive capacities (due to economic development, secular changes in technology, and in social and human capacity) are accounted for in estimating future impacts, as they should be (see, e.g., Goklany 2006a), and the	Dealt with under gov comments.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						implications of these methods should be noted. (Indur Goklany, US Department of the Interior)	
E-20-317	A	18	28			The Clarkson and Deyes (2002) study was not peer-reviewed before publication. It was reviewed after publication, and rubbished by every reader. HM Treasury is about to withdraw the study. (Richard Tol, Hamburg University)	It forms part of the literature and has been influential. It is given one sentence compared to seven describing the lower estimates of Pearce and Tol.
E-20-318	A	18	31			insert '/' after \$4-9 (Clair Hanson, IPCC TSU)	Done
E-20-319	A	18				() not [] (Clair Hanson, IPCC TSU)	Done
E-20-320	A	19	2	19	3	"Studies that were peer-reviewed": too imprecise! Does that mean that between the 28 quoted studies some are not peer-reviewed? Why this discrepancy? (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Added a phrase 'than those which were not'.
E-20-321	A	19	5			what are pure rates of time preference? (Clair Hanson, IPCC TSU)	Added to glossary
E-20-322	A	19	7	19	8	The final sentence in this paragraph seems to suggest that putting cost estimates on carbon with different discount rates generates such a wide range of cost estimates for carbon, as to make the exercise futile. Yet there is no reflection on what this means in practice for decision makers or research. (Emma Tompkins, Oxford University)	The sentence reflects the literature, but does not give policy advice.
E-20-323	A	19	7		8	can this be seen on F20.3? (Clair Hanson, IPCC TSU)	No, the peer-reviewed studies are not separated out in this figure.
E-20-324	A	19	14			As one of the authors of Downing et al. (2005), I can tell you that (a) this study was not peer-reviewed and (b) it was written under great pressure from policy. It has no place in the IPCC. (Richard Tol, Hamburg University)	Downing et al gives a range of \$1 to \$1500 for the SCC. This range does not indicate undue bias. The report was extensively peer reviewed.
E-20-325	A	19	21	19	21	"Invasive species may increase in the north" Comment: it is presently accepted that habitat perturbation including the occurrence of extreme events propiciates the establishment of invasive species. Although statistics are lacking, the arrival and or expansion of invasive species is constantly being reported for Southern Europe. It is not clear why this statement refers to "the north" only. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	Misplaced comment.
E-20-326	A	19	21	20	46	The last part of this section is by far and away the most useful. This section and the next section should focus on the paucity of data and research in informing your conclusions and focus on that and not on your substantive capacity conclusions. (John Drexhage, International Institute for Sustainable Development)	Much of the section is devoted to uncertainty.
E-20-	A	19	23			For better comparison it would be helpful to include the PAGE 2002 SSC right	Added a phrase to do this.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
327						next to th Scmethane in this sentence (Paul Vlek, University of Bonn)	
E-20-328	A	19	28			Figure 20.3. Indicate the legend of each line within the figure (for example above the line) (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Figure cannot be redrawn.
E-20-329	A	20	2			shouldn't there be a figure on costs of mitigation by time as well, and then superimpose the curves? (Peter Haas, University of Massachusetts)	Possibly, but this is not the focus of this chapter.
E-20-330	A	20	8			The social cost is sensitive to the emissions scenario in FUND. These results are not published, so I can only ask you to tone down this paragraph. (Richard Tol, Hamburg University)	When I tried to publish in Nature I was told that this was a result that everyone already knew. Should be published in a book by the end of the year. Have acknowledged that this result is not universal, and that the social cost does vary if the underlying scenario implies different discount rates and equity weights.
E-20-331	A	20	14			it is --> there is (Clair Hanson, IPCC TSU)	'It is' is correct.
E-20-332	A	20	17			add: to be identified as true 'integrated assessment models', other social and cultural values need to be given comparable weights to economic values, and there are prototype IAMs to demonstrate this (Rotmans & de Vries 2001). (Joe Ravetz, University of Manchester)	Added a phrase about Rotmans cultural approach. Rotmans & de Vries , 1997 added.
E-20-333	A	20	28			Figure 20.4. The size of the font is too small, considering the size of the graph (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Agreed. Font changed.
E-20-334	A	21	1	23	6	This entire section seems to be an elaborate justification for why the social cost of carbon should be included, the para on p.22, starting line 41 is particularly bad. I would suggest that this entire section should be removed from this chapter on sustainability and instead merged with section 18.4 in chapter 18 (on potential costs and damages avoided by adaptation and mitigation) (Emma Tompkins, Oxford University)	Text has toned down this paragraph. Difficult to move sections to other chapters at this stage.
E-20-335	A	21	2	21	4	Check the sentence: "that they divide into two scientific... models." It isn't understandable. (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	English is perfectly OK; the phrases could be reversed but this sentence structure is more elegant.
E-20-336	A	21	3	21	4	"High fishing pressure ... fishery." Comment: acerbate probably means exacerbate which is the usual form used in Europe, although the word derives from latin acerbus = biter . The sentence sounds quite meaningless. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	Misplaced comment

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-337	A	21	3	21	3	Replace: "scientific" parameters by "physical" parameters (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Physical is not better.
E-20-338	A	21	7			what's pure time preference rate? (Clair Hanson, IPCC TSU)	Already dealt with above (321)
E-20-339	A	21	10			delete 'a' (Clair Hanson, IPCC TSU)	Agreed.
E-20-340	A	21	13	21	13	the acronym IAM is never specified in the text. I believe the first time it is mentioned is on line 4 of the same page. (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Inserted (IAM) at first mention.
E-20-341	A	21	13	21	12	Avoid abreviation in section title. What means IAM? (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Changed
E-20-342	A	21	17	21	17	It seems that the DICE model is'nt quoted before. The reference is only given in the table's legend, which arrives afterwards! (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Added phrase in text.
E-20-343	A	21	17			delete But (Clair Hanson, IPCC TSU)	Changed '. But' to ', but'
E-20-344	A	21	21	21	22	"Ecosystem changes ...costs." Comment: gelatinous zooplankton and medusa, toxic algal bloom and the rest mentioned on this sentence are not exotic or invasive species. This sentence should be re-written as well as most of 12.4.7.2 (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	Appears to be a misplaced comment.
E-20-345	A	21	33	22	16	Any exercise attempting to forecast energy needs /consumption for 2100 appears as spurious given the pace of technology. A maximum horizon of 50 years should be considered. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	SRES scenarios go to 2100 and are established in the literature.
E-20-346	A	21	49	21	51	Statistics fot solar energy are not given, and in this sentence it is not considered as a key renewable energy, although it is mentioned later on (line6, page 22) that it is increasing in the Mediterranean. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	Appears to be a misplaced comment.
E-20-347	A	21				T20.5: sign --> sign of correlation with SCC (Clair Hanson, IPCC TSU)	Added phrase to title.
E-20-348	A	22	8	22	8	leave a space between Smith and (2004) (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Agreed.
E-20-349	A	22	10			which baseline? 1990? 2000? Pre-industrial? ... (Clair Hanson, IPCC TSU)	Added 'above pre-industrial.'
E-20-	A	22	35			Figure 20.5. I'm not convinced by the interest of this figure for the text	Better not to present this type of information

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
350						comprehension. The given added value is weak. (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	just in the text.
E-20-351	A	22	41			this states ‘...if the social cost calculations are complete and markets are perfect...’ this of course is a quite unlikely ‘if then’ statement, which needs amending, to the reality of incomplete SCC calculations and highly imperfect markets. The implications also need amending, in that where policy is based on simplistic and incomplete estimates it is quite likely to be ineffective and inappropriate. (Joe Ravetz, University of Manchester)	Paragraph toned down.
E-20-352	A	22				F20.5: needs improving. What do the curved lines represent? Anything? If not then delete as they don't match with the lines at the sides of the box (Clair Hanson, IPCC TSU)	Updated version addresses this.
E-20-353	A	23	1	23	1	CHANGE “of permits is” by: of permits has been Justification: It seems that authors are talking about price of permits coming from exchange in emission markets. If so, they have to make clear that allocation is previous to exchange, including verb in pass tense. If total allocation of permits has been “too large” the emerging prices for permits would be lower than SCC (even because a lack of demand for permits or an over supply of permits) independently of the allocation system have been chosen by the administrative agency (auction, grandfathering, mix....). This is one way to avoid the confusion between allocation processes of marketable permits (the first outcome) and level of prices for permits traded (the second, in time) as a consequence of relative scarcity or abundance of permits relative to SCC. But many other possibilities to avoid misleading are open to authors. (Ana Yabar Sterling, Universidad Complutense of Madrid)	Agree with the sentiment and have made change.
E-20-354	A	23	1	23	51	multiple corrections needed of "MDG's" - it should read "MDGs" (Camilla Toulmin, International Institute for Environment & Development)	Ok
E-20-355	A	23	3	23	6	ERASE “For reference.....tonne of carbon” Justification: this reference connects an unknown estimated value for SCC within the EU, to the EU cup composed by addition of the EU members national cup (coming from the National Allocation Programmes) and potentially widen by CER’s allow to be converted into emission rights of European Carbon Trading Scheme, 2005-2007. That close relationship has to be avoided for no been right. Also are non correct the sentence including the plateau mentioned at around \$100 because prices of EU emission rights oscillation between 9 and 30 € Also, to be consistent justification of amendment to line 1, page 23, is convenient to avoid the confusion between a cost-effective way to comply with mitigation commitments in face 2008-2012 (aim for the EU emission rights market which is not “perfect”) to theoretical	This paragraph deleted.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						solutions for climate change adaptation devices or policies. (Ana Yabar Sterling, Universidad Complutense of Madrid)	
E-20-356	A	23	9	28	22	This section should be the meat of this chapter, as it is the only section which refers to some of the key principles of sustainable development, i.e. access to resources, equity, local and sectoral development. Unfortunately this section does not address these issues in any meaningful way. The word 'equity' is referred to 18 times in chapter 20. Five of these are in the executive summary or sub-titles, 2 are references, 8 are in relation to equity weights for use in calculating the social cost of carbon, only 3 references are made to equity in any meaningful way, yet not in any substantive way. The word 'justice' does not appear anywhere in this chapter! Well-being is referred to only once. Justice, equity and well-being are key concepts, they need to be at the heart of this chapter, literature which discusses these issues needs to be identified and cited. (Emma Tompkins, Oxford University)	Revised
E-20-357	A	23	9	28	22	There is so much literature missing from this section, for example I don't see any references to the work of the following who work in Southern Africa (Thomas, D.; Twyman, C.; Osbahr, H., Washington, R.; Vogel, C. and others), Belize (Few, R.), on resilience (Carl Folke, Lance Gunderson, CS Holling, Brian Walker), vulnerability (Kasperson, R., Downing, T., Adger, N.), governance (Owens, S., O'Riordan, T., Jordan, A.) (Emma Tompkins, Oxford University)	The section is limited by space, but revision should help bring out the diversity of experience point.
E-20-358	A	23	9	28	22	The following literature must be included: Thomas, D. and Twyman, C (2005) Equity and justice in climate change adaptation amongst natural-resource-dependent societies. Global Environmental Change 15 (2005) 115–124 (Emma Tompkins, Oxford University)	Revised
E-20-359	A	23	9	28	22	The following literature must be included: Rayner, Steve and Elizabeth L. Malone (2001) Climate change, poverty, and intragenerational equity: the national level. International Journal of Global Environmental Issues 1 (2): 175 - 202 (Emma Tompkins, Oxford University)	Revised
E-20-360	A	23	9	28	22	The following literature must be included: Paavola, Jouni and W. Neil Adger (2004) Knowledge or Participation for Sustainability? Science and Justice in Adaptation to Climate Change. In: Frank Biermann, Sabine Campe, Klaus Jacob, eds. 2004. Proceedings of the 2002 Berlin Conference on the Human Dimensions of Global Environmental Change “Knowledge for the Sustainability Transition. The Challenge for Social Science”, Global Governance Project: Amsterdam, Berlin, Potsdam and Oldenburg. pp. 175-183. (Emma Tompkins, Oxford University)	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-361	A	23	9	28	22	The following literature must be included: Mueller, B (2001) VARIETIES OF DISTRIBUTIVE JUSTICE IN CLIMATE CHANGE – an editorial. Climatic Change 48: 273–288. (Emma Tompkins, Oxford University)	Revised
E-20-362	A	23	9	28	22	The following literature must be included: Bulkeley, H. (2001). "Governing climate change: the politics of risk society?" Transactions of the Institute of British Geographers 26(4): 430-447. (Emma Tompkins, Oxford University)	Revised
E-20-363	A	23	9	28	22	The following literature must be included: Adger, W.Neil (2001) Scales of governance and environmental justice for adaptation and mitigation of climate change. Journal of International Development. Volume 13, Issue 7 , Pages 921 – 931 (Special Issue: 2000 Annual Conference Issue) (Emma Tompkins, Oxford University)	Revised
E-20-364	A	23	9	28	22	The following literature must be included: Adger, W.N., Huq, S., Mace, M.J., Paavola, J. (Eds.), 2005. Equity and Justice in Adaptation to Climate Change. MIT Press, Cambridge (Emma Tompkins, Oxford University)	Revised
E-20-365	A	23	9	28	22	I would restructure section 20.7 around specific issues rather than specific reports, the MDGs and Our Common Future are two (of many) references that should be used in this section, not the only ones. If you do not restructure the entire chapter 20 as I have proposed above, then I would restructure this section by having the following sections: 'what are the justice and equity implications of climate change at different scales'; 'how will access to resources change under climate futures'; 'climate change adaptation, sustainable development and poverty'; 'Migration issues'; 'Security in a changing climate'. Is resilience a useful tool to achieve sustainability under a changing climate'. (Emma Tompkins, Oxford University)	Revised section, but PAO precluded reorganization
E-20-366	A	23	9	28	22	delete this entire section and re-write (Emma Tompkins, Oxford University)	Deleted
E-20-367	A	23	9	28	30	Same problem as previous section. Aggregation of impacts to level of political national boundaries is already covered in the regional chapters (hence somewhat repetitive) and a gross simplification (depicting climate change impacts for one country like Canada, with a range of impacts and adaptive capacity from the Arctic to coastal to the plains, etc, is beyond any credible stretch). Again, this section needs to be entirely rewritten and actually follow the title of the sub-section: Implications for regional, sub-regional, local and sectoral development. Instead this section focuses on virtually only on national level implications and do not get	Deleted

