



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

**Specific Comments**

**Chapter 20**

**December 5, 2005**

## 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 DECEMBER

### Substantive comments

- The chapter writing team should discuss all substantive expert review comments, by email and/or at Merida.
- 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 can be kept electronically, or with pen-and-paper.
- 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 **28<sup>th</sup> February 2006**.



# INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



WE HAVE RESPONDED AS BEST WE CAN FOR A CHAPTER THAT WILL CONTAIN 60% NEW MATERIAL IN THE SOD. SOME COMMENTS ARE PROVIDED, BUT WE MOSTLY INDICATE OUR THINKING BY CODE:

- D – DELETED COMPLETELY; NO NEED TO COMMENT FURTHER
- C – AGREE AND WILL INCLUDE RECOGNITION TO LANGUAGE LIKELY TO SURVIVE THE CUTS
- R – RECOGNIZE THE MERITS FOR A SECTION THAT WILL BE THOROUGHLY REVISED; WILL REFLECT CONTENT AS APPROPRIATE GIVEN THE NEW TEXT.
- N/A – NOT REALLY APPLICABLE TO CURRENT OR ANTICIPATED TEXT.

AGAIN, TO BE CLEAR....THE SOD WILL BE DRAMATICALLY DIFFERENT, AND MUCH OF THE TEXT THAT ATTRACTED THE ATTENTION OF THE REVIEWERS OF THE FOD WILL NO LONGER BE INCLUDED.

GY for the author team.

March 19, 2006

**IPCC WGII AR4 FOD Expert Review Comments**

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
20-0	A	0				<p><b>Co-chair and TSU comments</b></p> <p>Authors now need to read all other FOD chapters to identify key messages for Ch 20</p> <p>Suggest a map (to parallel table 1) that illustrates global distribution of sustainability and/or vulnerability, with climate change effects overlaid</p> <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>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 'knocked on the head?')</p> <p>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</p>	<p>We are going to try a map.</p> <p>We will be highlighting damages estimates.</p> <p>These two items will occupy up to 40% of the chapter (after your generous expansion of 3 printed pages); so much of the original material contained in the FOD will be deleted.</p>

**IPCC WGII AR4 FOD Expert Review Comments**

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						<p>agric prod potential changes, does this remove all pos effect in near term?</p> <p>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)</p> <p>Below are comments on ZERO-ORDER DRAFT by M. Parry in Jan 2005 [with note in square brackets regarding whether covered by FOD]:</p> <p>General comments:</p> <p>1) Intro should include summary of TAR conclusions regarding climate change and sustainability</p> <p>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]</p> <p>3) Prime objective of this chapter should be to give the reader the considered conclusions <b>**of the whole report**</b> 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; d) 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.</p>	<p>We will try to the degree possible, especially with respect to adaptation and mitigation material.</p> <p>Will do.</p> <p>Will do our best, though most will come from 17 and 18; not really enough space for other stuff</p> <p>The new emphasis will help here.</p>

**IPCC WGII AR4 FOD Expert Review Comments**

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						<p>4) can case studies but used effectively to illustrate. [FOD is better on this, now]</p> <p>5) Can the chapter conclude with a list of the key challenges to sustainability that thee p-make 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 millenium 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"> <li>• Summary of new knowledge relating to impacts and adaptation</li> <li>• Impacts and adaptation in the context of multiple stresses</li> <li>• Implications for environmental quality</li> <li>• Implications for risk, hazard and disaster management</li> <li>• Global and aggregate impacts</li> <li>• Implications for regional and sectoral development; access to resources and technology; equity</li> <li>• Sub-regional and local issues</li> <li>• Opportunities, co-benefits and challenges for adaptation (including over long term)</li> <li>• Uncertainties, unknowns, priorities for research</li> </ul> <p><b>(Martin Parry)</b></p>	<p>Case studies were NOT popular with reviewers looking for illustrations of general points. Each had its own peculiarity, and thus its own slow moving target vulnerability.</p> <p>Will try.</p> <p>Will cover.</p> <p>Deleted mostly.</p>

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20-1	A	0				Extremely well written - lucid, flows well and is very interesting. I am not familiar with the ground it covers, nor particularly with the literature referenced, and have very few detailed comments. However, there are strong parallels with the field of disaster risk management and many of the points about the failure to consider climate change could also be made about failure to consider disaster risk too. I think it would be worth stating this as greater consideration of both is required. (Charlotte Benson, Independent)	Thanks...hope the new version is similarly received.
20-2	A	0				Impressive first draft. Keep up the good work! (David Carr, University of California, Santa Barbara Department of Geography)	Ditto
20-3	A	0				In the whole chapter, it would be more explicit to cite "TAR", instead of "IPCC (2001a)" (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	OK
20-4	A	0				Overall: The wide ranging character of the issues covered in this relatively short chapter results in too many social science concepts being employed as unanalysed constructs, with the audience implicitly assumed to know what they mean. This introduces many ambiguities in to the text. The chapter is presently constructed more as an argument than as a distillation of what has gone before in previous chapters and what is relevant from the literature on sustainability. In redrafting the chapter thought might be given to beginning from a clearer and fuller statement of what is sustainability as a concept, what are the issues in sustainable development and the linkages to the climate change agenda of adaptation and mitigation, and then laying out a clear road map of how the chapter addresses these questions. (Edward Clay, Overseas Development Institute)	C
20-5	A	0				It is very relevant to end the report with a chapter related to sustainable development since it is the ultimate goal of all the countries of the world, especially of developing ones. It is also excellent to have reviewed the consistency and tension across on global policies on CC and SD. However, a more focused section on priorities for research would be required. Bringing climate to the development community or Bringing development and policy to the scientific community sound one way communication while in public participation process or awareness raising a bridge between policy and development on one hand and a bridge between scientists and development are certainly more appropriate. (Savitri Garivait, The Joint Graduate School of Energy and Environment (JGSEE))	R
20-6	A	0				generally a good focus on dealing with uncertainty associated with addressing	C

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						<p>questions of sustainability. It is about time. More on defining sustainability. Differentiate between substantive and procedural definitions.</p> <p>comment. Uncertainty. This is a defining property of climate systems. Clarify the interplay between different environmental threats, and at what temporal and spatial scales.</p> <p>procedural literature on dealing with uncertainties. Kasemir, Jager, Jaeger and Gardner 2003 Public Participation in Sustainability Science; Rayner &amp; Thompson chapter in Rayner and Malone 1997 Human Choice &amp; Climate Change vol 1, Ravetz &amp; Funtowicz, Haas 2004 "When Does Power Listen to Truth" Journal of European Public Policy (on the institutional limitations of the IPCC in its efforts to shape sustainability decisions)</p> <p>(Peter Haas, university of massachusetts amherst)</p>	
20-7	A	0				<p>The chapter is in an interesting way drawing on new literature related to disaster management and health issues that go beyond traditional climate change assessment, and in this way new insights are established about sustainable development (SD) and climate linkages. However, the chapter could in a more clear way distinguish between short term issues (like in disaster management) and longer term perspectives of climate change adaptation and SD linkages. Another general comment is, that the discussion about SD and adaptation is only very briefly touching on OECD countries, where it could be interesting to refer more literature on SD for example related to "climate vulnerable" sectors like agriculture and water management.</p> <p>Introduction, page 4 Conclusion 1 on the weakest of the determinants are given a too prominent role based on what the subsequent literature review can "carry" (see more detailed comments below). Conclusion 3 is very important and it is new and important to IPCC to be able to discuss equity not only in terms of fairness but also in a more institutional context. Conclusion 5. I think that is very narrow to talk about climate change only as a stress to SD, it is rather a general permanent key development constraint. Conclusion 7 is not correct. A number of DC's have included climate change impact and adaptation issues in MDG policies. See for example national communications from India and China, the interagency project on climate change and the vulnerability of the poor, and a number of ODA activities (Chapter 2 of WGIII has some references).</p> <p>(Kirsten Halsnaes, Riso International Laboratory)</p>	<p>Need to bring in scale issues.</p> <p>D</p> <p>R</p>
20-8	A	0				<p>The executive summary reads like a list of disjointed statements without any clear overall messages. Moreover, they are too condensed to be easily comprehensible. I</p>	D

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						find the message of the concluding section 10 much more to the point. I believe an effort to fit the twelf subconclusions into such general conclusions might be worthwhile. (Bruggink Jos, ECN)	
20-9	A	0				Finally, I would like to state that this is a very tough chapter in terms of available literature and the complexity of issues concerned. I do believe there are very relevant messages conveyed in the present chapter and this is a good start. Nevertheless I also believe, there is a challenge ahead for the authors to bring these messages across in a more convincing and accessible way than is presently the case. (Bruggink Jos, ECN)	Thanks
20-10	A	0				This chapter is surprisingly lacking in quantitative data about the key threats to sustainability from climate change and the unsustainable human activities that lead to global warming. I feel that the text is too much loaded with economics jargon to be helpful. It also gives the impression that the focus of this IPCC report is on adaptation, while much of the sustainability issues are in the domain of mitigation. A major rewrite would be useful. (Tord Kjellstrom, Australian National University)	A major rewrite is in the offing.
20-11	A	0				Overall structure and focus. This chapter as currently structured attempts to update and extend Ch 18 of the TAR (2001), which was clearly titled "Adaptation to climate change in the context of sustainable development and equity." Chapter 18 was thus clearly focused on adaptation. The title of this chapter, however, appears to be both more expansive and to shift the focus to the intersection between climate change and sustainability more broadly, which would be great. Yet the structure and content of the current chapter remains overwhelmingly focused on adaptation, with some attempts to connect it to sustainable development. This is unfortunate. I would much prefer a chapter that does what the title suggests - consider the interrelationships between the two parallel and intersecting tracks of climate change impacts and policy on the one hand and sustainable development on the other. This would attempt to answer broader questions like, (1) What are the positive and negative implications of climate change impacts on sustainable development? Obviously these implications will vary across localities and regions and over time. Consider the Arctic Climate Impact Assessment as an example. Melting sea ice alone has enormous positive and negative implications for sustainability - on ecosystem health, on subsistence hunting, on regional development (including oil and gas development), and on intra and trans-Arctic shipping, to just name a few examples. (2) What are the relationships between mitigation and sustainable	WGII focuses on adaptation; WGIII does mitigation, though there will be some overlapping and cross referencing. Here, the major place to look will be Chapter 18.  Other points will be taken in the revisions as they pertain to sections that survive.