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>down into the real implications of climate change (mitigation and adaptation) for sustainable development. In addition, the discussion on the MDGs is shallow in its analysis; the objective of the MDGs is not only to obtain these goals but to maintain them over time. There are some important messages and they need to come out more, particularly that we can only adapt so much and that mitigation will be necessary in one form or another, but can and should be done in a much more convincing context. The political maps of impacts are wholly inappropriate.</p> <p>(John Drexhage, International Institute for Sustainable Development)</p>	
E-20-368	A	23	9			<p>In general we think that this discussion is too focused on climate temperature change and not enough on climate variability in the immediate and mid-term enough. MDGs related to natural hazards and thus climate change (including climate variability) includes all goals.</p> <p>(Silvia Llosa, ISDR System)</p>	Deleted
E-20-369	A	23	28	25	44	<p>"This is a key section in which the authors acknowledge the possibility of opportunity costs (p 24 lines 17-22) and that "We do not know, a priori, which effects will predominate" - but they appear to fail to follow through with sufficiently clear recommendations for further research to clarify these issues in context specific situations."</p> <p>(Edward Clay, Overseas Development Institute)</p>	Yes
E-20-370	A	23	28			<p>this section is missing discussion of the education component. Education and awareness on climate risks are important elements, which seem weak in many sectors. For your information and consideration, we add here the knowledge development part of the Hyogo Framework for Action: 3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels 18. Disasters can be substantially reduced if people are well informed and motivated towards a culture of disaster prevention and resilience, which in turn requires the collection, compilation and dissemination of relevant knowledge and information on hazards, vulnerabilities and capacities.</p> <p>Key activities:</p> <p>(i) Information management and exchange</p> <p>(a) Provide easily understandable information on disaster risks and protection options, especially to citizens in high-risk areas, to encourage and enable people to take action to reduce risks and build resilience. The information should incorporate relevant traditional and indigenous knowledge and culture heritage and be tailored to different target audiences, taking into account cultural and social factors.</p> <p>(b) Strengthen networks among disaster experts, managers and planners across</p>	Revised but perhaps not as extensively as this comment for space reasons.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>sectors and between regions, and create or strengthen procedures for using available expertise when agencies and other important actors develop local risk reduction plans.</p> <p>(c) Promote and improve dialogue and cooperation among scientific communities and practitioners working on disaster risk reduction, and encourage partnerships among stakeholders, including those working on the socioeconomic dimensions of disaster risk reduction.</p> <p>(d) Promote the use, application and affordability of recent information, communication and space-based technologies and related services, as well as earth observations, to support disaster risk reduction, particularly for training and for the sharing and dissemination of information among different categories of users.</p> <p>(e) In the medium term, develop local, national, regional and international userfriendly directories, inventories and national information-sharing systems and services for the exchange of information on good practices, cost-effective and easy-to-use disaster risk reduction technologies, and lessons learned on policies, plans and measures for disaster risk reduction.</p> <p>(f) Institutions dealing with urban development should provide information to the public on disaster reduction options prior to constructions, land purchase or land sale.</p> <p>(g) Update and widely disseminate international standard terminology related to disaster risk reduction, at least in all official United Nations languages, for use in programme and institutional development, operations, research, training curricula and public information programmes.</p> <p>(ii) Education and training</p> <p>(h) Promote the inclusion of disaster risk reduction knowledge in relevant sections of school curricula at all levels and the use of other formal and informal channels to reach youth and children with information; promote the integration of disaster risk reduction as an intrinsic element of the United Nations Decade of Education for Sustainable Development (2005–2015).</p> <p>(i) Promote the implementation of local risk assessment and disaster preparedness programmes in schools and institutions of higher education.</p> <p>(j) Promote the implementation of programmes and activities in schools for learning how to minimize the effects of hazards.</p> <p>(k) Develop training and learning programmes in disaster risk reduction targeted at specific sectors (development planners, emergency managers, local government officials, etc.).</p> <p>(l) Promote community-based training initiatives, considering the role of</p>	

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>volunteers, as appropriate, to enhance local capacities to mitigate and cope with disasters.</p> <p>(m) Ensure equal access to appropriate training and educational opportunities for women and vulnerable constituencies; promote gender and cultural sensitivity training as integral components of education and training for disaster risk reduction.</p> <p>(iii) Research</p> <p>(n) Develop improved methods for predictive multi-risk assessments and socioeconomic cost-benefit analysis of risk reduction actions at all levels; incorporate these methods into decision-making processes at regional, national and local levels.</p> <p>(o) Strengthen the technical and scientific capacity to develop and apply methodologies, studies and models to assess vulnerabilities to and the impact of geological, weather, water and climate-related hazards, including the improvement of regional monitoring capacities and assessments.</p> <p>(iv) Public awareness</p> <p>(p) Promote the engagement of the media in order to stimulate a culture of disaster resilience and strong community involvement in sustained public education campaigns and public consultations at all levels of society.</p> <p>(Silvia Llosa, ISDR System)</p>	
E-20-371	A	23	28			<p>The tone of this section is not in line with chapter 9 on the same issue, especially 1.8-15. A box on the potential impacts of climate change on MDGs like the one placed in chapt 9 would speak better to the subject than text. Such a box can be drawn from sources including: 'Disaster risk reduction: a development concern', DFID, 2004; 'Reducing Disaster Risk: A Challenge for Development', UNDP, 2004; see also http://www.unisdr.org/eng/mdgs-drr/link-mdg-drr.htm where the two reports can be downloaded</p> <p>(Silvia Llosa, ISDR System)</p>	We will coordinate with chapter 9 to ensure than any differences in tone are reconciled
E-20-372	A	23	29	23	29	<p>“Countries ...and cold” The sentence is rather incorrect, it should be reformulated “...currently experience additional mortality (or: an increase in mortality rates) due to heat and cold.</p> <p>(Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)</p>	Will clarify
E-20-373	A	23	34	23	36	<p>The sentence, “Goal 7, ... is the most immediately relevant of the MDG’s to climate change” reveals a constricted and simplistic view of the relationship between MDGs and climate change. First, the relationship between the two runs both ways. Meeting the MDGs would, in addition to advancing sustainable development, would enhance both adaptive and mitigative capacities. Thus the impacts of climate change would be modulated by how far societies have advanced</p>	We will ensure that the full relationship of climate change to the MDG’s (and vice versa) is described much more clearly than is the case in the current draft.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						toward the MDGs. In fact, from that perspective, MDGs 1 through 6 listed on Table 20.7, for instance, would directly or indirectly enhance a number of the determinants of adaptive and mitigative capacity (e.g., economic development, propensity for technological change, social and human capital (Goklany 2006a). (Indur Goklany, US Department of the Interior)	
E-20-374	A	23	36	23	36	the relationship between climate change and the MDGs is not limited to two, but comprises multiple ways (Camilla Toulmin, International Institute for Environment & Development)	We will ensure that the full relationship of climate change to the MDG's (and vice versa) is described much more clearly than is the case in the current draft.
E-20-375	A	23	36	23	37	I disagree, if we agree that climate change is driven (in part) by human activity, then it is fair to say that climate change is driven directly by lifestyles, human behaviour, consumption patterns, institutions, culture, ideology etc..., these affect many of the MDGs directly, especially, Goals 1, 4 and 6. (Emma Tompkins, Oxford University)	We will ensure that the full relationship of climate change to the MDG's (and vice versa) is described much more clearly than is the case in the current draft.
E-20-376	A	24	1	25	6	There is only 1 reference in this section (Arrow et al.). I cannot believe there is no other literature on this. I am familiar with work of Tyndall colleagues working in El Salvador (Schipper, L.) , Brazil (Boyd, E. possibly also Brown, K), Mexico (Corbera, E) and Bolivia (Boyd and possibly Brown) who were trying to assess the development benefits of various climate change community based carbon sequestration measures (which in this context could be considered adaptation) or specific adaptations, although I do not have the references to hand. This work needs to be cited. (Emma Tompkins, Oxford University)	Will cite appropriate literature.
E-20-377	A	24	2	24	3	The sentence, "Current literature ...by 2015" is not quite accurate. Noting that MDGs 1 and 6 should both be sensitive to climate change (in addition to MDG7), there is in fact guidance in the current literature that allows us to gauge whether climate change will affect progress toward those MDGs. Accordingly, replace that sentence with the following: "Results of various global impact studies compiled by Goklany (2003, 2005a, 2005c) suggest that climate change will have a minimal impact, if any, on the achievement of the MDGs by 2015. Specifically his compilation indicates that by the year 2085, the contribution of climate change to populations at risk for hunger and malaria levels are projected to be small compared to contribution of other non-climate-change-related factors. Thus, it is unlikely that the effect of climate change on either attainment or nonattainment of MDGs 1 and 6 will be significant by the year 2015." (Indur Goklany, US Department of the Interior)	We will ensure that the full relationship of climate change to the MDG's (and vice versa) is described much more clearly than is the case in the current draft.
E-20-	A	24	4	24	6	this is too cautious.	Noted

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
378						(Camilla Toulmin, International Institute for Environment & Development)	
E-20-379	A	24	4	24	4	add after ".. in any case" "in many parts of sub-Saharan Africa." (Camilla Toulmin, International Institute for Environment & Development)	But also in many other places
E-20-380	A	24	4	24	6	The claim that climate change will have little impact on MDGs can not be supported by the evidence as it currently stands, particularly in the context of extreme events. While hurricanes, flooding, droughts cannot be necessarily attributed to climate change they certainly are consistent with climate change impact scenarios. (John Drexhage, International Institute for Sustainable Development)	The chapter does not say this. It says only that climate change is unlikely to affect attainment of the 2015 targets. We will ensure that the discussion of time frames, targets, and goals is clarified
E-20-381	A	24	8		9	also goal 1? (Clair Hanson, IPCC TSU)	We will ensure that the full relationship of climate change to the MDG's (and vice versa) is described much more clearly than is the case in the current draft.
E-20-382	A	24	17	24	19	One could argue that there are opportunity costs from everything. Development is most often about trade-offs. Is it accurate to put the blame on adaptation? We suggest to put this conclusion into the larger context or delete. (Silvia Llosa, ISDR System)	Noted
E-20-383	A	24	19	24	22	I would provide as a reference: Goklany (2006a), which deals with precisely the matter alluded to in this sentence. (Indur Goklany, US Department of the Interior)	Noted
E-20-384	A	24	20	24	22	to reinforce the economic argument in favor of climate-related disaster risk management discussed here, you may consider the following information: '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.' (Tearfund). DFID also reports that '[h]umanitarian responses to disaster impacts now cost Development Assistance Committee (DAC) donors an annual US\$6 billion or seven per cent of total official development assistance (ODA) flows and this proportion is rising.' (see 'Disaster risk reduction: a development concern', DFID, 2004). Other figures/conclusions can be added from 'Disaster preparedness programmes in India: A cost benefit analysis', Courtenay Cabot Venton and Paul Venton, 2004, Network Paper N°49 (http://tilz.tearfund.org/webdocs/Tilz/Topics/Disaster%20preparedness%20in%20India%20a%20cost-benefit%20analysis.pdf) (Silvia Llosa, ISDR System)	Noted
E-20-385	A	24	24	24	26	Meaningless text. If there is something worth being said, it needs expression in clear language. (Camilla Toulmin, International Institute for Environment & Development)	Will clarify
E-20-	A	24	27	24	29	More emphasis should be put on "demand-side" strategies, this paragraph should be	Noted

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
386						written in a more energetic way, since urban and agricultural water conservation schemes could increase present availability by up 30% (case of Portugal, water mainly lost due to leaky pipes). (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	
E-20-387	A	24	31	24	33	Use tCO2 to represent a metric ton or a tonne of CO2. (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Noted
E-20-388	A	24	35			After “On the other hand,...” insert the following: “ <i>since energy use and economic development, although not linearly related, grow together, the increase in the latter would enhance adaptive capacity which, then would help reduce the impacts of climate change and, perhaps more importantly, climate and climate variability. Together, this might mean an overall reduction in the cumulative impacts of climate, climate variability and climate change, especially for countries that are low on the economic development scale (Goklany 2000, 2006). Moreover, investments in forestry and agricultural services,...</i> ” [Note: New language is italicized, and references have been provided in the foregoing.] (Indur Goklany, US Department of the Interior)	This depends on how the development proceeds.
E-20-389	A	24	46	24	51	It is not a coincidence that development and climate change are inversely linked – climate change is a consequence of industrial development and vulnerability to it is a consequence of lack of sustainable development. This is presented here as if these are two different things and needs to be changed. (Silvia Llosa, ISDR System)	Will clarify
E-20-390	A	24	48			Commence the paragraph with the following italicized insert: “ <i>Although Goklany (2003, 2005a) shows that in the near-to short term lack of sustainable development would hinder adaptation to climate change, the Millennium Ecosystem Assessment (2005) and others argue that over ...</i> ” (Indur Goklany, US Department of the Interior)	Noted
E-20-391	A	24	49	24	51	This is a very important message and should be noted in the Executive Summary. (John Drexhage, International Institute for Sustainable Development)	Noted
E-20-392	A	25	4	25	6	If wealth is an important element of adaptive capacity, then would a rich, low-lying island that can afford to buy citizenship for all citizens in another country be considered low or high adaptive capacity? I think this statement is too general. (Emma Tompkins, Oxford University)	Will be clarified
E-20-393	A	25	12	25	12	in some developed countries, especially in Europe, forest cover increases (Silvia Llosa, ISDR System)	Yes, this is noted in the chapter
E-20-394	A	25	13	25	17	I was unable to access Yohe et al. (2006), and no citation is provided for Brenkert and Malone (2005), so we are unable to comment on Section 20.7.2, the	It was there.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						methodology employed or about the robustness of the information presented here. [Regarding the latter point, the following comment suggests that use of only scenario A2 in and of itself may not provide robust information.] (Indur Goklany, US Department of the Interior)	
E-20-395	A	25	20	25	20	“Mountainous ...options”. This sentence makes no sense and is incorrect, should be removed. Regions do not possess adaptation options. At the most it might be acceptable to say that “Organisms living in mountainous and subarctic regions have less possibilities to adapt to changes than those in regions under less extreme environmental conditions.” (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	?
E-20-396	A	25	22	27	22	A. Regarding both Figures 20.6 and 20.7, it should be noted that panels A and C are quite unrealistic since adaptive capacity would probably expand as a matter of course because of secular trends in technology (Goklany 2006) even if nothing else (e.g., level of economic development) changes. That this secular trend occurs today indicates that it would continue to occur in even in a business-as-usual world. B. It is somewhat puzzling why the authors selected SRES scenario A2 to underpin the discussion in Sections 20.7.2 and 20.7.3. Of the four generic SRES scenarios, A2 is the one that seems currently to be the one most likely to be in error. It has the highest population growth – 14 billion (+) in 2085, an estimate that is at odds with most population projections. It also has the smallest level of economic growth and technological prowess. Therefore, it most likely has the lowest adaptive capacity (see Goklany 2005c). Accordingly, use of A2 would tend to distort the potential effects of adaptive capacity. It is recommended that results using the other scenarios be employed. It would also be very instructive to use A1FI and B1. (Indur Goklany, US Department of the Interior)	Deleted
E-20-397	A	25	37	25	39	“, and planting forests ...considered acceptable) “ – This piece of advice appears astonishing and contradictory in relation to several concepts previously presented. Considering that organisms and populations depend on their genetic plasticity , that is availability of a wide gene pool, in order to be able to adapt to (any) change, the solution is to create forests with clones of the same genotype. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	?
E-20-398	A	25	43	25	46	Hard to understand, could be re-written (Emma Tompkins, Oxford University)	Deleted and/or revised
E-20-399	A	25	44			insert 'have' after 'would' (Clair Hanson, IPCC TSU)	Ok
E-20-400	A	25	46		48	The MDG's are for 2025. How can that be "the longer term" in a climate change report? The only MDGs that are linked directly to climate change are infectious	MGDs are for mid century; targets are for 2015 to 2025

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						disease and water, for which no big effects are predicted before 2025. (Richard Tol, Hamburg University)	
E-20-401	A	25	49	25	51	“Forests that ... than other forests.” This statement appears as highly disputable, even if published by Garcia et al., 2005 (but this reference is missing!). Mediterranean forests are already adapted to extreme moisture conditions, and can tolerate large variations of this parameter, as attested by annual climatic records. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	?
E-20-402	A	26	4	26	4	Another very important prerequisite should be added: forest surveillance, which is in Mediterranean regions mostly neglected. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	?
E-20-403	A	26	7	26	12	The logic of this paragraph is somewhat confusing, regarding the drivers leading from grassland abandonment to grassland re-establishment. It should be re-written. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	?
E-20-404	A	26	15	36		Figures 20.6 > 20.9. The graphic quality of the maps is poor (very rough line resolution) ! (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Deleted or improved
E-20-405	A	26		27		As already stated, the maps should all be deleted - both repetitive and misleading. (John Drexhage, International Institute for Sustainable Development)	Only two remain
E-20-406	A	27	8			Figure 20.7, Panel A and Panel B are reversed (Panel A should be Panel B). (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Deleted
E-20-407	A	28	3	28	9	this paragraph needs to be rewritten for better understanding (Silvia Llosa, ISDR System)	Revised
E-20-408	A	28	3			included --> include (Clair Hanson, IPCC TSU)	Ok
E-20-409	A	28	4			Add a new sentence as follows: “Goklany (2006a) notes that, similarly, there are substantial co-benefits associated with enhancing adaptive capacity and reducing vulnerability to climate-sensitive problems. In addition, greater adaptive capacity might either reduce the level at which anthropogenic climate change becomes dangerous or, alternatively, postpone the timing of stabilization (Goklany 2000a).” (Indur Goklany, US Department of the Interior)	Revised
E-20-410	A	28	11	28	22	The above noted shortcomings in Figures 20.6 and 20.7 also apply to Figures 20.8 and 20.9. Specifically: A. The left hand panels are quite unrealistic since adaptive capacity would probably expand as a matter of course because of secular trends in technology (Goklany 2006a) even if nothing else (e.g., level of economic development)	These maps remain, but they are offered as illustrative.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						changes. B. It is somewhat puzzling why the authors selected SRES scenario A2 to underpin the discussion in Section 20.7.4. Of the four generic SRES scenarios, A2 is the one that seems currently on track to be the one most likely to be in error. It has the highest population growth – 14 billion (+) in 2085, an estimate that is at odds with most population projections. It also has the smallest level of economic growth and technological prowess. Therefore, it most likely has the lowest adaptive capacity (see Goklany 2005c). Accordingly, use of A2 would tend to distort the potential effects of adaptive capacity. It is recommended that results using the other scenarios be employed. It would also be very instructive to use A1FI and B1. (Indur Goklany, US Department of the Interior)	A2 chosen as illustrative – point included.
E-20-411	A	28	11	28	11	Why the figure 20.9 is so far from its first text reference (8 pages)? (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Mistake
E-20-412	A	28	20	28	30	12.5.9 – Most of the possible adaptation measures recommended make no sense (points 1 to 3), or are trivial (point 4). Since the Earth is a dynamic entity human societies can not be encouraged to remain static regarding their life styles and hobby preferences. The tourism industry will have to improve its capacity to become more imaginative in a sustainable way. Artificial snow, coastal sea barriers and replacing natural tourism by man – made attractions seem to be the opposite of what is desirable (for reasons so well established that it would be tedious to explain here !) (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	?
E-20-413	A	28	21		22	To clarify how the reader should interpret this: do the significant vulnerabilities in 2100 with 550ppm suggest similar levels of vulnerability with and without adaptation, and should therefore the 450 ppm (or lower) CO2 level be considered as a more appropriate target if limiting/avoiding vulnerability is the goal? (Stephen Sheppard, University of British Columbia)	Impacts overwhelm... Could be, but cannot be policy prescriptive
E-20-414	A	28	25	35	11	delete this entire section and re-write. This section is poorly written and introduces more concepts of sustainable development, suggesting that it is about economic capacity and social capital (and environmental sustainability), these are very different to economic growth and social wellbeing. Again, a consistent use of sustainable development is needed, or there needs to be mention of the various views on sustainability initially. (Emma Tompkins, Oxford University)	Revised
E-20-415	A	28	25	35	11	General comment: By far and away, the best section of the entire Chapter, as it for one thing, actually addresses the theme of the chapter. Chapter authors should seriously think about this section can get more prominence in the Chapter,	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						particularly in the Executive Summary. (John Drexhage, International Institute for Sustainable Development)	
E-20-416	A	28	33	30	27	The following literature must be included: Smit, B. and J. Benhin (2004) "Tools and Methodologies for Mainstreaming Vulnerability and Adaptation to Climate Change into Sustainable Development Planning." A paper presented at the workshop Integrating Vulnerability and Adaptation to Climate Change into Sustainable Development Policy Planning and Implementation in Southern and Eastern Africa, 4 September 2004, Nairobi, Kenya. http://www.unep.org/themes/climatechange/Focus_Areas/workshop.asp (Emma Tompkins, Oxford University)	Revised
E-20-417	A	28	33	30	27	The following literature must be included: Huq, Saleemul, Atiq Rahman, Mama Konate, Youba Sokona, Hannah Reid (2003) Mainstreaming Adaptation to Climate Change in Least Developed Countries (Ldcs). April 2003. IIED, London (Emma Tompkins, Oxford University)	Revised
E-20-418	A	28	33	30	27	The following literature must be included: Blackburn, J., Chambers R., et al. (2000). Mainstreaming participation in development. OED Working Paper Series No. 10. Washington D.C., World Bank. (Emma Tompkins, Oxford University)	Revised
E-20-419	A	28	33	30	27	The following literature must be included: Adger, W. N., K. Brown, et al. (2003). "Governance for Sustainability: Towards a 'Thick' Understanding of Environmental Decision-making." Environment and Planning A 35: 1095-1110. (Emma Tompkins, Oxford University)	Revised
E-20-420	A	28	33	30	27	delete this entire section and re-write. The current section is basically empty of theory, methods or tools at present. This section is not referenced for the most part, and unsubstantiated statements are made throughout, e.g. p30 (lines 6-7), who recognises that communities must participate to build resilient communities? Is this always true? Are there only certain circumstances when it is true? Who says that this is not acted upon?; p30 (lines 7-11) who says all these things or is it just the authors opinion - in which case it should be deleted; and so it goes on, unsubstantiated sentences one after another. There is so much literature about mainstreaming - none of it is mentioned. (Emma Tompkins, Oxford University)	Revised
E-20-421	A	28	33			we propose the following for inclusion/reconsideration of the section: 1) disaster risk reduction should be considered as an entry point for climate risk integration in development practices. 2) Additional reference on community-based approaches can be found in: 'Shaw R. and Okazaki K. (2003): Sustainability in Grass-roots initiatives: focus on	Ok....thanks