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						<p>development? At one point the current chapter says "Although linkages between SD and CC policies have been primarily defined as mitigation measures, this need not leave out adaptation" (p. 16:45-47). Then why aren't these linkages summarized and discussed, since that's where the bulk of policy and research attention has gone? Of course it's important to consider adaptation, but you shouldn't therefore ignore mitigation. One glaring example is that the Clean Development Mechanism receives only one off-handed mention in the entire chapter, much less joint implementation, or even the Adaptation Fund (which addresses adaptation), etc. stemming from the UNFCCC process. Why is there no discussion of the sustainable development intentions and implications of these climate policy instruments? (3) To what extent is climate change currently being integrated into SD indicators - what progress has been made in making GHG emissions reduction (mitigation) an indicator of sustainable development itself? There are only a few tangential comments made in the current chapter that connect to this. (4) How is sustainable development as currently conceptualized and practiced increasing or decreasing GHG emissions? Examples? What about controversies like hydro and nuclear power - are these win-win solutions to both the CC and SD problems? (5) What linkages and synergies currently or potentially exist between improvements in climate change adaptive capacity and sustainable development? The current chapter does attempt to identify some of these to its credit. In short, the intersection between climate change impacts, climate change mitigation and adaptation policies, and sustainable development is critical to the achievement of both sustainable development and climate change policy objectives - it's unfortunate that this chapter so narrowly limits its focus to adaptation alone.</p> <p>Many sections as currently written are very difficult to read and understand. There are numerous run-on sentences, inappropriate comments (e.g., "It is not difficult to see..."), convoluted chains of logic and non sequiturs, and abuse of vague abstractions. I read some sentences a dozen times and still don't know what was being said, which makes it impossible to review the accuracy or adequacy of what is being argued. Many terms are used with little to no attempts at definition or contextualization (e.g., "path dependent", "determinants") and require that the reader either already know the literature being cited or read Ch 18 in the TAR just prior to this one.</p> <p>Adaptive capacity gets a lot of attention in this chapter, yet adequate capacity clearly depends on the magnitude, severity and rapidity of the impacts. While there are a few small comments about abrupt climate change, there is no connection to the growing literature on "dangerous" climate change, which helps places adaptive</p>	

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						capacity into context. Likewise, more discussion of how desired levels of adaptive capacity relate to the different IPCC scenarios would be useful, building on the interesting section 20.6.1. (Anthony Leiserowitz, Decision Research)	
20-12	A	0				Chapter 20, overall comments: While some reference is made in the chapter to Jared Diamond and Collapse: How Societies Choose to Fail or Succeed, I strongly recommend the recent work of the University of Edinburgh tephrochronologist Andrew Dugmore’s recent field work on the disappearance of the Norse colonies in the North Atlantic. While Dugmore relates the impact of climate change on pivotal events (as does Diamond), Dugmore’s work is far richer and more nuanced, delving into the multiple complexities of inter-related complex dynamics, of which climate change is only one influential factor—this recognition is critical and seems to be a central focus of all Chapter 20, as well as the entire fourth assessment report of the IPCC. Overall comment on Chapters 20. Clearly shows 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 chapters 18 and 20. 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)	Will have a look, but that section looks to be gone.
20-13	A	0				General comment about chapter 20: it would be useful to cross-reference various sections in this chapter to those of WGII. Having reviewed chapter 2 also it strikes me that some repetition of content could be avoided by simply referring to pages where it's been addressed before (e.g. as you are perhaps planning in section 20.7.2?) (Irene Lorenzoni, University of East Anglia)	Working on that.
20-14	A	0				Chapter 20: Overall, this is a really interesting and well done chapter. As one not really familiar with the literature in this field, I found the chapter quite informative and well done. My compliments to the authors. (Michael MacCracken, Climate Institute)	Thanks.
20-15	A	0				This chapter has come a long way since the zero-order draft. It is fairly complete, explains concepts well, and maintains focus on the subject matter. (Elizabeth Malone, Joint Global Change Research Institute)	Thanks. Going another long way.
20-16	A	0				GENERAL COMMENTS:	We will build Mohan’s stuff into the

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						<p>Due to work pressure, this review was done while travelling. Regret that citations rely mainly on MMRS (2005) which I have with me, plus others based on memory.</p> <ol style="list-style-type: none"> <li>1. Good attempt to survey vast literature -- my comments relate mainly to gaps.</li> <li>2. Relies too much on Annex 1 country authors. Developing country (DC) literature on sustainable development should be used more, since it provides a different viewpoint -- as recognised on page 3, lines 25-27. For example, Annex 1 authors focus more on mitigation (page 3, lines 29-30), whereas DC researchers have been showing more concern for vulnerability-impacts-adaptation issues (e.g., MM 2002a, CPSSI 2003, MMRS 2005), especially regarding impacts on the poor, equity, etc.</li> <li>3. Some recent publications have been left out -- e.g., the most up-to-date one is the book: MMRS 2005</li> <li>4. REFERENCES given at the bottom</li> </ol> <p>The key concept of "making development more sustainable" (MDMS) should be expanded on (briefly mentioned on pg.6, line 5). It was proposed at the 1992 Earth Summit in Rio, as a practical alternative to difficult problem of seeking an ideal definition of sustainable development -- MM (1992). Thus we seek CC policies that will make development more sustainable, while CC policies must not be burdened with solving all the problems of SD. E.g., MM (2002a) and MMRS (2005) state: "The precise definition of sustainable development remains an elusive (and perhaps unreachable) goal. Therefore, a less ambitious strategy that merely seeks to make development more sustainable might offer greater promise. The stepwise MDMS approach becomes the prime objective, while SD is defined as a process rather than an end point. Such an incremental (or gradient-based) method is more practical and permits us to address urgent priorities without delay, because many unsustainable activities are easier to recognize and eliminate."</p> <p>Another key SD concept -- the sustainable development triangle (summarising the balance between the economic, social and environmental dimensions of SD, and their interactions) -- is missing. Some mention could be made. It was proposed at the 1992 Earth Summit in Rio, and is now widely accepted (MM 1992). It was explicitly shown in the TAR (SYR Figure 8-3</p> <p>References:  IPCC (2000) = IPCC. 2000. Guidance paper on "Development, equity and sustainability in the context of climate change" (M. Munasinghe), Intergovernmental Panel on Climate Change, Geneva.  CPSS (2003) = Climate Policy. 2003. Special Supplement on Climate Change and Sustainable Development (eds. M. Munasinghe and T. Downing), Vol. 3(S1).</p>	<p>introduction. It has been around for so long that it is the canonical jumping off point, and we will make certain to start from there.</p>

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						<p>KAETAL (1995) = Arrow, K.J., Cline, W., Maler, K.G., Munasinghe, M. and Stiglitz, J. (1995) ‘Intertemporal equity, discounting, and economic efficiency’, in Global Climate Change: Economic and Policy Issues, M. Munasinghe (Editor) World Bank, Washington DC, USA.</p> <p>MIND (2004) = MIND. 2004. Action Impact Matrix - Application to Climate Change and Sustainable Development in Sri Lanka, Munasinghe Institute for Development, Colombo, Sri Lanka.</p> <p>MM (1992) = Munasinghe, M. 1992. Environmental Economics and Sustainable Development, Paper presented at the UN Earth Summit, Rio de Janeiro, World Bank, Wash. DC, USA.</p> <p>MM (1997) = Munasinghe, M. (Editor) 1997. Environmental Impacts of Macroeconomic and Sectoral Policies, World Bank, Wash. DC, USA</p> <p>MM (2001) = Munasinghe, M. 2001. "Sustainable development and climate change - applying the sustainomics transdisciplinary framework", Int. J. Global Environmental Issues, vol.1, pp.13-55.</p> <p>MM (2002a) = Munasinghe, M. 2002. "Analysing the nexus of sustainable development and climate change", OECD Paper No. COM/ENV/EPOC.DCD/DAC(2002), Paris.</p> <p>MM (2002b) = Munasinghe, M. 2002. Macroeconomics and the Environment, Edward Elgar Publ., London, UK.</p> <p>MMCC (1994) = Munasinghe, M. and Clarke, C. 1994. Disaster Prevention for Sustainable Development, World Bank and Int. Decade for Natural Disaster Reduction, Washington DC and Geneva.</p> <p>MMWC (1994) = Munasinghe, M. and Cruz, W. 1994. Economywide Policies and the Environment, The World Bank, Washington DC, USA.</p> <p>MMRS (2005) = Munasinghe, M. and Swart, R. 2005. Primer on Climate Change and Sustainable Development, Cambridge University Press, UK.</p> <p>SYR (2001) = IPCC TAR Synthesis Report. 2001. Cambridge Univ. Press, UK.</p> <p>(Mohan Munasinghe, Munasinghe Institute for Development (MIND))</p>	
20-17	A	0				<p>Scale discussions are left out almost entirely. There is a big difference between global sustainability/adaptive capacity and local sustainability/adaptive capacity. This needs to be parsed.</p> <p>Use of the term “adaptive capacity”</p> <p>As the document currently reads (particularly in the beginning sections), “adaptive capacity” comes across as a homogeneous quantity that is good to have, and bad not to have – i.e., a silver bullet. In reality, there are many different kinds of</p>	Scale again...yes.