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>community based disaster management, 99 pages, UNCRD Publication'</p> <p>3) Positive incentives and cost-benefit analysis of implementation of climate risk reduction measures are important issues for mainstreaming adaptation into development process.</p> <p>4) The case of Vietnam (Shaw R. (2006): 'Community based climate change adaptation in Vietnam: Inter-linkage of environment, disaster and human security', In: Multiple dimension of global environmental changes, edited by S. Sonak, TERI publication, 521-547)) is a successful example of combining climate risks, disaster risk reduction and development plans. Through consultative processes, safer district, commune and village plans were prepared that incorporated future climate risks; the plans became part of local development plans.</p> <p>5) On the contrary, drought plans prepared in Gujarat (Western India) had a deep impact when local NGOs implemented the project. However, incorporating the plan in the district plans is difficult, due to different levels of uncertainties and lack of political commitment (Ref: Kutch Ecological Plan, 2004, A CD-ROM compiling the Kutch initiatives, Abhiyan and EPC). (Silvia Llosa, ISDR System)</p>	
E-20-422	A	28	37	28	39	<p>Provide a few references here, e.g, Goklany (2006a). (Indur Goklany, US Department of the Interior)</p>	Revised
E-20-423	A	28	42	28	42	<p>natural disasters' is a misleading expression. Replace by 'natural hazards' (Silvia Llosa, ISDR System)</p>	Ok
E-20-424	A	28	46	28	51	<p>This discussion is very limited in scope. Line 47 should include a specific reference to sectors and natural resource use, not merely "development processes." Specific examples could include those from other types of hydrologic hazards in addition to floods, atmospheric hazards (wind) and geologic hazards. Work from IFRC mangrove reforestation in Vietnam, Peru's PROCLIM project with the CAM related to GEF-sponsored initiatives (see http://www.conam.gob.pe/proclim/ingles/index.htm), and FOCUS Humanitarian International initiatives in the Bartang Valley, Tajikistan dealing with water resource management and flood hazard reduction could be noted (for more information see http://www.akdn.org/focus/disaster_mitigation.html#tajikistan and contact Mr. Hadi Husani, hhusani@focushumanitarian.org, director of the programme.) (Silvia Llosa, ISDR System)</p>	Revised
E-20-425	A	28	50	28	50	<p>Should read: "results of a research and pilot activity action undertaken during 2002-2004, albeit on a limited" (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University</p>	Ok, but revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Sao Paulo)	
E-20-426	A	28		31		Section 20.8.1. This section could usefully add a reference to the key role of information processes and media in communicating climate change /adaptation knowledge and urgency, linking with page 30 line 9-11 and SPM p 18 line 2. Suggested language for page 30 line 15: "Information processes and media can play a key role of in communicating climate change /adaptation knowledge and translating scientific or modelling outcomes to convey the urgency of climate change response. The potential for more effective means of communicating climate change risks and alternative future consequences using imagery and emerging media/tools 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. Comput. Environ. Urban Syst. 29 (3), 255–273. Sheppard, S.R.J. 2005. Landscape visualisation and climate change: The potential for influencing perceptions and behaviour. Environmental Science and Policy. 8: 637-654. (Stephen Sheppard, University of British Columbia)	Revised and considered
E-20-427	A	29	4	29	23	12.5.11 – In southern Europe danger of re-emergence or appearance of new of water born diseases, is partially due to a considerable expansion of artificial water bodies, such as dams and artificial lakes (e.g. Alqueva, Portugal, the largest artificial lake in Europe). (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	Ok, but not possible to include many illustrations
E-20-428	A	29	25	29	28	Another issue is the marked lack of awareness amongst key policy makers and program implementers of the relevance of climate change and/or what can be done about it. (John Drexhage, International Institute for Sustainable Development)	Ok
E-20-429	A	29	25	30	11	Except for the first sentence ["However, there arte many challenges."], much of what is in these two paragraphs is an editorial, and argumentative, if not completely erroneous. For instance, the notion that "economic growth is pursued through unfettered market principles" is a figment of the imagination. We challenge the author to come up with a single example where economic growth is pursued this way – certainly there are no "unfettered markets" in North America, China, the EU, India, Africa, or Latin America. Trade, commerce and economic activities are directly or indirectly regulated and modulated by governments everywhere. And even if there were some examples, that would not warrant a general statement of this type. After the worldwide attention given to the MDGs, the claim that social and environmental aspects of development ring hollow. Similarly, the notion that climate change issues remain neglected (for whatever reason), cannot be squared	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>with either the media coverage worldwide of this matter, or the fact that all virtually all governments have participated in the UNFCCC process. What the climate change issue suffers from is not lack of attention but, perhaps, lack of actions that the author approves of. [It is important to distinguish between the two.] We suspect that the reason for this might be -- as so well articulated by Prime Minister Blair -- that no country is going to sacrifice its economic development or consumption for a long term environmental problem. Accordingly, we would modify these two paragraphs to read as follows:</p> <p>“However, there are many challenges. Perhaps the primary one is to continue progress toward improving health, education, access to safe water and sanitation, and other indicators of social and environmental progress while nurturing the institutions that underpin economic development and its benefits. It is recognized that many of these activities and institutions will be more resilient and robust if they are undertaken at the grassroots level.”</p> <p>(Indur Goklany, US Department of the Interior)</p>	
E-20-430	A	29	29	29	28	<p>bottom lines. "Extremely limited capacity at community level" - is this really true? I think it depends greatly on context. Very often in risk prone parts of the world, community capacity is much greater than in richer countries where people are less exposed to regular threats. Its rather a question of seeing how government can strengthen existing community-level mechanisms for adaptation, rather than building them up from nothing.</p> <p>(Camilla Toulmin, International Institute for Environment & Development)</p>	Revised and considered.
E-20-431	A	29	43	29	43	<p>better to say that climate change is already inevitable rather than that "we are committed..." since this suggests an act of commission on our part.</p> <p>(Camilla Toulmin, International Institute for Environment & Development)</p>	Ok
E-20-432	A	29		29		<p>text should mention the opportunity of the investment renewal cycle in power stations, infrastructure, cars and buildings which means that investment must be made in any case, so cutting overall costs of shifting towards a low carbon economy.</p> <p>(Camilla Toulmin, International Institute for Environment & Development)</p>	May not be able to include all illustrations given severe space constraints
E-20-433	A	30	6	30	28	<p>Figure 12.4 – According to the model presented in the map, the only parts of Europe remaining with a zero temperature anomaly would be Portugal and part of Andalusia, Spain. This contradicts the case study presented, based on the 2003 heat wave !</p> <p>(Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)</p>	?
E-20-	A	30	9	30	10	Delete "especially in developing countries". The lack of knowledge on climate	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
434						change among mainstream policy makers in the developed world is just as rife. Also it is not only a lack of knowledge on the impacts side, but also a clear sense of how to respond to that threat from an adaptation or mitigation perspective. (John Drexhage, International Institute for Sustainable Development)	
E-20-435	A	30	10	30	11	The earlier statemets about climate change impacts not being relevant for MDGs contradicts this (correct) statement. The perception that climate change is only about the future is only driven further home by the previous statements on the MDGs. Need more statements of the type noted here. (John Drexhage, International Institute for Sustainable Development)	That statement was about MD Targets, not Goals. Will clarify.
E-20-436	A	30	16			One of the challenges to implementing actions that would advance adaptive capacity is that many in the climate change community believe that mitigation is a superior approach to adaptation, and that the latter is plagued with shortcomings. For there to be progress on adaptation this controversy needs to be aired and addressed. Accordingly, add a new paragraph that would read as follows: "Fuller integration of adaptation and mitigation – and their integration with policies to advance sustainable development -- could be hindered by several commonly-held beliefs regarding the similarities and differences between adaptation and mitigation (e.g., Dang et al. 2003; Huq and Grubb 2003, Wilbanks et al. 2003, Klein et al. 2003). These include arguments that adaptation is of limited value in reducing threats to biodiversity and natural systems, that adaptation confers local but not global benefits, that mitigation anywhere accrues to everyone's benefit whereas adaptation only provides local benefits, and that adaptation is generally reactive but not proactive. Goklany (2006a), however, argues that these claims are based on a narrow view of adaptation that downplays, if not ignores, the fact that addressing current climate-sensitive risks would, in addition to providing large near-term benefits (including progress toward MDGs and sustainable development), also reduce future vulnerabilities to climate change. He provides several proactive examples whereby adaptation and increases in adaptive capacity would help conserve biodiversity and natural systems. He further notes that such actions to conserve biodiversity, reduce vulnerability to climate-sensitive global health problems or advance sustainable development through efforts to generally advance adaptive capacity would generate global benefits. He also notes that the benefits of mitigation are heterogeneous (if for no reason other than the fact that the impacts of climate change are also heterogeneous). Accordingly, he argues that there should be no preconceived bias toward either mitigation or adaptation being always superior, and that efforts should be made to meld these efforts with efforts to advance sustainable development, and provides several examples of how this	Too long, but thoughts included in revision.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						might be achieved.” References: Dang, H.H., Michaelowa, A. and Tuan, D.D.: 2003, ‘Synergy of adaptation and mitigation strategies in the context of sustainable development: the case of Vietnam’, Climate Policy 3S1, S81–S96; Huq, S. and Grubb, M.: 2003, Scientific assessment of the inter-relationships of Mitigation and Adaptation. Available at http://www.ipcc.ch/activity/cct2a.pdf ; Klein, R.J.T., Schipper, E.L. and Dessai, S.: 2003, Integrating mitigation and adaptation into climate and development policy: three research questions, Tyndall Centre for Climate Change Research Working Paper 40; Goklany, I.M.: 2006a: Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development, forthcoming in Mitigation and Adaptation Strategies for Global Change. Wilbanks, T.J., Kane, S.M., Leiby, P.N., Perlack, R.D., Settle, C., Shogren, J.F. and Smith, J.B.: 2003, ‘Possible responses to global climate change: integrating mitigation and adaptation’, Environment 45, 28- 38. (Indur Goklany, US Department of the Interior)	
E-20-437	A	30	17	30	22	In this connection the recent article by Schipper and Pelling in Disasters, 2006, 30(I) 'Disaster risk, climate change and international development: Scope for and challenges to integration' could be assessed for reference. The Tearfund analysis of donors policies and practices in natural disaster risk reduction (July 2003) is also of relevance (Silvia Llosa, ISDR System)	Referred to earlier section
E-20-438	A	30	19			But --> However (Clair Hanson, IPCC TSU)	Ok
E-20-439	A	30	20	30	22	And what exactly were those suggestions? (John Drexhage, International Institute for Sustainable Development)	Revised
E-20-440	A	30	24	30	27	These are the issues that should have been discussed in this section, as it is they are relegated to one sentence at the end. (Emma Tompkins, Oxford University)	Revised
E-20-441	A	30	24	30	27	lacks also relate to inputs and outputs e.g. input data for climate model-driven assessments and long term output of models that are understandable by decision-makers who work on different time scales (Silvia Llosa, ISDR System)	ok
E-20-442	A	30	27			Add a sentence that states: “However, it should be noted that many believe that some of the resources (and technologies) that developed nations have transferred to developing countries have been, for whatever reason, squandered (see, e.g., Easterly 2006, Erixon 2005, Mbeki 2005), although there are notable exceptions (e.g., the transfer of expertise and technologies that led to the green revolution --	Too long, but thoughts reflected in revision