**IPCC WGII AR4 FOD Expert Review Comments**

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						<p>adaptive capacity. I think this would be a good place to lay out a taxonomy (perhaps incomplete) of different types of adaptive capacity. One dimension of the taxonomy/table can address the “adaptation to what?” question. For example, different capacities are required to adapt to episodic perturbations (“hazards”) as opposed to slow changes that approach a threshold (e.g. groundwater depletion for irrigated agriculture, or tipping points in market prices for substitutable goods). The chapter (page 24 line 14 through page 26 line 2) begins to address some of the issues associated with adaptation to hazards. However, relatively little attention is paid to the issue of adapting to chronic issues. A second dimension of the taxonomy/table might breakdown some broad categories of the types of adaptive capacity. Three broad categories are: reducing exposure (e.g., relocating assets), reducing sensitivity (e.g., building higher dykes, irrigated agriculture), and coping with bad outcomes (e.g., relief programs). Some discussion of this occurs in section 20.5, but the framework should be explicitly laid out. This discussion also needs to highlight the issues or moral hazard associated with adaptation. There are sprinkles of text that refer to the possibilities, but the issue needs to be highlighted. For example, building higher dykes encourages further concentration of people/assets in protected areas, such that when the dykes fail, they fail ever more spectacularly. Similarly, irrigate agriculture builds creates ever larger populations that are dependent on relatively stable yields. This actually makes the population more sensitive to changes in yield since they become accustomed to the stability. When the system “breaks” (and there is always a risk of perturbations that will break the system) the failure is even more spectacular. Note that moral hazard is an issue for “sustainable” hazard management practices (e.g. wetland reconstruction) as well. A third issue is what is the “adaptive capacity” is striving to preserve/maintain/develop? The analysis takes on a very different character depending on the answer: the human species as a whole, a particular civilization, a particular “way of life” (e.g., small-holder agriculture), a particular population in a particular place (New Orleans), a type of ecosystem (e.g., mangroves, coral reefs), or a particular class of people (people living on less than \$2/day). The text does not make this clear and sometimes confuses the point. It’s not an easy discussion as it includes elements of scale, place, sector, and the degree of human versus natural system focus/integration. (Thomas M. Parris, ISciences, LLC)</p>	
20-18	A	0				Key themes which need more amplification: in the summary, the introduction, the conclusions, and at various places in the main text.	R

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						<p>1) Highlight the linkage between climate vulnerability, adaptive capacity and processes of globalization, liberalization</p> <p>2) identify the systemic complexity and uncertainty aspects which point towards new approaches to science and policy-making.</p> <p>3) apply these perspectives in particular to the results coming from integrated assessment modelling and sustainability accounting.</p> <p>4) In the later parts of the chapter the wider factors in adaptative capacity then need to be spelled out, in terms of multi-level governance and new forms of sustainable development policy processes.</p> <p>(Joe Ravetz, University of Manchester)</p>	
20-19	A	0				<p>This chapter is in good shape. I would add a review of the recent literature on geography and growth (Sachs, Winter, Acemoglu, Easterly); long term economic growth is clearly an aspect of sustainable development, and it may be influenced by climate and climate change. This new literature is not reviewed elsewhere in this report.</p> <p>(Richard S.J. Tol, Uni. Hamburg)</p>	Thanks...and will take note.
20-20	A	0				<p>There seem to be very contrasting views of sustainability and sustainable development presented throughout. It is very clear due to strong authorial tones when a deep green is writing (e.g. 20.3.6) to when a 'weak sustainability' voice is writing (e.g. 20.8.1). This leads to a sense of receiving mixed messages when reading the chapter.</p> <p>I feel that the chapter could be enhanced if re-structured If we assume that sustainable development is about 1) human well-being and life support; 2) learning, innovating and adapting; 3) ability to self organise; 4) something continuous and durable; and 5) longterm vision and active choosing, then the chapter might be better structured around these pillars. However this would require a significant re-write. If the current structure is going to be used then I would change the table of contents.</p> <p>I feel that the chapter could be enhanced if re-structured If we assume that sustainable development is about 1) human well-being and life support; 2) learning, innovating and adapting; 3) ability to self organise; 4) something continuous and durable; and 5) longterm vision and active choosing, then the chapter might be better structured around these pillars. However this would require a significant re-write. If the current structure is going to be used then I would change the table of contents.</p> <p>There are several references to 'social and human capital'. I do not think that this is a helpful, or descriptive term. Paavola and Adger, 2005 helpfully describe the</p>	<p>We will search for one light-green voice that can reflect the opportunities and challenges.</p> <p>We have to stick with the IPCC given outline.</p>

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						<p>public and prive elements of social capital. The private good aspect is the knowledge, skills and capacity that any one individual has (could be referred to as human capital). The public good aspect is the social networks and ties that generate some degree of social resilience within a community. I would be happier to see this usage. Alternatively, you could refer to 'networks and ties' and 'knowledge and skills' for better clarity.</p> <p>I apologise to all authors for the bluntness of my comments. I have left this review to the last minute and so am typing verbatim my thoughts. Please pass on my comments that I think this is a really challenging section to write due to the fundamental disagreements which exist among many academics on the meaning of sustainable development and the ways in which sustainable development can be achieved. Overall, this is great and I am very sorry for the way in which I am communicating my comments</p> <p>(REF!)</p>	No problem...good thoughts.
20-21	A	0				<p>Reading this chapter has been an interesting assignment. The sheer amount of information that is packed in it reflects the expertise of the authors and the complexity of the issue.</p> <p>Following are the spontaneous comments registered while reading. In the end is an overall impression of the chapter.</p> <p>A general observation: It should be recognized that climate change and land cover change are also linked. There is an increasing literature on this. Though I did not find time to scan the other chapters of the report, I would assume that this is covered somewhere. There is an obvious link to development here and an obvious mitigation issue to be addressed in this nexus. Also, the OECD perspective (Climate change – A development challenge) as published in OECD observer No 246/247, Dec. 2004/Jan 2005 P. 41... might be considered.</p> <p>Overall the paper reads like a bundle of good thoughts and thorough reading thrown together with very little structure. It is difficult to read and to follow and remains rather inconclusive. This is reflected in the somewhat weak conclusions. Also, recommendations are missing.</p> <p>The huge difference in writing style between the sections is rather disturbing. One of the authors (not the economist) should go through and try to cast it all into a single style of writing, elimination jargon in order to enhance the chance that the chapter will be read.</p> <p>May be the authors should think once more what messages they really want to convey, strengthen the arguments and texts around those messages in a systematic</p>	Revision should help.

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						<p>fashion and delete some of the text that seems to make little or no contribution. The boxes should be used to illustrate some of the points they are making and should be referred to in the text. I believe there is still quite a way to go.</p> <p>(Paul Vlek, University of Bonn)</p>	
20-22	A	0				<p>I welcome the conclusion that “the pre-requisites for (sustainable) development match the determining factors that influence adaptive capacity to relative climate change and climate variability.” As noted above, this is very similar to the conclusion reached by the UNDP in a major report, Reducing Disaster Risk: A Challenge for Development (2004) and also reflected in the final document of the World Conference on Disaster Reduction, The Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disaster (2005). In both cases the argument was that the sustainable human development (in particular achievement of the Millennium Development Goals) and significant reduction of death, injury, and economic loss from extreme natural events have a common set of pre-requisites. Furthermore, the objectives of development and disaster reduction require one another. Progress toward meeting the MDGs is easily wiped away by catastrophic events such as the Indian Ocean tsunami (2004) or Kashmir earthquake (2005) and is also eroded by the regional droughts and numerous smaller wildfires, floods, landslides, and storms that affect humanity every year. As I noted at the beginning, this logic seems to be the same as that adopted as the leitmotiv of chapter 20.</p> <p>(Ben Wisner, London School of Economics &amp; Benfield Hazard Research Centre)</p>	R
20-23	A	0				<p>(i) the general impression from the text is of fragmentation, especially the Executive Summary; (ii) at some places of the this Chapter, new texts are considered to be added in the future (before SOD?); (iii) it would be helpful if all the mentioned models (FUND, PAGE, RICE, etc.) are briefly described in a table.</p> <p>(Antoaneta Yotova, National Institute of Meteorology and Hydrology)</p>	Will be addressed.
20-24	A	1	0	40		<p>There is also a good deal of jargon or unnecessarily complicated or unclear language. Specifically, p. 5 Lines 32-34 have several style problems. These sorts of problems are recurrent in the document. However, for a first draft it is quite expected and so I do not point them all out. Later revisions are more appropriate for style and grammar concerns. Organizational structure and content are the first priorities. The introduction has some human appeal in paragraph 1, but I believe it could and should be much more compelling. Re: the exec. summary, what does "path-dependent" mean? Also, above this it should state that adaptive capacity is</p>	Will look to loose the jargon.

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						explained by the weaker (not weakest) of these "two" determinants. Further, the executive summary should summarize trends in impacts and adaptation and implications for the environment and for sustainable development. (David Carr, University of California, Santa Barbara Department of Geography)	
20-25	A	1	0			<p>Following are citations for references alluded to in the comments. Most are available from my home page at <a href="http://members.cox.net/igoklany/">http://members.cox.net/igoklany/</a>. I'll also be happy to send hard copies, if requested:</p> <ol style="list-style-type: none"> <li>1. Goklany, IM. 1995. "Strategies to Enhance Adaptability: Technological Change, Economic Growth and Free Trade." <i>Climatic Change</i> 30: 427-449.</li> <li>2. Goklany, IM. 1999. "Richer is More Resilient: Dealing With Climate Change and More Urgent Environmental Problems." In R. Bailey, ed., <i>Earth Report 2000, Revisiting the True State of the Planet</i> (New York, NY: McGraw-Hill), pp. 155-187.</li> <li>3. Goklany, IM. 1999a. "The Future of the Industrial System." Invited Paper. International Conference on Industrial Ecology and Sustainability, University of Technology of Troyes, Troyes, France, September 22-25, 1999. Also available in: D. Bourg and S. Erkman (eds). 2003. <i>Perspectives on Industrial Ecology</i> (Sheffield, UK: Greenleaf Publishing), pp. 194-222.</li> <li>4. Goklany, IM. 2000. "Potential Consequences of Increasing Atmospheric CO2 Concentration Compared to Other Environmental Problems." <i>Technology</i> 7S: 189-213.</li> <li>5. Goklany, IM. 2001a. <i>Economic Growth and the State of Humanity</i>. Political Economy Research Center, Policy Study 21. March 2001.</li> <li>6. Goklany, IM. 2002b. "The Globalization of Human Well-being." <i>Policy Analysis</i>, No. 447 (Washington, DC: Cato Institute, August 22, 2002).</li> <li>7. Goklany, IM. 2003. "Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation," <i>Energy &amp; Environment</i> 14: 797-822.</li> <li>8. Goklany, IM. 2005. "A Climate Policy for the Short and Medium Term: Stabilization or Adaptation?" <i>Energy &amp; Environment</i> 16: 667-680.</li> <li>9. Goklany, IM. 2005a. "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.</li> <li>10. Goklany, IM. 2005b. "Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development," accepted by <i>Mitigation and Adaptation Strategies for Global Change</i>.</li> </ol>	Will take note of these contributions noted here and frequently below....for the sections that survive the revision.

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						(Indur Goklany, Office of Policy Analysis, Department of the Interior)	
20-26	A	1	1	40	40	<p>There is plenty of information here. And I am not an expert on climate per se. Other reviewers would likely be more appropriate to review the quantity and appropriateness of the reviewed research. Where I would like to focus my comments is where I see the major challenge remaining for this chapter, namely organization and clarity. Since the authors are leading experts in the field and there are several contributing authors who will surely make comments on the content I will try to focus on moving this chapter from a first draft to a more finished version. Much of this organizational challenge is surely part of the process of dealing with several contributing authors.</p> <p>The way I would naturally conceptualize links between climate change and sustainability would be as follows:</p> <ol style="list-style-type: none"> <li>1) introduction to theory, defining terms, and stakeholders</li> <li>2) recent trends in impacts</li> <li>3) recent trends in risk and adaptation</li> <li>4) implications of 2 and 3 above to environmental change and feedbacks of env. Change to 2 and 3 above.</li> <li>5) implications of 2 and 3 above to economic development and feedbacks of ec. Development to 2 and 3 above.</li> <li>6) The importance of scale (aggregate, global, regional)</li> <li>7) Uncertainties, challenges and priorities for research</li> </ol> <p>With this outline in mind, examining the structure of Chapter 20 as it stands, I would recommend several changes.</p> <p>(David Carr, University of California, Santa Barbara Department of Geography)</p>	Very nice organizational approach. Sounds like an outline for the SPM.....
20-27	A	1	3			<p>Title is misleading. It is mostly an economics perspective. Social institutions, technologies and politics are ignored. No justification is given for lack of perspectives. Organisation of chapters is poor. No clear framework or rationale for what topic areas are covered and what are excluded. Overall it is a highly unbalanced treatment of sustainability and climate change (CC) linkages. The activities of developed nations are underplayed. Oil is mentioned in text only twice. Industry only 3 times. Consumption issues are treated a bit better but much less than population growth issues. This is a very selective reading of the issues. Peace and security are essentially ignored.</p> <p>(Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)</p>	IPCC OFFICIAL TITLE
20-28	A	2	13	2	13	Section 20.8 could be re-structured in the following way: 20.8.2 Equity, efficiency,	D

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						effectiveness and legitimacy (REF!)	
20-29	A	2	14	2	14	Section 20.8 could be re-structured in the following way: 20.8.3 Methods for evaluating sustainable pathways (REF!)	D
20-30	A	2	17	2	17	Section 20.8 could be re-structured in the following way: 20.8.5 Alternative forms of governance for sustainability. This section would cover the appropriateness of participatory actions at different scales, but it would also cover alternative governance structures, e.g. communist - which don't encourage participation, yet can adapt or develop sustainably. (REF!)	D
20-31	A	3	0			Executive Summary, pg. 3: Quite weak in comparison to Chapter 18; illustrative of the generally disjointed connections made in the chapter. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-32	A	3	1			Section "Executive summary". It is only a repetition of the introduction (next section), not an executive summary. A more balanced and flowing style is requested (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-33	A	3	1	3	46	The discussion on this page is much more heavily weighted toward the cc adaptation->sustainability connection than visa-versa. (Thomas M. Parris, ISciences, LLC)	D
20-34	A	3	3		46	EXSUM: this appears to be hurriedly drafted and fails to provide a sufficiently precise and unambiguous statement of the conclusions of this final chapter. (Edward Clay, Overseas Development Institute)	D
20-35	A	3	3	3	6	I find the first statement on conclusions much too strong. The urgency of integrating sustainable development and adaptation and the main factors to be considered in this respect is indeed generally acknowledged. Only in this sense can one speak of high confidence. But I believe there is a serious lack of empirical knowledge regarding the costs and benefits of adaptation and the best way forward to combine goals of sustainability and goals of adaptation. Indeed this sets adaptation issues apart from mitigation issues in the policy debate on climate change. So, in my opinion the first sentence should accentuate both the urgency of the sustainability-adaptation connection and the lack of knowledge regarding effective policies. (Bruggink Jos, ECN)	D
20-36	A	3	3			What is the message other than a truism? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D

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20-37	A	3	3			integrate issues has many senses (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-38	A	3	3	3	6	I read this several times and still was not sure what it meant. Bad news for the first para of an exec sum (Thomas M. Parris, ISciences, LLC)	D
20-39	A	3	3	3	46	The executive summary is still rather unclear and does not contain many memorable statements; conclusions also mentioned on pages 5-6: move some of these to ES. (Rob Swart, MNP)	D
20-40	A	3	3	3	6	Remove, the statement is not interesting and because of the very diverse views on sustainable development probably incorrect (Rob Swart, MNP)	D
20-41	A	3	5			Line 5 confidence (what do you mean?) of 'any system' should be replaced by natural system. 5 confidence (what do you mean?) of 'any system' should be replaced by natural system. (Hasna Bangladesh, UNEP)	D
20-42	A	3	5			too rhetorical and ambiguous (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-43	A	3	5	3	6	I did not think that there were "established" ideas about sustainable futures and climate change, in fact I think this chapter shows that there are still many competing sustainability paradigms and this is part of the problem in identifying the 'correct' path. This is well explained in section 20.8.2 (REF!)	D
20-44	A	3	8			Line 8 vulnerability depends (what do you mean) (Hasna Bangladesh, UNEP)	D
20-45	A	3	8			exposure and sensitivity.... Replace the above by "natural systems are vulnerable because they are both fragile and complex, when exposed to the extremes it can collapse and lose its natural ability to adapt and sustain for a long time." (Hasna Bangladesh, UNEP)	D
20-46	A	3	8		12	The focus on the 'weakest link' is controversial and not established see comments on section 20.1.2 below (Edward Clay, Overseas Development Institute)	D
20-47	A	3	8			any system - presumably socio-economic and natural? (Edward Clay, Overseas Development Institute)	D
20-48	A	3	8	3	12	I read this many times before I could make sense out of it. A diagram or functional presentation would help a lot. For example: $v=V(\text{exposure}, \text{sensitivity})$ ; $\text{exposure}=E(\text{adaptive capacity})$ ; $\text{sensitivity}=S(\text{adaptive capacity})$ . Note that this sentence reinforces the notion that adaptive capacity can be expressed using a	D

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						single metric (see my general comments attached) (Thomas M. Parris, ISciences, LLC)	
20-49	A	3	8	3	12	These sentences don't make much sense. (Colin Polsky, Clark University)	D
20-50	A	3	8	3	8	Exposure does not depend on adaptive capacity. You are either exposed to a hazard or not, e.g. you live in the Caribbean and are affected by hurricanes, or you live in the UK and you are not, adaptive capacity does not affect this, it affects your sensitivity and your general vulnerability.D (REF!)	D
20-51	A	3	9			why especially depends on "adaptive capacity"? Authors don't appear to be using standard IPCC definitions, nor arguing why differ in this case. (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-52	A	3	10	3	10	replace "these" by "the" (no determinants mentioned) (Rob Swart, MNP)	D
20-53	A	3	14	3	15	I do not understand the meaning of this sentence. Perhaps the intention is to stress the difficulties of reaching generally applicable conclusions about the relation between sustainability and adaptations. Why focus on relative (relative to what?) efficiency aspects only? (Bruggink Jos, ECN)	D
20-54	A	3	14			What is the message other than a truism? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-55	A	3	14			At the first time 'path-dependent' concept is discussed it would be useful to explain what we should understand by: "are path-dependent". Clarify what path are we talking about? Historical path? Finally, why are both issues considered empirical? At the first paragraph it is stated that there is high confidence in integration of sustainability and climate change. If sustainability is based in empirical issues I see a conflict. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-56	A	3	14	3	15	statement not understandable_remove (Rob Swart, MNP)	D
20-57	A	3	17	3	23	In the first sentence you seem to be talking about individuals (or perhaps groups of individuals); in the second you seem to be talking about "systems." What is the unit of analysis? As my general comments indicate, the analysis of sustainability and adaptive capacity is very much dependent on the unit of analysis (Thomas M. Parris, ISciences, LLC)	D
20-58	A	3	18			why "prerequisites"?	D