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						see, e.g., Goklany 1998). According to these analysts, it's not obvious that fulfilling these commitments would achieve their desired outcomes, although other analysts would bne more optimistic (e.g., Sachs 2005).” References: Mbeki, M.: 2005. Perpetuating Poverty in Sub-Saharan Africa: How African Political Elites Undermine Entrepreneurship and Economic Development, International Policy Press, London; Erixon, F.: Aid and development: Will it work this time? International Policy Press, London; Easterly, W.R.: 2006. The White Man's Burden : Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good , Penguin Press, New York; Sachs, J.: The End of Poverty: Economic Possibilities for Our Time, Penguin Press, New York; Goklany, I.M.: 1998. Saving Habitat and Conserving Biodiversity on a Crowded Planet, BioScience 48 (1998): 941-953. (Indur Goklany, US Department of the Interior)	
E-20-443	A	30	30	32	30	The section on participatory processes lacks any of the critiques that have emerged over the past 20 years in the area of development studies. There is a one line reference to Cooke and Kothari (2001) which synthesizes some of the main issues, however, if you are going to devote 2 pages to describing the benefits of participation, then the problems with it need to be presented in equal quantity. Participatory governance is not universally considered a panacea to all problems and this section needs to be toned down to show where participation is useful and where it is not. There is also no mention of cross-scale issues of governance in this section on participation – this can be a huge handicap to any form of participatory governance, see for example the special issue in the journal Ecology and Society on on cross-scale dynamics. http://www.ecologyandsociety.org/viewissue.php?sf=18 (Emma Tompkins, Oxford University)	Revised
E-20-444	A	30	30	32	30	If it is retained, this section should review the pros and cons of participatory governance, explaining where it is appropriate and where it is not. There should be mention in here of cross-scale issues, at present there are none. (Emma Tompkins, Oxford University)	Revised
E-20-445	A	30	30	32	30	delete this entire section and re-write (Emma Tompkins, Oxford University)	Revised
E-20-446	A	30	30	32	30	This section seems not to make a great contribution. It is either too short or too long. The paragraph describes an importtant dilemmma: how to move from science to action. Science often is generated at a completely different scale than the one at which adaptation action has to take place. The section leaves the impression that PIA will solve this problem, when in fact, the fusion process properly identified as necessary remains a major challenge and should be identified as such. A section on	Revised

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						institutions might have been more helpful here. (Paul Vlek, University of Bonn)	
E-20-447	A	30	30			participation is good, but can anything be said about the criteria for who gets to participate, and on which issues? (Peter Haas, University of Massachusetts)	Revised
E-20-448	A	30	30			we propose the following for inclusion/reconsideration of the section: 2) Two specific tools are used in disaster risk reduction: 1) participatory GIS: This is a mapping process with participation from local communities. This is a part of Community Based Information Management System (CBIS). The most important aspect of mapping is incorporation of local information, and participatory GIS helps in this process. 2) Mapping of indigenous knowledge: This is an important aspect, and very much relevant to climate change adaptation. The difference between indigenous and planned adaptation is not discussed. Mention could be made of the CPWC and its work with participatory processes (www.waterandclimate.org) (Silvia Llosa, ISDR System)	Revised
E-20-449	A	30	32	30	32	At the beginning of this section there needs to be some mention of what is contained in this section, I would suggest that you cover the following areas: social learning (what is it and how does it affect sustainability and climate change adaptation?); different forms of knowledge (indigenous, technical, scientific, tradition etc...); different forms of governance; critiques of different forms of governance (including participatory ones) (Emma Tompkins, Oxford University)	Tried, but space is short.
E-20-450	A	30	32	32	51	Cite this book in References Engaging Stakeholders in the Adaptation Process Cecilia Conde and Kate Lonsdale Jos Plateau, Nigeria, Environmental Resources Development Programme The objective of this study was to identify viable projects to address resource problems faced by people in the tin-mining Jos Plateau, Nigeria, Environmental Resources Development Programme The objective of this study was to identify viable projects to address resource problems faced by people in the tin-mining region of Nigeria's Jos Plateau. Researchers focused on two communities – Marit and Wereng. Identifying priority projects required reliable, yet quick and cost-effective, appraisals to be performed by researchers in collaboration with community residents, members of the relevant departments of Jos University and	Considered in the revision, but space is tight.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>representatives of local government and non-governmental offices.</p> <p>In the past, rapid appraisals had been criticised for only studying areas that were easily accessible, for focusing exclusively on the elite or affluent community members, and for scheduling according to needs of researchers rather than the needs of the local communities. Researchers had also failed to recognise the value of indigenous knowledge and did not report back to the communities on what they had learned, or how the information would be used.</p> <p>To avoid these biases, the study team used the Rapid Rural Appraisal (RRA) approach, which incorporates the following concepts:</p> <p>Appropriate precision – gathering information at a sufficient level of accuracy. If you need monthly rainfall information, do not collect daily data.</p> <p>Optimal ignorance – understand what you don’t need to know and don’t waste time getting it.</p> <p>Value of indigenous knowledge – local people can have important information to share, and should also be informed of the findings of studies.</p> <p>Triangulation/Iteration – ensure that you are getting a realistic picture by comparing the information from one source with that from other sources.</p> <p>Flexibility – this turned out to be a key concept for this study, as logistical problems shifted the timeframe considerably.</p> <p>Interactive teamwork – a small team with mixed skills, each member assigned a specific role.</p> <p>The study areas were identified using a Rapid Rural Reconnaissance process (Chambers, 1983). In this process, the local people identified the most vulnerable areas. This is important when secondary data sources (maps, reports, etc.) are of poor quality or out-of-date.</p> <p>Data collection – The team used a number of techniques to create a history of the communities: past events, how they had affected the community, and effective responses. Qualitative methods: in-depth interviews; informal, spontaneous conversational</p>	

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>interviews; semi-structured interviews (topics were pre-selected, but not the actual questions) and standardised, open-ended interviews (structured questions). Diagram techniques: participatory mapping of the community; transect walks through agricultural zones; Venn/Chapatti diagrams of organisational structures. Trend analysis: daily activity charts (chart people’s locations throughout the day); seasonal and annual calendars. Having synthesised the RRA data, the team – together with the community – identified the key issues, grouped and prioritised them. The Marit team decided to take a multi-purpose approach and identify projects that could involve more than one key issue at the same time. They came up with 22 possible projects, and reduced these to nine “best bet” projects. The Wereng team undertook a similar project identification process. To assess project viability, the Wereng team used the following criteria: productivity, sustainability, stability, equity, cost, time to benefit, social, technical and institutional feasibility.</p> <p>(Leila Devia, National Industrial Technology)</p>	
E-20-451	A	30	36	30	37	<p>It is important to think about levels at which action takes place in practice, and how best to build on local perceptions and capacities.</p> <p>(Camilla Toulmin, International Institute for Environment & Development)</p>	Will add new references as per responses to comments 416-503 for Section 20.8
E-20-452	A	30	37	30	37	<p>isn't there anything more recent than 1992?</p> <p>(Silvia Llosa, ISDR System)</p>	Thank you; editing executive summary
E-20-453	A	30	46	31	7	<p>There has been a lot of criticism of this work, which basically suggests that social science methods (including stakeholder engagement) are useful in understanding how society makes decisions. This is a trivial point to make - engaging people in research is what various social sciences have been trying to do for many years, we have 40 years of in-depth research in participatory methods. The references cited in this section are not 'real participation' they are the application of social science methodology to understand a problem - that is very different (and that is very common). You need to see the literature from the development and politics fields on participation to get a better feel for where it is at right now, e.g. Bulkeley, H. and A. P. J. Mol (2003). "Participation and Environmental Governance: Consensus, Ambivalence and Debate." Environmental Values 12(2): 143-154. Kasemir, B., J. Jager, et al. (2003). Public participation in sustainability science. A Handbook. Cambridge, Cambridge University Press. Parkins, J. R. and R. E. Mitchell</p>	Will obtain reference

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(2005). "Public participation as public debate: A deliberative turn in natural resource management." <i>Society & Natural Resources</i> 18(6): 529-540. Rowe, G. and L. J. Frewer (2000). "Public Participation Methods: A Framework for Evaluation." <i>Science, Technology & Human Values</i> 25(1): 3-29. (Emma Tompkins, Oxford University)	
E-20-454	A	30				F20.9 should be here (Clair Hanson, IPCC TSU)	Will obtain reference
E-20-455	A	31	1	31	1	political and cultural aspects also need to be integrated (Silvia Llosa, ISDR System)	Will obtain reference
E-20-456	A	31	3	31	3	Table 12.5. "Movement of populations to southern Europe" – This is disputable, considering the unpleasant increasing summer temperatures. Retired people or independent workers, might consider a 2nd residence in the south that would be used for about half of the year. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	Will obtain reference
E-20-457	A	31	6			Comment: another tool tested recently in the UK that you may like to refer to is deliberative mapping (see http://www.deliberative-mapping.org/)- an innovative way of consulting experts and citizens on particularly complex issues involving deep ethical and moral elements. (Irene Lorenzoni, University of East Anglia)	Refers to references in comments 416-419; will obtain these and cite; can also cite 17.4.1
E-20-458	A	31	11	31	14	Haas' work is on transboundary and global environmental issues, but the argument can be directly applied to the domestic application of usable knowledge as well. (Peter Haas, University of Massachusetts)	See comment #420; Will check for these references; some may be difficult to obtain in time, but should be able to get most of them
E-20-459	A	31	16	31	18	"However ...requirements." Some of the countries now use their land to provide food for Europe ALREADY need this land for their own populations. However, as a consequence of their political situation and or lack of infrastructures /coordination, and so on, this is not yet happening. (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	See comments 416-421
E-20-460	A	31	20			Comment: some definition of 'participatory governance' is needed here, as this terminology is of recent use amongst academic circles mainly in developed nations (see also H.Schneider, 1999, at http://www.eldis.org/static/DOC6953.htm). (Irene Lorenzoni, University of East Anglia)	ok
E-20-461	A	31	27	31	28	Can you provide more information on how national and local institutions change their role in governance? (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Agree; will try to obtain references on these projects.
E-20-462	A	31	29	31	30	very unclear what this means Page 32 lines 3-4: what does this mean? Far too many words strung together in meaningless fashion.	Ok—edit