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						(Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	
20-59	A	3	21			What is the message other than a truism? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-60	A	3	21			I am less convinced by the ahistorical, voluntarist assumptions that lie behind the statement beginning at line 21 (page 3) concerning the choice of development paths. In the least developed countries (LDCs) and highly indebted poor countries (HIPCs) the World Bank has since the early 1980s imposed structural adjustment regimes. The leaders of these countries do not choose a development path but Dcomply with requirements and advice.  I have an even deeper ill ease with the assumption throughout this chapter that the actors relevant to sustainability and climate change are nations and that relevant decisions take place at national level. On the ground, the natural resource manager and end user in LDCs and HIPCs is likely to be a poor women. National government institutions are notoriously ignorant and dismissive of the knowledge and needs of such primary actors. Without addressing these weaknesses of governance, the chapter's pious words about participatory process seem a bit hollow. (Ben Wisner, London School of Economics & Benfield Hazard Research Centre)	D
20-61	A	3	25		27	The chapter fails to make clear the increasingly unsatisfactory distinction between developed and developing societies/economies (Edward Clay, Overseas Development Institute)	D
20-62	A	3	25	3	27	This conclusion seems too obvious and general. So perhaps it should be made more clear, what this means for adaptation policies or perhaps it could be coupled to the statement on the site- and path-specific nature of adaptation actions. (Bruggink Jos, ECN)	D
20-63	A	3	25			Only for development planners? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-64	A	3	25	3	25	I would urge the authors not to loosely use the word "uncertainty"--in the US, this is being used as an excuse for inaction, and the whole concept is being used--there is no metric to know how important an uncertainty is, nor to relate one to another--everything is just too uncertain to do anything--so don't play into that abuse of the concept. With respect to this sentence, I would say that complexity and an expanding set of connections and linkages are being found. Maybe say this expands the ranges of some estimates of outcomes, etc. But somehow also get across that we are learning more and the problem is not at all going away--we are recognizing even more troubling aspects (like the increasing likelihood of Greenland melting, etc.)	D

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						(Michael MacCracken, Climate Institute)	
20-65	A	3	25			When analysing national sustainability it is clear that important issues may be different for developed and for developing countries. Netherless, when analysing global sustainability there is no reason that views from developed and developing countries are different. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-66	A	3	25	3	27	The same can be said of climate change issues (Thomas M. Parris, ISciences, LLC)	D
20-67	A	3	26			What is the message other than a truism? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-68	A	3	26	3	26	replace "issues" by "priorities" (Rob Swart, MNP)	D
20-69	A	3	29			Yes, most literature on SD and CC may focus on mitigation. Is this a problem? (Tord Kjellstrom, Australian National University)	D
20-70	A	3	29			What is the message other than a truism? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-71	A	3	29	3	30	assertion is false? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-72	A	3	29	3	33	I am not convinced by the underlying text that this statement is true. The focus of the MDGs is poverty, not protection of the environment and as such may aim more at vulnerability than at mitigation. The same applies to much SD literature speaking to vulnerasbility at local levels. (Rob Swart, MNP)	D
20-73	A	3	29	3	30	I disagree. I think that there are a variety of journals which are focussing on adaptation issues too, e.g. Global Envionmental Change. (REF!)	D
20-74	A	3	30			Need a defination of mitigation, what you give is not acceptable. (Hasna Bangladesh, UNEP)	D
20-75	A	3	30			Elsewhere in the report it is stated that progress has been made to improve estimates. (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-76	A	3	32	3	33	The same can be said of the UNFCCC and Kyoto (Thomas M. Parris, ISciences, LLC)	D
20-77	A	3	35			meaning? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-78	A	3	35			I understand that with new tools provided by research uncertainty in aggregate	D

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						global impacts has to be reduced. The reason why uncertainties in future global temperature, for example, increased in the TAR compared with SAR is that new and more scenarios of future development were added. Regarding regional estimates the statement is also hard to justify, since in TAR there are several places where it is stated that regional forecast are still difficulty to perform. Obviously, it is better to assume that uncertainty reduces with further R&D, otherwise why is the society expending money with scientists? (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao DPaulo)	
20-79	A	3	35	3	35	"net impacts" of what? (Thomas M. Parris, ISciences, LLC)	D
20-80	A	3	35	3	35	I would add to the end of this sesntence 'as the unknown issues are decreasing' (REF!)	D
20-81	A	3	37	3	38	meaning? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-82	A	3	38	3	38	I do not understand why "necessarily" is here--is being prepared for variability ever and always going to be enough to take care of climate change? I would cross out "necessarily" here and in the text where it appears. (Michael MacCracken, Climate Institute)	D
20-83	A	3	40		42	Unclear - Do they mean 'Explorations of participatory processes'? (Edward Clay, Overseas Development Institute)	D
20-84	A	3	40			What are 'participatory processes, carried out as part of climate change research ..'? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-85	A	3	40	3	42	meaning? A lot of conditions do not fit sustainability and climate change (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-86	A	3	40	3	42	What about the many participatory processes carried out as part of the sustainable development agenda? (Thomas M. Parris, ISciences, LLC)	D
20-87	A	3	40			insert "and policy development" behind "research" (Rob Swart, MNP)	D
20-88	A	3	40	3	42	I strongly disagree with this statement. Participation does not always lead to sustainable outcomes, e.g. see Cooke and Kothari 2001 (Kumarian Press), or successfl integration of sciences. A better focus here would have been on general governance issues, not just one aspect of governance (i.e. participation). (REF!)	D
20-89	A	3	44			Programmatic preferences - whose? When? and where? - unclear (Edward Clay, Overseas Development Institute)	D

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20-90	A	3	44			What is the message other than a truism? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-91	A	3	44	3	46	I don't think I understand this paragraph. However, it is not just a trade-off between equity and efficiency that is needed, legitimacy of decision making process and the effectiveness of the adaptation action are also important. (REF!)	D
20-92	A	3	45			Relative weights given to equity and efficiency. Equity clearly is an ingredient to sustainable development. Efficiency is more tied to capitalism approach of minimum cost. Thus, sounds to me that too much weight to efficiency implies in minimizing sustainable development relevance. If this is correct it is useful to say a few words why so many papers quote the relevance of efficient use of energy. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-93	A	3	46			governance process (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-94	A	3	47			ambiguous, rephrase (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-95	A	3				The executive summary is rather imprecise and does not underline the needs for change in global consumption patterns if the world's population shall be supported sustainably by this planet (Tord Kjellstrom, Australian National University)	D
20-96	A	4	0	5		The introduction is for a large part essentially the same as the executive summary (although more accessible because of the longer statements). Perhaps it would be possible to start out with a short summary of the coverage of this issue in earlier IPCC reports and leave the conclusions for the end. (Bruggink Jos, ECN)	D
20-97	A	4	0			scope of this chapter is not explained (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-98	A	4	1			20.1 Introduction: This chapter lacks a clear road map (c.f. Chapter 19.1.5) and so the reviewer stumbles from section to section trying to make sense of the logical sequence of the argument (Edward Clay, Overseas Development Institute)	D
20-99	A	4	1	5	37	Much of the Introduction reads like an executive summary; partition the material appropriately. It is hard to make specific suggestions because the two sections need to be parallel with the other WGII chapters. (Elizabeth Malone, Joint Global Change Research Institute)	D
20-100	A	4	3		10	Societal' unclear. An aspirational statement by Strong, not free from conceptual	D

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						ambiguity, is not the best way to begin a key introductory section. Instead the reader is entitled to a clear statement at the outset of what is meant by the concept of sustainable development in this section. (Edward Clay, Overseas Development Institute)	
20-101	A	4	3		10	This is a wonderful quote by Maurice Strong. He argues that the main need is for "a major shift in the motivational basis of our current behavior. People and nations are motivated not only by their immediate self-interest, but by their deepest moral, ethical and spiritual values." Yet this chapter currently says almost nothing about Dthis theme. Either delete the quote or integrate the theme in the chapter (e.g., see Earth Charter, recent reviews by Leiserowitz, Kates and Parris summarizing global sustainability values, attitudes and behaviors, etc.). (Anthony Leiserowitz, Decision Research)	D
20-102	A	4	3	4	4	20.1, Introduction, lines 3-4: Have I missed something here? The conference on the human environment in Stockholm—was NOT 1961; it was 1972. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-103	A	4	3	4	10	This is a great quote, but it no interpretation or follow-through is offered. The text has virtually no discussion about moral, ethical, and spritual values (and it probably should). Moral, ethical and spritual values is probably the greatest connection between cc adaptation and sustainable development. Consider including literature such as Leiserowitz et al (2005), Environment, 47(9):20-38; and Dietz et al (2005) Annual Review of Environment and Resources 30. (Thomas M. Parris, ISciences, LLC)	D
20-104	A	4	4			Line 20.1 Maurice Strong has been wrongly described as international statesman (perhaps international businessman would have been more appropriate) which he himself would not like to see. Secretary General of ...is more appropriate (take the bracket out.) Highlight Marine system habitat change "rapidly" is more likely Change Polar regions habitat change to rapid habitat change. (Hasna Bangladesh, UNEP)	D
20-105	A	4	4			The Stockholm conference took place in 1972. In 1961, environment had not yet been 'discovered' as an issue for the international agenda. (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	D
20-106	A	4	7	4	10	This is a fascinating and important statement--and raises the question why so much of the IPCC analyses about impacts and mitigation are focused on economics--when that is not even mentioned! You might also want to read the unanimous statement of the US Catholic Bishops on this issue--they basically said the national discussion on climate change needed to start not from economic impact, but from aspects of equity and stewardship--so a quite similar statement. The Catholic	D

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						Bishops statement has been published, but is on the Web at <a href="http://www.usccb.org/sdwp/international/globalclimate.htm">http://www.usccb.org/sdwp/international/globalclimate.htm</a> (Michael MacCracken, Climate Institute)	
20-107	A	4	12	4	16	Competition between places (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-108	A	4	12	40	13	intersection of climate change ADAPTATION and sustainable development.....Executive Summary of WORKING GROUP II chapter 18 (Rob Swart, MNP)D	D
20-109	A	4	12	4	15	I would delete the first sentence of this para. I think that knowledge has progressed from the TAR, now we know that adaptive capacity is a necessary BUT NOT SUFFICIENT condition. This change in our knowledge needs to be shown. (REF!)	D
20-110	A	4	17	4	20	The sentence "The effects of climate change...development trajectory" can be deleted. (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-111	A	4	20	4	22	The sentence "Moreover, it is still widely believed...future of climate change" seems to refer to mitigation and not adaptation. The words "...critical in determining the future of climate change." can be replaced by "...critical in determining the future impact of climate change." (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-112	A	4	22			Add a reference at the end. For example, this is clearly demonstrated by the different IPCC Reference Scenarios, as already concluded in TAR (WGIII - Chapter 1). (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-113	A	4	24		30	This is a sort of summary of the argument and not a proper introduction. It is already employing concepts that have to be clarified later in the chapter. Eg. line 29 'any system'; line 35 'success'. line 44 'goals'; line 46 'adaptive capacity'. (Edward Clay, Overseas Development Institute)	D
20-114	A	4	24	4	27	No turn-overs, contests, changes - seems incredible (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-115	A	4	26	4	27	The sections are not highlighted in italics (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-116	A	4	29	5	37	Why the arguments are not in the same order as in the chapter? This exposition could be shorter: it should be a presentation of the next sections, as an Ariadne's thread. This catalogue of assertions don't present sentences with the same level of approach.	D

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						(Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	
20-117	A	4	29	4	31	In order to separate the present work and the TAR, and also to eliminate confusion, I think that the mentions to the TAR should be eliminated in this presentation of the present chapter (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-118	A	4	29	4	36	This is virtually a repeat of the executive summary, why bother? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-119	A	4	29	4	36	terrible English (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-120	A	4	31	4	31	Wwhat does "...site-specific and path dependents" refer to - "factors", "determinants"? (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-121	A	4	33	4	33	"sustainable" need not be in brackets (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-122	A	4	37	4	38	Why does this sentence refer only to "socio-economic-political system"? What about natural systems? This raises a huge question on the assumptions of this chapter (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-123	A	4	39			where does this concept "relative efficiency" come from? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-124	A	4	40	4	41	This seems to me to be worded too strongly. I agree that adaptive capacity and support for SD are site specific and path dependent and that currently we cannot predict outcomes with any certainty -- but the wording suggests that the best would be to throw up our hands and abandon the effort. With that I disagree. How about, "...essentially empirical questions whose answers cannot currently be predicted but, because they are crucially important, need to be studied using both case study and modeling approaches. (Elizabeth Malone, Joint Global Change Research Institute)	D
20-125	A	4	42	4	45	Should be point no. 2 (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-126	A	4	42	4	42	references made to 'social and human capital' see earlier comment (REF!)	D
20-127	A	4	46	5	2	Should be point no. 1 (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-128	A	4	46			a two way causality is difficult to argue for, as 'sustainable development' is not a tangible quality, but rather is constructed as a pluralistic combination of perceptions, values, policies, actions, processes, and so on.	D

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						(Joe Ravetz, University of Manchester)	
20-129	A	4	46	4	46	I strongly disagree with this statement. I do not believe that there is a two way causality between sustainable development and adaptive capacity. Adaptive capacity can lead to sustainable development, but will not always. For example increased wealth contributes to adaptive capacity, however if that wealth is spent on buying air conditioners for hot weather use then it does not lead to sustainable development. Adaptive capacity can actually lead to unsustainable development. (REF!)D	D
20-130	A	5	3	5	13	see comments above on executive summary (Rob Swart, MNP)	D
20-131	A	5	4	5	4	I would change the word 'issues' to 'constraints to' (REF!)	D
20-132	A	5	5			But not only development planners? (Edward Clay, Overseas Development Institute)	D
20-133	A	5	5	5	6	Reword the sentence beginning on line 5 to read: "Whether justified or not, climate change is seldom included in the list of stressors that these decision-makers take to be sources of serious threat to sustainability." As currently worded, it implies that this is a serious omission. The case needs to be made that currently climate change is as serious or more serious than other concerns that are normally trotted out, e.g., hunger, malnutrition, malaria, etc. See Goklany (2000, 2003, 2005). References are provided at the end of these comments. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-134	A	5	5	5	7	The Kyoto and Montreal Protocols are good evidences that global problems are already being considered in the list of stressors that decision-makers take into account. Obviously, for many developing countries, the amount of local stressors are so huge that global ones are less important, but economic barriers set by other countries are a global concern for many of those countries. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-135	A	5	8			Need to make clear that most of the mainstream literature doesn't actually recognise climate change as issue (Edward Clay, Overseas Development Institute)	D
20-136	A	5	9	5	12	It is unclear to me way Agenda21 focusing in economic growth and social development is a practical manifestation of the fact that sustainable development confronts developed and developing countries. If you want to support this thesis further explanation is needed. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao	D

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						Paulo)	
20-137	A	5	10			Should the focus not be on emissions reductions? (Tord Kjellstrom, Australian National University)	D
20-138	A	5	11	5	13	It may not be correct to say that the MDGs focus on mitigation; in fact, in their focus on food, water, and health, they are more adaptation relevant. It is also misleading to say that they "are not motivated by adaptation to climate change" because neither are they motivated by mitigation. (Ulka Kelkar, TERI (The Energy and Resources Institute))D	D
20-139	A	5	12			This is not surprising, they are political strategy; why "even though"? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-140	A	5	14	5	15	What is meant by "global coverage of robust net impacts is incomplete"? That not enough studies have been conducted? Please rephrase more clearly. (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-141	A	5	14	5	15	This does not summarize Section 20.6. (Elizabeth Malone, Joint Global Change Research Institute)	D
20-142	A	5	14			This statement about increasing uncertainty is better than the one quoted in the Summary. Here an explanation for such trend is provided. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-143	A	5	16			I would prefer to say: "Environmental impact assessment and/or development policies are considering climate change as..." (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-144	A	5	17			"have gained prominence" is a truism (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-145	A	5	20			"not necessarily suff." for what? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-146	A	5	20	5	20	Urge crossing out "necessarily" as mentioned earlier. (Michael MacCracken, Climate Institute)	D
20-147	A	5	22		25	Participatory process' -unclear sentence - again the issue of by whom for whom? (Edward Clay, Overseas Development Institute)	D
20-148	A	5	22	5	26	20.1 The terms Participatory processes and Programmatic preferences should be defined in the summary on page 5. (Paul Vlek, University of Bonn)	D
20-149	A	5	25			"appropriate ... decision-making" - what does this mean? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-150	A	5	26		30	As chapter 17 makes clear, much adaptive behaviour is informal, but this paragraph	D

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						makes it something that apparently occurs within rule based, well established countries (Edward Clay, Overseas Development Institute)	
20-151	A	5	26	5	28	in? what kind of model of the world at "decision-making" has the authors presumed? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-152	A	5	33			"sufficient set of applications" - meaning? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-153	A	5	33	5	33	Two minor edits: "advanced" and "they" (Michael MacCracken, Climate Institute)	D
20-154	A	5	33			Considering the degree of uncertainty attributed to very high confidence (above 99%) in IPCC traditional evaluations I suggest to use "high confidence". (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-155	A	5	34	5	34	Delete the words "that they can be offered to researchers and policymakers alike as "well established" methods" (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-156	A	5	34			Maybe 'methods' is not the most appropriate term here. Consider using other terminology and slightly rephrasing the paragraph to clarify? (Irene Lorenzoni, University of East Anglia)	D
20-157	A	5	40			Section 20.1.1. Is the Kates et al. paper the only and more recent point of view on "sustainable development"? Several other approaches and critics (as during the Johannesburg Summit) came out during the recent years. For example: the role of the world companies, mentioned in the next section... (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-158	A	5	40	6	25	Section 20.1.1 There is a large literature on sustainable development and the text fails to refer to key texts from the peer group reviewed literature. Worse this section supposedly about definitions takes off into the language of political discourse about ' practical truths'. (Edward Clay, Overseas Development Institute)	R
20-159	A	5	40	6	25	The definition of sustainable development has evolved quite a bit since the Bruntland report, which this limited definition comes from. In particular, more recent definitions emphasize three pillars of sustainable development - economy, environment and human/social. See Kates, et al, (2005) What is sustainable development? Environment 47(3) for a review. (Anthony Leiserowitz, Decision Research)	R
20-160	A	5	40			SECTION 20.1.1.	R