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Camilla Toulmin, International Institute for Environment & Development)	
E-20-463	A	31	33	31	37	In practice, Participatory Integrated Assessment (PIA) and Participatory Rural Appraisal (PRA) exhibit considerable overlap. Note PIA is more commonly used among development practitioners to refer to Participatory Impact Assessment - measuring the impacts of development projects. Although PRA has a strong "selecting between development options" component, it is mainly a research tool to collect baseline socio-economic data - wealth rankings, village characteristics, number of wells, power relationships among different groups, seasonal calendars of crops and other activities etc. As such, it should also be seen as a research methodology that produces results that have policy implications. In practice it is likely that PIA focuses more on environmental issues than PRA which focuses more on socio-economic data although that is a generalization. In that context PRA produces superior information on the current institutions, wealth endowments, and power relationships among community agents (this is a large part of adaptive capacity). PIA provides insights into multidimensional ecological-social relationships. (John Drexhage, International Institute for Sustainable Development)	Will obtain references
E-20-464	A	32	6	32	6	Suggestion: include an additional sentence "Riedlinger and Berkes (full reference: Riedlinger, D., and F. Berkes. 2001. "Contributions of traditional knowledge to understanding climate change in the Canadian Arctic". Polar Record 37: 315-328.) find that indigenous knowledge may complement scientific approaches to understanding climate change by: (i) providing local scale expertise; (ii) providing a source of climate history and baseline data; (iii) assisting in formulating research questions and hypotheses; (iv) providing insight into impacts and adaptation in indigenous communities; and (v) assisting in long term, community-based monitoring." (John Drexhage, International Institute for Sustainable Development)	Wrong section—does not pertain to chapter 20
E-20-465	A	32	12	32	12	Suggestion: include an additional sentence: "Traditional knowledge was used extensively in a project to document climate change in Canada's Western Arctic and explore how Inuit knowledge can enrich scientific research. (Ashford, G. and J. Castleden, 2001. Inuit observations on climate change: final report. Winnipeg: International Institute for Sustainable Development http://www.iisd.org/pdf/inuit_final_report.pdf)." (John Drexhage, International Institute for Sustainable Development)	See comments #429-432. Need to reconcile differing reviewer opinions.
E-20-466	A	32	28	32	31	This entire issue - the fusion of top down and bottom up impacts model needs considerably more attention than a few sentences. In fact, given the theme of this chapter, it probably warrants consideration as a discrete section. Conclusions	Will consider suggested revision. Also see comments #428, 430-432, government comment #96.

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						should also be included in Executive Summary. (John Drexhage, International Institute for Sustainable Development)	
E-20-467	A	32	30			Comment: the authors of this chapter may consider commenting briefly here on the efficacy of participatory processes (or even PIA) in influencing policy. Undoubtedly these processes have an important role in fostering deliberation amongst their participants. However, there are very few examples of where the outcomes of such processes have been incorporated into, or at least taken into account, at the point of policy making. This should not deter the use of PIA or other participatory methods. Rather, the question is being clear about the use and usefulness of their outputs and outcomes. If processes do not deliver what people expected (for a variety of reasons), erosion of confidence and trust from the participant parties may ensue, making them futile. (Irene Lorenzoni, University of East Anglia)	Will consider along with #428-429.
E-20-468	A	32	33	34	43	There is so much literature missing from this section. Check the LCA website to start, see Schipper and Pelling (2006), In addition see: The special issue of Climate Policy, Volume 3, Supplement 1, (November 2003), edited by M. Munasinghe and T.E. Downing, on Climate Change and Sustainable Development; Also see the special issue of Global Environmental Change by Adger et al 2005: Adger, W. N., N. W. Arnell, Tompkins, E.L. (2005). "Successful adaptation to climate change across scales." Global Environmental Change 15(2 [SPECIAL ISSUE]): 77-86. See also: Adger, W. N., S. Huq, et al. (2003). "Adaptation to climate change in the developing world." Progress in Development Studies 3(3): 179-195. (Emma Tompkins, Oxford University)	Will consider; see #430.
E-20-469	A	32	33	34	46	Good material, but not written all that clearly. Suggest a strong grammar cleaning. (John Drexhage, International Institute for Sustainable Development)	This issue is likely covered in WG3.
E-20-470	A	32	33	35	11	I would suggest deleting most of this section and re-writing. Much has already been achieved in this area which this section does not reflect at all, I repeat the comment I made regarding section 20.5: Thinking in this area has progressed significantly since this chapter outline was drawn up. In 2002-3 there was a lot of discussion on how climate change adaptation, sustainable development, vulnerability and disaster risk communities could join together, since then there have been many events which have done exactly this, there have been joint publications such as the special issue of Disasters edited by Thea Hihorst and Madeleen Helmer, see DISASTERS 30 (1): 49-63 MAR 2006, the emergence of the Linking Climate adaptation network (http://www.linkingclimateadaptation.org/), which has held online conferences on adaptation, disasters, development and risk, for many published references in this area see: http://www.eldis.org/climate/adaptation/themes/drr.htm	Wrong section—does not pertain to chapter 20

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Emma Tompkins, Oxford University)	
E-20-471	A	32	33			<p>We would like to flag two major problems relative to the incorporation of climate risks into development practices and plans:</p> <p>1) Most of the climate scenarios deliver projections at the regional level. Policy makers need specific information at the sub-regional, and/or local level.</p> <p>2) Time frame of climate projections are too far in the future when effective planning requires near future scenarios (next 5 to 10 years).</p> <p>It seems that disaster risk reduction approaches provide one answer to overcome these problems, as disaster are precursors of impacts of climate change.</p> <p>We also believe that this section lacks examples. We believe a box describing three different situations – one where climate change adaptation is being implemented and is driving sustainable development (Caribbean); one where development trends are such that adaptation and sustainable development are not feasible without a huge change in governmental policies (Ethiopia); and one where sustainable development is driving adaptation (Costa Rica) could be useful. [countries indicated is () are where we believe relevant projects can be found]</p> <p>Mention should be made of the regional effort in the Americas on bringing climate change adaptation (science) and development communities together. Sources of information include:</p> <p>1. the Mountain Research Institute (MRI) web site for its recent meeting in Argentina (April, 2006) where numerous examples of this issue are presented.</p> <p>2. the GEF/Water Programme web site, particularly for projects in Latin America, that deal with willingness to pay (and the Gov. of Costa Rica web site for a specific GEF project on payment for services). Cost benefit tools ultimately are used to justify someone's ends (prime examples are the agriculture, energy and water sectors where disaster risk reduction is seldom mentioned) even if the means negatively impact some populations.</p> <p>(Silvia Llosa, ISDR System)</p>	Will consider
E-20-472	A	32	39	32	40	<p>downshifting movements around the world would contest this information. Moreover it is not only a question of equitable distribution but also one of preserving life's sustainaing resources.</p> <p>(Silvia Llosa, ISDR System)</p>	Will reconcile for consistency with statements on MDGs
E-20-473	A	32	40	32	43	<p>There are several problems associated with the statements: "... but, unless growth is equitably achieved ...[THRU]... free market policies undertaken by them."</p> <p>A. These statements seem to be concerned with income levels rather than the full suite of development outcomes. Whether or not income equalities have been exacerbated, development outcomes such as life expectancy, infant mortality (and,</p>	Will cite chapter 18, 20.3.3 and 20.8.3; Dang already cited in the chapter; other references will be added (Goklany reference if published by the deadline); will consider suggested additional text; also see comments #416-419

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						<p>by extension, other mortality rates) percent of children in the labor, and education, have generally improved around the world in the last several decades, and, in fact, inequalities with respect to these measures are shrinking. The exceptions seem to be in areas that have been unable to get the benefits of globalization because they recently suffered economic setbacks or are currently suffering from such setbacks, or are beset by diseases such as malaria, AIDS and tuberculosis. These countries include Russia (although its economy is doing well today), other former communist countries in Eastern Europe and the former Soviet Union, and countries in Sub-Saharan Africa. All this is laid out in detail in Goklany (2002).</p> <p>B. Perhaps measured by the number of countries, global poverty may be exacerbated, however, in terms of population, a smaller share of the global population seems to be poor (based on numbers living on less than \$1 and \$2 per day). See: World Bank: 2005. Global Economic Prospects 2005, Tables 1.5 and 1.6. In fact, as GEP 2005 notes the MDGs for poverty are on track because of robust economic growth, particularly in South and East Asia, owing, in large part, to policies that have freed up markets substantially.</p> <p>(Indur Goklany, US Department of the Interior)</p>	
E-20-474	A	32	40	32	40	Table 12.6 – Forest, grasslands, shrublands Please include “Improved knowledge of trophic chains and food webs functioning” (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	Will add reference
E-20-475	A	32	43	32	43	Revise: "200x" (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	edit
E-20-476	A	33	0			Table 12.6. – Biodiversity : Please include Improved inventories of biodiversity. Please note that for many regions of Europe a large fraction of the invertebrate fauna has never been inventoried and Red books do not exist (for invertebrates). (Maria Paiva, Faculty of Sciences and Technology, Universidade Nova de Lisboa)	Add text on this
E-20-477	A	33	2	33	24	this paragraph needs re-thinking - perhaps could be cut. (Camilla Toulmin, International Institute for Environment & Development)	Will consider additional text on these points, subject to limits on chapter length; see comment 442
E-20-478	A	33	2	33	14	I would delete this section, if this is retained it needs to be re-written, it is poorly written with long, convoluted sentences. (Emma Tompkins, Oxford University)	See comment #442
E-20-479	A	33	3			But --> However (Clair Hanson, IPCC TSU)	Will try to obtain these references—addresses concerns in comment 440
E-20-480	A	33	9	33	14	This may give the false impression that technologies can fully solve the problem, i.e. no behavioral change is required (Silvia Llosa, ISDR System)	Already cited Garande and Dagg critique as well as Cooke and Kothari; Add references from Ecology & Society special issue