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						Review and citations give an impression of relying too much on US based work (eg., Kates, US-NRC, Chicago Parliament). For DC views, see SD framework proposed at 1992 Earth Summit in Rio (MM 1992), and subsequently expanded with case studies and applications (e.g., MM 1998, 2002; MMRS 2005) (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	
20-161	A	5	40	5	40	Consider relabelling "Defining sustainable development and sustainability science" (Thomas M. Parris, ISciences, LLC)	R
20-162	A	5	40	5	46	"sustainable development is a widely held BUT NOT UNIVERSAL goal" There are many critiques of sustainable development as a concept and they should be acknowledged and dealt with in the text. (Thomas M. Parris, ISciences, LLC)	R
20-163	A	5	40			Section 20.1.1 Defining SD. This should not ignore the political question of the over-riding imbalance between developing and developed nations. (Joe Ravetz, University of Manchester)	R
20-164	A	5	40	6	25	I would delete and then re-write this whole section. I do not like this whole section. It relies too much on the authors interpretation of their idea of sustainability without any reference to the literature. For example, I would re-write the beginning of section 20.1.1. At present the section starts with a very political comment -that we are on an unsustainable path. This assumption depends on your definition of sustainability. There has been a lot of work that considers strong and weak sustainability paths and both sides argue that they are promoting sustainable development. However, one side requires economic growth and development, the other does not. Not everyone agrees that the current development path is unsustainable. If a strongly political tone is used then you will have to include those people who disagree with this assertion, e.g. Lomborg 'The Skeptical Environmentalist', and some of the work by David W. Pearce on different types of sustainability. Alternatively this section could be written in a less value-laden way, and the concept of different elements of sustainability could be introduced, for example why not start with the different definitions of sustainable development. The end of this section, considering 'sustainability science' also ignores the other subject areas which look at this issues, such as ecological economics and geography. (REF!)	R
20-165	A	5	40			20.1.1 Some of the statements in this section seem not well thought through. Improved access to NR does not necessarily underpin SUSTAINABLE development. And should the agenda 21 be really seen as a practical manifestation. It seems largely theoretical to date. The sentence ....across purposes and at the	R

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						intersection are unnecessarily vague. (Paul Vlek, University of Bonn)	
20-166	A	5	42	6	25	One could provide an endless list of references on sustainable development in the past decades. To start a discussion on sustainable development with two references to a fairly recent note on sustainability science does not seem balanced. Cite the Brundtland report and other seminal works or give a more extended list including Kates. (Bruggink Jos, ECN)R	R
20-167	A	5	42	5	43	what is the point of this sentence - any more content? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-168	A	5	42			Reference to Kates could be at the end of the paragraph as the authors of this chapter probably don't refer to him solely to support this point! One alternative could be: 'Many authors concur that ... (e.g. Kates...)' (Irene Lorenzoni, University of East Anglia)	R
20-169	A	5	42			add UNEP GEOs as references (Rob Swart, MNP)	R
20-170	A	5	42	5	45	Kates is just one source. If you look at the Green GDP / Genuine Savings work of Hamilton and Pearce, a different, more mixed picture emerges. Some, like Lomborg, would even argue that all is dandy. (Richard S.J. Tol, Uni. Hamburg)	R
20-171	A	5	43			why only these 2 groups (policy and scientists)? What about publics? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-172	A	5	44	5	45	The words "and they have support in their efforts from the highest levels" are too vague and should be deleted (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-173	A	5	45	5	45	Date and place of the WSSD? (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-174	A	5	45	5	45	Replace "recent" by "2002" (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-175	A	5	45			"highest levels" means? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-176	A	5	46	5	46	"aspiration" may be more appropriate than "goal" (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-177	A	5	48	5	50	This definition was not introduced by IPCC 2001, but by the Brundtland's Report published by the World Commission on Environment and Development, WCED, in 1987! Gro Harlem Brundtland, former Prime Minister of Norway and former President of WHO, was President of the Commission.	R

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						(Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	
20-178	A	5	48	5	50	the social development and justice components are poorly dealt with in this chapter (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-179	A	5	48	5	50	20.1.1, lines 48-50: Refer to 18.3.5 for better definitions of development. (P. H. Liotta, Pell Center for International Relations and Public Policy)	R
20-180	A	5	48	5	50	This definition of sustainability is identical with the definition of the Brundtland-report (1987). So the source should be mentioned. (Ortwin Renn, University of Stuttgart)R	R
20-181	A	5	50	6	7	I would refer to Goklany (1995, 1999, 2000, 2003, 2005b), to support these statements. References are provided at the end of these comments. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-182	A	6	0	8		What is the purpose of including a long section on the wide range of interested parties in sustainability in general (who can afford not to be?) and why include a box on Time Inc.? Have these parties been specifically active in connecting adaptation and sustainability issues? The box exemplifies the dominance of the mitigation issue in the sense that an adaptation example would be much more appropriate at this point. This section does not contribute to the essential messages of this chapter and is far too general and unspecific. (Bruggink Jos, ECN)	R
20-183	A	6	1	6	2	The examples given are only the economic aspects of sustainable development. They can also be achieved with a purely growth oriented paradigm. What distinguished sustainable development is that the economic goals must not be achieved at the expense of the social and environmental goals. Then sustainable development has common underpinnings with adaptive capacity building. (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-184	A	6	2	6	7	This is what should be assessed not assured away. Overall sentence is incomprehensible (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-185	A	6	2			"access ..." can mean greater unsustainability (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-186	A	6	5			This section could also be worded to consider that climate change could be a potential driver towards sustainability, as you later mention in the chapter. (Irene Lorenzoni, University of East Anglia)	R
20-187	A	6	7	6	12	The two sentences "It can also highlight...practical manifestation of this truth." can be deleted. (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-188	A	6	7	6	12	Perhaps consider using 'issue' or 'question' rather than 'truth'? Also would suggest	R

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						rephrasing the last sentence of this paragraph to increase clarity. (Irene Lorenzoni, University of East Anglia)	
20-189	A	6	7	6	12	A few too many uses of the word "it" and "this"--just not always clear what is being referred to. (Michael MacCracken, Climate Institute)	R
20-190	A	6	9	6	9	The "Agenda 21" is one of the main products of the Rio de Janeiro Earth Summit, originally built for the last decade of the XXth Century. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))R	R
20-191	A	6	14	6	26	framework used by countries in developing indicators of sustainable development starts with the idea of three pillars of sustainability : environmental, economic, and social. Another dimension of sustainable development that is often mentioned in this context covers institutional aspects. it is suggested to add, before from local to global : The institucional aspecto of sustainable development is tha last major axe identified. In this field, the legal and institutional framework for access to information, consultation and participation of civil society is concerned. The way public voice in decision making is taken account, and the extent to which legal or non legal forms of democracy are applied measured. (Leila Devia, National Institute of Industrial Technology)	R
20-192	A	6	14	6	25	It is not explained in any detail what the new issues of sustainability issues are. Furthermore, what does it provide compared with the SD approach of other disciplines (and what is the specific relevance to CC). (Kirsten Halsnaes, Riso International Laboratory)	R
20-193	A	6	14	6	25	This paragraph can be rewritten in two sentences. E.g. "In recent years the science and technology communities have increasingly recognisd that they will play central roles in promoting understanding of the origins of sustainability challenges and the prospect of successfully dealing with them. This has led to the emergence of "sustainability science", which is premised on the need for a better understanding of the complex and dynamic interactions between society and nature (Kates et al 2000)". (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-194	A	6	14	6	25	This paragraph could go at the beginning of section 20.1.2 (Irene Lorenzoni, University of East Anglia)	R
20-195	A	6	15			technology communties could contribute to (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-196	A	6	16	6	16	Give title and/or main subject of the Mexico City Workshop. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R

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20-197	A	6	16			citation incorrect (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-198	A	6	17			engineering views were poorly represented (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-199	A	6	19			"This has led to" - 2000 is before 2002, what do you mean? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-200	A	6	21			Perhaps but this is not the key argment for which the paper should be cited here (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)R	R
20-201	A	6	28	8	22	This section makes a convincing argument that a wide range of parties are interested in sustainable development, but does very little to tie that interest to a concern about adaptation. It implies that any interest in sustainable development will improve adaptive capacity, even though the previous section points out that some decision might work at cross purposes between these two objectives (Pg. 6, lines 2-6). For example, the case study on Time Magazine does not explain whether the sustainable forest initiative will make those forests more resilient to climate change. (Lenny Bernstein, IPIECA)	Agree. These are valid points, which will be taken into consideration.
20-202	A	6	28			20.1.2 what about the role of big auto and oil producers? (David Carr, University of California, Santa Barbara Department of Geography)	Agree.
20-203	A	6	28			Section 20.1.2. Why no reference to the Johannesburg 2002 Summit? (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	Agree.
20-204	A	6	28	8	22	Section 20.1.2 this section is analytically unsatisfactory. The discourse about 'interest groups' is not clearly located within any theoretical framework. These interest groups are presented as unanalysed constructs. There is a political science theory that encompasses stakeholders, civil society etc. The interst groups refered to are not clearly defined. For example, some 'NGOs' are organised from within faith groups as are CRS, LWS, World Vision within the US. The Team drafting this chapter would benefit from the professional advice of a widely recognised political scientist. (Edward Clay, Overseas Development Institute)	Good points. The redrafted section will be much shorter and more structured.
20-205	A	6	28			why not cite Kates 2005 in environment on sustainable development as negotiated; this section is too broad scope and idiosyncratic in selection. Recommend focussing "interested" parties that look at SD and climate change only. If focus on SD shold follow style of 20.2 ALSO WHY ONLY "NGOS"? MANY LOCAL COMMUNITY (LC) LEVEL ACTIONS ARE CRUCIAL - SEE THE BONN DECLARATION, THIRD INTERNATIONAL FORUM OF INDIGENOUS	Selection of groups to mention was not explicitly identified as those that are interesten in SD and climate change. Will be redrafted for clarification.