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
							(including Adger, Young); also Welp et al., Lemos, Gibson et al., Allen, Orindi, Alam, Elasha, Iwanciw—Bolivia, Huntington, Kandlikar and Risbey; also see comment #453
E-20-481	A	33	16	33	30	I would delete this section. Decision criteria are introduced with no justification, only one reference. (Emma Tompkins, Oxford University)	See comment #443
E-20-482	A	33	19	33	21	repeated text? (Camilla Toulmin, International Institute for Environment & Development)	See comment #443
E-20-483	A	33	19	33	20	Redraft the sentence. The expression "keeping in" is used twice making the sentence unclear. (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	See comment #443
E-20-484	A	33	19	33	21	20.8.3: There is a crucial sentence here: "The key message . . ." Unfortunately, the sentence is absolutely unreadable. (P. H. Liotta, Pell Center for International Relations and Public Policy)	See comment #443
E-20-485	A	33	19	33	21	needs rewriting, add 'climate variability' to 'climate change' on l.21 (Silvia Llosa, ISDR System)	Add publications by Chambers, Rambaldi, Corbett, Kabat
E-20-486	A	33	20	33	20	replace "keeping in sharp view" with "and". (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Will add text to beginning of section
E-20-487	A	33	20			Editing comment: there is some repetition in this sentence using 'needs keeping in sharp view' (Irene Lorenzoni, University of East Anglia)	This refers to a box in Conde and Lonsdale (chapter in Lim et al.--adaptation policy framework publication); will add cite
E-20-488	A	33	26	33	26	Remove the first "." after "climate change" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Will add text; also see comment #452
E-20-489	A	33	39	33	41	I would like to highlight the sentence starting 'Gardiner (2004)...' as this is the only reference made in this entire chapter to intergenerational ethics!!! (Emma Tompkins, Oxford University)	Add Vlassova, Berkes, Huntington, ACIA, Inuit document (Nickels et al.) and document from Furgal et al.; new book by Reid, Berkes, Wilbanks & Capistrano (2006) linking TEK and science; create BOX (Box 20.1) listing indigenous knowledge examples related to adaptation and sustainability—contributes to cross-cutting WG2 case study on application of indigenous knowledge

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
E-20-490	A	33	41	33	44	The discussion in this paragraph needs to be expanded identifying additional areas where potential synergies exist. Accordingly the two (whole sentences) on these lines should be modified to read as follows: “Beg et al. (2002) outlines such challenges as well. He and Goklany (2000a, 2006a) also identify potential synergies between climate change and other policies that could facilitate adaptation such as those that address desertification, biodiversity, hunger, water stress, coastal flooding, and malaria.” References are provided in the foregoing comments. (Indur Goklany, US Department of the Interior)	The focus here is on application of participatory processes to climate change futures, which is different from local-scale development futures (e.g. proposals for buildings, mines, etc.) because of scientific uncertainties, difficulties in visualization and translation—communication (related to other comments on crossing scales); agree that it is important to add references on methodological issues related to public participation; Add Bulkeley, Parkins, Rowe, also see recent issue of Environment magazine for article comparing results of citizen processes (citizen jury?); need to acknowledge concerns related to access to resources and response options at local scales
E-20-491	A	33	47			There should be a new paragraph that addresses the importance of developing, nurturing and/or strengthening the institutions that underpin economic development, build technological prowess and human and social capital, since they would help address climate change and sustainable development simultaneously. References have been provided previously. (Indur Goklany, US Department of the Interior)	Figure placement
E-20-492	A	33	48	33	51	sentence not clearly written, hard to understand what is meant (Emma Tompkins, Oxford University)	Will add text
E-20-493	A	34	6	34	7	replace 'climate change' by 'climate-related risks' because it is recognised that present climate-related disasters are hindering poverty reduction strategies and that disaster risk reduction too needs to be mainstreamed with climate change adaptation within the development process. These lines can refer to 'Schipper, L., M. Pelling (2006) 'Disaster Risk, Climate Change and International Development: Scope for, and Challenges to, Integration', Special issue of Disasters, 30 (1): 19-38'. (Silvia Llosa, ISDR System)	Wrong chapter
E-20-494	A	34	7			For transparency and accuracy, replace “Climate change” with “Climate, climate variability and climate change.” (Indur Goklany, US Department of the Interior)	Will consider
E-20-495	A	34	9	34	11	A. Qualify “Projected climate change” with “in the long term”. [For the rationale, see comments referring to Ch. 20, p. 24, lines 2-3.] B. For the same reason, replace, “for the attainment of MDGs” with “attaining or	Revise text

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						maintaining goals associated with sustainable development”. (Indur Goklany, US Department of the Interior)	
E-20-496	A	34	24	34	43	you may consider the placement of these paragraphs which do not fit very well here (Silvia Llosa, ISDR System)	Wrong chapter
E-20-497	A	34	24	34	26	write out UNFCCC COP, replace 'lesser' by 'least' (Silvia Llosa, ISDR System)	Add Schneider 1999; also see comments #416-419, 443
E-20-498	A	34	24	34	46	Additional information: GEF has recently started CBA (Community-based adaptation) pilot projects in several countries (Bangladesh, Bolivia, Niger and Samoa): projects addressing community-based adaptation will essentially create small-scale ‘policy laboratories’ and generate knowledge about how to achieve adaptation at the local level through more effective national and intergovernmental policies.(Ref: GEF (2005): Community based adaptation programme: PDF-B: CBA Inception meeting, Bangkok). Disaster risk reduction is a core component of the project, which will be formulated to a full-size GEF proposal over next several years. The outputs of this project will be incorporated in the GEF’s Adaptation Learning Mechanism. (see http://www.gefonline.org/projectDetails.cfm?projID=2774 and Apart from GEF funding, ADB (Asian Development Bank) has started a PEF (Poverty Environment Fund) in 2004, and recently funded a project on community-based climate change adaptation to cope with natural disaster in Central Vietnam. (see http://www.adb.org/Projects/PEP/vie-edm.asp) You may consider the following text for inclusion as a box: A community based climate change adaptation project was funded by the Asian Development Bank (ADB) through its Poverty and Environment Fund (PEF), and was jointly implemented by CECI, a Canadian NGO and the Kyoto University Graduate School of Global Environmental Studies. The project adopted a unique approach of research, implementation and policy studies with participation of different stakeholders in the Thua Thien Hue Province of Central Vietnam. The project area of central Vietnam is already subject to changes in rainfall and typhoon patterns, which are linked to climate change. The project incorporated a three-stages approach: assessment of climate risk, planning of safer village/ commune/district, and implementation of specific sub-projects. The whole process was implemented in close cooperation with the local government, and training was provided to “change agents” to enable them explain climate risks to communities. The key point of the project was the incorporation of climate risks into local development plans. It was possible through continuous communication with local policy-makers and grassroot field implementation. (see "Shaw R. (2006): Community base climate change adaptation	See comment #460

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						in Vietnam: inter-linkage of environment, disaster and human security, In: Multiple dimension of global environmental changes, edited by S. Sonak, TERI publication, 521-547." and http://www.adb.org/Projects/PEP/vie-edm.asp (Silvia Llosa, ISDR System)	
E-20-499	A	34	34			Viet Nam --> Vietnam (Clair Hanson, IPCC TSU)	Does this refer to this chapter?
E-20-500	A	34	35	34	36	CDM needs to be explained (Silvia Llosa, ISDR System)	Will consider additional information on PRA (publication by Richard Ford—Clark University)
E-20-501	A	34	38	34	43	list of activities eligible at present could be given (see UNFCCC website and recent COP decisions) (Silvia Llosa, ISDR System)	Add Krupnik and Jolly; Furgal et al (see comment #452)
E-20-502	A	34	45	34	46	these lines do not fit here. Should they be somewhere else, or cut? (Camilla Toulmin, International Institute for Environment & Development)	See comment #464; also add Inuit document (see comment #452)
E-20-503	A	34	49	35	11	why is there a section here on the social cost of carbon. Irrelevant - delete. (Emma Tompkins, Oxford University)	Can cite section 2.2.1.3
E-20-504	A	34	49	35	11	Section 20.8.4 Improving understanding of the social cost of greenhouse gases. An important part of the Chapter is devoted to SCC. Could you please add in this section some comments to clarify relationship between a) mitigation cost, b) the timing of mitigation and cost implication, (a and b probably Chapter 10 WG III), c) the current carbon price for CDM projects and d) the SCC as impacts from CC). I suggest it could help to the purpose of the section. (Juan Llanes-Reguerio, University of Havana)	Agree; this is consistent with proposed revision of this section.
E-20-505	A	34	49			is there any potential for a section on appropriate scales of mitigation assessments? Interesting work has been done by the Union of Concern Scientists on the regional impacts of global warming, and Haas 2004 argues that mitigation studies should be conducted at the level of the most direct political mobilization. (Peter Haas, University of Massachusetts)	Add Schipper, Adger (see comment # 443); also Wilbanks, Najam, Davidson, Dang, Swart (some of these already cited elsewhere in the chapter)
E-20-506	A	35	4			remove 'a' (Clair Hanson, IPCC TSU)	edit
E-20-507	A	35	8			A. Introduce a new paragraph after "...contingent effects" that would read as follows: "Exacerbating matters is that impact assessments do not fully account for changes in adaptive capacity over time due to changes in the level of economic development, secular changes in technological prowess, or projected changes in social and human capacity. These factors affect impacts estimates through changes in adaptive capacity (Goklany 2005c, 2006a). This is important so that impacts	See comments #468, 469, 493, 498; can cite Disasters special issue

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						assessments are not internally inconsistent with the scenarios used to drive climate change. ” B. Start a new paragraph with “Expanding research...” and replace “...this arena ...” with “these arenas...” (Indur Goklany, US Department of the Interior)	
E-20-508	A	35	14	35	48	Priorities for research on adaptation and development are now: 1. understanding which adaptations are compatible with sustainable development paths. This requires the application of many of the tools and methods that have been developed over the past 5 or so years, i.e. vulnerability mapping, adaptation monitoring etc.. 2. We need to invest more in decision support tools, there is an over-emphasis on the need to make decisions based on the social cost of carbon, yet still we cannot find a price. There are other decision support tools that could be used and developed to ascertain whether they are useful in helping prioritise spending, taking climate change into account. 3. What are the appropriate decision criteria for decision support tools? Is cost effectiveness (i.e. social cost of carbon arguments) adequate? If not, what other criteria should be used and how can these be applied in decision support tools? (Emma Tompkins, Oxford University)	See comment #470; Link with 20.5; cases offered but references not provided; will look at GEF web site
E-20-509	A	35	14	35	48	Most of the ideas listed in this section are a bit dated, hence I would delete this entire section. I would suggest a different set of uncertainties and unknowns, I would argue that much is known about how we can reduce vulnerability, there is a rapidly growing body of literature on the links between development, risk management, vulnerability and climate change. However, we still do not know what the regional and local impacts of climate change might be. Clearly there needs to be on-going investment in regional and localized models of climate impacts, but equally there needs to be greater communication of what is known. So, for example, could the UK Climate Impacts Programme (see www.ukcip.org.uk) be an effective model for helping other countries adapt? Is such a model likely to generate sustainable outcomes? How would such a model work in developing countries? What type of infrastructure is necessary for such a model of communication to work? (Emma Tompkins, Oxford University)	See comment #473
E-20-510	A	35	14			Section 20.9 contains some excellent points, but is poorly written in english (probably a German who wrote the text). Suggestions for improvements follow: (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	Cite World Bank (2005) regarding MDG
E-20-	A	35	14			any potential for looking at the varieties of political capital by which resilience and	Wrong chapter

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
511						mitigation may occur? (Peter Haas, University of Massachusetts)	
E-20-512	A	35	14			Again, this section does not address climate outside the GHG problematic. We suggest the following to complete the panorama of this section. Research to enhance links between disaster risk reduction and climate change adaptation and promote converging agendas should include: Action-oriented research: at field level to understand people's perception and factors influencing action. This will help understand the cultural context for climate change adaptation. Policy-oriented research: develop policy framework to incorporate disaster risk reduction and climate change issues in local development plans and policies. Analytical research to develop local climate scenarios and near future projections, as well as put together information available on risk reduction, disaster response and adaptation to climate-related risks in a way that can be articulated for different sectors of society Process-oriented research to develop and enhance synergy among the above three research outputs. Other challenges for greater interaction between disaster risk, climate change and international development are described in Schipper, L., M. Pelling (2006) 'Disaster Risk, Climate Change and International Development: Scope for, and Challenges to, Integration', Special issue of Disasters, 30 (1): 19-38 as well as in 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). (Silvia Llosa, ISDR System)	Update citation
E-20-513	A	35	16	35	21	Jargon filled text. (Camilla Toulmin, International Institute for Environment & Development)	Wrong chapter
E-20-514	A	35	16	35	16	add after 'sustainable development', ', disaster risk reduction' (Silvia Llosa, ISDR System)	Revise text
E-20-515	A	35	17	35	18	Replace the part of the sentence "...but there is a need...productively." with "...but there is a need for these communities to develop means through which to integrate their efforts more productively." (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	See comment #477
E-20-516	A	35	17	35	17	Typo error - "but there is a need is to develop means by which these communities can integrate". (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University	See comment #477

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Sao Paulo)	
E-20-517	A	35	17	35	17	rephrase "change communities, but there is a need is to develop means by these communities can integrate" by "change communities, but there is a need to develop means by these communities to integrate" (Sabine Wurzler, North Rhine Westphalia State Environment Agency)	See comment #477
E-20-518	A	35	17			remove 'is' after 'need'; insert 'which' after 'by' (Clair Hanson, IPCC TSU)	Revise text
E-20-519	A	35	18	35	18	replace the word "efficacies" with "efficiency" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	See comment #481
E-20-520	A	35	20	35	20	replace the last sentence with "Moreover, engaged stakeholders can inform both the sustainable development and the climate change communities." (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	See comment #481
E-20-521	A	35	24	35	24	Replace the word "in" with the word "towards" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	See comment #481
E-20-522	A	35	24	35	27	Important observation - should be in Executive Summary. (John Drexhage, International Institute for Sustainable Development)	See comment #481
E-20-523	A	35	25	35	25	Not sure what is meant by the term "coincident improvement"? Perhaps "consistent improvement"? (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	See comment #481
E-20-524	A	35	29	35	29	replace the word "casting" with "forecasting" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	See comment #481
E-20-525	A	35	29	35	44	This statements are fundamental, maybe be the most important in the present discussion. They should be expressed more heavily! (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	See comment #481
E-20-526	A	35	29	35	31	understanding of how adaptive capacity evolves is important and should explicitly include disaster risk reduction (Silvia Llosa, ISDR System)	Add Thomas and Twyman, Coward (in Coward and Weaver), Barnett and Adger, Brown, D'Arge et al.Ekeli, Shue, Kemfert and Tol, Page, Hasselman
E-20-527	A	35	29			casting? (Clair Hanson, IPCC TSU)	Beg reference already covers this
E-20-528	A	35	42	35	48	more jargon filled text. Try to re-phrase in simple clear English. (Camilla Toulmin, International Institute for Environment & Development)	See government comment #96, expert comment #429 regarding additional text on

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
							institutions to be placed in earlier section
E-20-529	A	35	43			a null set? (Clair Hanson, IPCC TSU)	edit
E-20-530	A	36	1			<p>The opportunity brought by disaster risk reduction for climate change adaptation in the context of sustainable development is not clearly stated in the concluding thoughts. Disaster risk reduction is an integral part of looking at sustainable development through the climate change lens. Quite often by identifying natural hazard risks – atmospheric, hydrologic and geologic – which are triggered by climate events, and by examining the physical, financial and economic aspects of the risks, one can be quickly led to an understanding of who is vulnerable, why, who pays and who benefits. The climate change and sustainable development communities can only be benefited by including disaster risk reduction in the dialogue and by using specific natural hazard risks created or increased by climate change as a means to set agendas, research priorities and most importantly, action in real time by those most vulnerable at the local level. As a matter of fact, this issue is lost after section 20.5 and the chapter is so fragmented that elements are not put together in a context. A storyline is missing and the logic of the different sections should be explained. The references mentioned throughout the ISDR system comments provide language to write appropriate text in the concluding section. We also propose the following sentences for your consideration 'Reducing losses to weather-related disasters, meeting the Millennium Development Goals and wider human development objectives, and implementing a successful response to climate change are aims that can only be accomplished if they are undertaken in an integrated manner.' (Schipper, L., M. Pelling (2006) 'Disaster Risk, Climate Change and International Development: Scope for, and Challenges to, Integration', Special issue of Disasters, 30 (1): 19-38) or 'Strategic coordination including the exchange of information, methodologies and tools between experts and institutions working on disaster risk management, climate change and development is essential for diminishing the impacts of natural disasters and improving the sustainability of development processes.' (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))</p> <p>The conclusion could also note that emphasis will be required on project based implementation, advocacy and awareness raising if the three realms of action are to be mutually reinforcing and leading to truly integrated and more sustainable development.</p>	Add Schipper cite; put AfDB cite in this sentence; both cites refer to climate change because this can change existing climate-related risks, including risks due to historic variability in climate (due to potential changes in climate and climate variability/extremes—cite chapter 2; also chapter 19), and that is one of the new challenges created by human-induced climate change

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Silvia Llosa, ISDR System)	
E-20-531	A	36	3	36	9	It's not clear to me that changes in adaptive capacity over time have been considered in these studies. This should be discussed, noting that this could be a serious deficiency (Goklany 2005c). (Indur Goklany, US Department of the Interior)	See comment #493
E-20-532	A	36	4			stock and trade --> stock in trade (Clair Hanson, IPCC TSU)	Edit; for B, cite 20.7.1
E-20-533	A	36	6	36	12	Those results come from the Tol (2005) study (see section 20.6.2). Give the reference! (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Will consider
E-20-534	A	36	6		8	this sentence comes out of the blue. Suggest inserting 'in the SCC' between estimates and runs (Clair Hanson, IPCC TSU)	Edit; glossary—COP definition (copy from WG3)
E-20-535	A	36	13	36	17	Transfer Figure 20.9 to an earlier page. There is no reason to be so far from the discussion in the text. (Jose Roberto Moreira, National Reference Center on Biomass - IEE, University Sao Paulo)	Add GEF documents, Shaw; AIACC case studies
E-20-536	A	37	2	37	2	replace the word "like' with "such as" (Bano Mehdi, Canadian Climate Impacts and Adaptation Research Network (C-CIARN))	edit
E-20-537	A	37	2	37	17	I feel that these concluding thoughts are a bit weak, is this really all we can say in conclusion from this chapter - that we don't know who will suffer more - surely there are more interesting things to say? (Emma Tompkins, Oxford University)	Cite glossary WG3??
E-20-538	A	37	4			cast? (Clair Hanson, IPCC TSU)	Cite section 17.4
E-20-539	A	37	10	37	12	It's not clear to us that the wrong lessons are not being learnt from both the 2003 heat wave and Hurricane Katrina. With respect to the heat wave, the problem wasn't that adaptive capacity was overwhelmed as much as adaptive capacity was not deployed. One could make the argument that the basic problem might be that while the European politicians were talking a lot about climate change they were unprepared for manifestations for any of its consequences. The next time around, one should expect Europe to be better prepared, and the toll of more of these heat waves should be much reduced. The lack of deployment of adaptive capacity also applies to Hurricane Katrina. Moreover, the adaptive capacities of developed nations are less likely to be overwhelmed. Accordingly, I would rewrite the sentence extending from line 8 to line 11 as follows:	Move to 20.9

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						“Doing so supports the long-held opinion that developing countries are generally more vulnerable than developed countries. However, if the effects of climate change on the chosen metric are too severe that they can overwhelm the capacities of even the most advanced economies to adapt, or if available adaptive capacity is not deployed, the effects could be disastrous.” (Indur Goklany, US Department of the Interior)	
E-20-540	A	37	12	37	12	Date of Katrina hurricane? (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Move to 20.9
E-20-541	A	37	13	37	13	inappropriate metaphor given previous sentence. (Camilla Toulmin, International Institute for Environment & Development)	Revised and shortened
E-20-542	A	37	13			it's either 'carries weight' or 'holds water' (Clair Hanson, IPCC TSU)	Revised and shortened
E-20-543	A	37	19	37	33	Very important statement! This paragraph could be swap with the next one, which I feel less strong, in order to be the final conclusion of the chapter. (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Revised and shortened
E-20-544	A	37	20	37	20	after 'climate', add 'vulnerability and' (Silvia Llosa, ISDR System)	Revised and shortened
E-20-545	A	37	31	37	33	You have not proven this final sentence at all in this chapter. (Emma Tompkins, Oxford University)	Revised and shortened
E-20-546	A	37	31	37	33	Contrary to what the sentence commencing on line 31 claims, the so-called “conclusion” articulated in this sentence comes as a surprise because we disagree with its specifics. With sufficient qualifications and some clarification this might be acceptable. We recommend the following substitute: “It is therefore no surprise to conclude, with high confidence, that In the long term, i.e., several decades hence, increased vulnerability to climate change can impede nations’ abilities to move along sustainable development pathways; and vice versa. On the other hand, lack of sustainable development is a major reason for the higher vulnerability of developing countries.” Our precise rationale for this text is the following: First, with respect to the changes in the beginning portion of the sentence, as noted in our comments regarding Ch. 20, p. 24, lines 2-3, Results of various global impact studies compiled by Goklany (2003, 2005a) suggest that climate change will have a minimal impact, if any, on the achievement of the MDGs by 2015. Specifically his compilation indicates that by the year 2085, the contribution of climate change to populations at risk are for the most part (especially for hunger, malaria and water shortage levels, all of which are explicitly mentioned by the MDGs) projected to be small compared to contribution of other non-climate-change-related factors. Thus, it is unlikely that	Revised and shortened

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						the effect of climate change on sustainable development will be significant for several decades. With respect to changes in the latter part of the sentence, lack of development is precisely why it is generally assumed that developing countries will have difficulty in adapting. (Indur Goklany, US Department of the Interior)	
E-20-547	A	37	35	37	44	Add, as references to these lines: Goklany (2005a, 2006a). (Indur Goklany, US Department of the Interior)	Revised and shortened, but no references in concluding remarks
E-20-548	A	37	35	37	47	Excellent concluding paragraph. Again, main messages should be incorporated in Executive Summary. (John Drexhage, International Institute for Sustainable Development)	Revised and shortened
E-20-549	A	37	40	37	40	add 'environmental' to 'human and social' capital (Silvia Llosa, ISDR System)	Revised and shortened
E-20-550	A	37	44	37	47	I think this is such a shame to end IPCC WG2 in this way. There has been so much interesting and innovative work undertaken in this area in the past 5 years, and it is not reflected at all in this chapter. Please re-write this chapter, it could be so good, so useful and so positive, yet at present it is a rather dull mish-mash of old hat. (Emma Tompkins, Oxford University)	Revised and shortened the end...PAO prevented taking your suggestions for reorganization. I expect that you will be invited to give it a shot next time; accept the invitation for the preliminary meetings where suggestions for the PAO will be made!
E-20-551	A	38	1	45		I didn't review in detail the references. (Pierre Chevallier, Institut de Recherche pour le Développement - IRD)	Revised
E-20-552	A	38				Suggested commonly used citations for "Poverty and Climate Change" (please select according to your format): 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, which 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 recollection, the report was originally printed in Bonn, Germany. (Frank Sperling, World Bank)	Revised and shortened
E-20-553	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.	Considered in text; perhaps

IPCC WGII AR4 SOD *EXPERT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Washington, D.C. 42 pp. (Frank Sperling, World Bank)	
E-20-554	A	44	1		3	Please update the reference to Yohe et al (2006), which has now been accepted for publication. Brenkert and Malone is missing from the reference list. (Richard Tol, Hamburg University)	Done