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						PEOPLES AND LOCAL COMMUNITIES ON CLIMATE CHANGE, JULY 14 – 15, 2001, BONN, GERMANY <a href="http://www.wrm.org.uy/actors/CCC/IPBonn.html">http://www.wrm.org.uy/actors/CCC/IPBonn.html</a> (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	
20-206	A	6	28	8	22	I would delete this whole section (20.1.2). These 3 pages could be replaced with the following sentence "NGOs, scientists, businesses, governments and faith groups each appear to have an interest in sustainable development, see for example....." I would then add a list of references. (REF!)	Section will go from current 1.5 pages to one or two short paragraaf.
20-207	A	6	28			20.1.2. There are good examples from many countries to site when it comes to sustainability. Taking the USA as an example is a bit ironic. Why not limit this to the international efforts including IPCC or WRI. One could also cite ongoing efforts such as Agricultural Assessment. Also, Kung's report (10 years old) might not convince too many readers unless one can also say that this had an impact.... (Paul Vlek, University of Bonn)	See above.
20-208	A	6	30	7	19	This section is too verbose and not focussed enough to highlight the fact that a variety of parties are stakeholders. For instance, the role of government, development community (i.e. aid agencies) has not been mentioned. Local / grassroots NGOs are not sufficiently aware fof climate change issues but play important roles as well. In addition, it could be mentioned that busines interest in climate change and sustainability stems as much from corporate social responsibility as from concern about natural disasters and insurance costs. (Ulka Kelkar, TERI (The Energy and Resources Institute))	See above
20-209	A	6	30			NGOs do much more than this often providing critical and independent analysis which state agencies for "political" reasons are incapable of carrying out fairly. (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	Excellent point for redrafted section.
20-210	A	6	30	6	36	This paragraph could go at the end of section 20.1.2 (on page 7, just before the box?) to increase fluidity of the text (Irene Lorenzoni, University of East Anglia)	Agree, but entire section to be dramatically shortened and rescoped.
20-211	A	6	30	7	19	Not all NGOs/business groups have acted as progessive agents of change in either the SD or CC debates. This discussion leaves out a range of NGO's that have argued for preserving the status quo or worse. (Thomas M. Parris, ISciences, LLC)	Agree.
20-212	A	6	33			It is not entirely clear what 'its' refers to in this sentence (Irene Lorenzoni, University of East Anglia)	To be rewritten in any case.
20-213	A	6	35			see Dimitrov, Dryzek: many avenues for influences (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	OK
20-214	A	7	1	7	19	After of voluntary actions, add : transparency, stakeholder accountability, and	Agree

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						voluntary standards are also criteria that are considered as well as government relations with firms and citizen and civil society Cross references with Bellagio Principles as Institutional Capacity (Leila Devia, National Institute of Industrial Technology)	
20-215	A	7	1	7	19	Should include a discussion/citation for the Global Reporting Initiative (Thomas M. Parris, ISciences, LLC)	Agree
20-216	A	7	5			It is not restricted to international issues (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	Agree, but focus here is SD and CC
20-217	A	7	13	8	11	One could insist more on the ambiguous role of the transportation, energy or petroleum companies in this debate. The case of Time is interesting, but it can probably be reduced. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	Box to be removed and incorporated in text
20-218	A	7	15			"them" - should you comment on what kinds of things are covered by their definitions of "sustainability" (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	Box to be removed and incorporated in text
20-219	A	7	15			Please, add reference for the statement "Some firms that have not ..." (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	Box to be removed and incorporated in text
20-220	A	7	17			Please, add reference for the statement "Many firms have joined..." (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	Box to be removed and incorporated in text
20-221	A	7	22	8	11	This whole box needs to be referenced in the main body and put in context. (Thomas M. Parris, ISciences, LLC)	Agree
20-222	A	7	22			Box 20.1 This reads like an advertisement on CNN. If one company is high-lighted one should at least contextualize it and indicate the merit of the box to the story line. Not too convincing. (Paul Vlek, University of Bonn)	Box to be removed and incorporated in text
20-223	A	7	23	8	10	Box 20.1 is for a global report very US-centric with details about places and cities that have no relevance to the wider audience. Is such a large box required to support the argument being made in Page 7 line 1-19 (Edward Clay, Overseas Development Institute)	Agree
20-224	A	7	23			Box 20.1 is an effective illustration and case study. (P. H. Liotta, Pell Center for International Relations and Public Policy)	Many reviewers disagree, however
20-225	A	7	23			Is this box example really relevant here? Perhaps it could be extended to include examples of businesses who have improved their sustainability profile whilst enacting responses to climate change? That would perhaps suit the link you are suggesting in this chapter that should be more strongly made between sustainability	Box to be removed and incorporated in text

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						and climate change. Also, the whole section 20.1.2 could go later, perhaps at page 32, line 34, before current section 20.6.4. (Irene Lorenzoni, University of East Anglia)	
20-226	A	7	27			Check if it is ton(2,000 pounds) or tonne(1,000 kg) (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-227	A	7	41	7	43	These kind of projects open space to discuss the participation of developing countries in similar efforts. Even poorly analysed in the literature, the normal practice in developing country is to recycle wastes more intensively than in developed countries since there is economical motivation that drives poor people to this business. Such activity in developing countries creates many jobs. May I suggest you discuss also examples from developing countries (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-228	A	8	0			For example section 20.2 could be condensed and incorporated into the introduction or into other sections of the chapter. (David Carr, University of California, Santa Barbara Department of Geography)	D
20-229	A	8	1	8	2	The phrase "and their ... benchmarks" seems out of touch with the sentence--needs better linkage. (Michael MacCracken, Climate Institute)	D
20-230	A	8	14	8	22	The international thought on world population and ethnic strided forward during the recent years. I'm not a specialist, but the given references seem outdated. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-231	A	8	14	8	22	I will suggest to exclude references to religious issues, since keeping this perspective can be very controversial and might require that IPCC has a full coverage of all different alternatives (Kirsten Halsnaes, Riso International Laboratory)	D
20-232	A	8	14	8	22	Delete. Is this group important enough to deserve such mention. How is it related to the chapter? No special attention to climate (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-233	A	8	14	8	22	I would urge mention here of the US Catholic Bishops statement (I am not Catholic, but did advise them on their discussion of the science), which calls for consideration to be based on the issues of equity (distributional, international, and intergenerational) and stewardship. I think a sentence or two about this here would help set up some of the later discussion in the chapter. To see the statement, see <a href="http://www.usccb.org/sdwp/international/globalclimate.htm">http://www.usccb.org/sdwp/international/globalclimate.htm</a> (Michael MacCracken, Climate Institute)	D

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20-234	A	8	14	8	22	Quote implies the whole issue comes down to population, what about affluence and technology? (Thomas M. Parris, ISciences, LLC)	D
20-235	A	8	14	8	22	Consider citing <a href="http://environment.harvard.edu/religion/main.html">http://environment.harvard.edu/religion/main.html</a> and the series of books described at <a href="http://environment.harvard.edu/religion/publications/books/book_series/cswr/index.html">http://environment.harvard.edu/religion/publications/books/book_series/cswr/index.html</a> (Thomas M. Parris, ISciences, LLC)	D
20-236	A	8	15	8	18	Kung's quote has been overtaken by events. The world population is no longer "growing at an ever-increasing rate". In fact, fewer people are being added to the world's population each year now, than were, say, a couple of decades ago. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-237	A	8	15			Why use this obscure reference when international agencies (UN, UNEP, UNDP, WHO, etc.) have been expressing the same message in various documents since before 1991, and most recently in the documentation from the Summit on SD in Johannesburg in 2002? (Tord Kjellstrom, Australian National University)	D
20-238	A	8	18			Check end of statement. Typo error. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-239	A	8	22			Could also refer to the World Council of Churches which has been working on climate change since 1991 (see <a href="http://www.wcc-coe.org/wcc/what/jpc/ecology.html">http://www.wcc-coe.org/wcc/what/jpc/ecology.html</a> ) (Irene Lorenzoni, University of East Anglia)	D
20-240	A	8	25	9	8	Poor section (20.2). I would delete the entire section and re-write. The author cites only 1 author in the first two paragraphs and has a limited synthesis of two authors in the final paragraph. There is much work being undertaken across Europe (with which I am familiar) and I am sure across the rest of the world. The author should check the outputs from the Tyndall Centre for Climate Change Research ( <a href="http://www.tyndall.ac.uk">www.tyndall.ac.uk</a> ), the Potsdam Institute for Climate (PIK), CICERO in Norway, SEI in Stockholm, IVM in Holland and other climate change research institutes whose remit is to synthesise new knowledge relating to climate change impacts and adaptation. (REF!)	R
20-241	A	8	27	9	8	This section contains some very important observations but the title and context is somewhat confusing. What does the adjective "new" indicate: new since AR3, new in addition to chapter 17 conclusion? What is meant by synthesis: synthesis	R

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						between sustainability and adaptation knowledge, between knowledge about multiple determinants of adaptive capacity and multiple stresses? (Bruggink Jos, ECN)	
20-242	A	8	27	9	8	This section is very inadequate in the present draft. (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-243	A	8	31	8	31	Insert a new sentence: "Goklany (1995, 2003, 2005, 2005b) notes that responses designed to reduce vulnerability to current climate-sensitive problems would enhance society's ability to cope with the impacts of climate change as and when Rthey occur, and that these responses, moreover, would enhance sustainable development." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-244	A	8	34	8	37	Rest of text is not very consistent with these observations. Do the authors support them? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-245	A	8	37	8	37	This may be a fair summary of Brown's work, but the last two words should read "social acceptance.' It may be disheartening, but unjust regimes can be remarkably durable. (Thomas M. Parris, ISciences, LLC)	R
20-246	A	8	39	8	49	On this topic, the approach of Tony Allan (*) is also very interesting. (*) Allan, J. A. 2001. The Middle East water question: hydroplitics and the global economy. I. B. Tauris & Co Ltd, London, New York. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-247	A	8	39	8	41	This is also consistent with Goklany (1999a, 2000) (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-248	A	8	39			Add to capacity to adapt money availability. This is stated in Pg 12, line 41 (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-249	A	8	39	8	50	Consider citing Parris and Kates (2003), Proceedings of the National Academy of Sciences of the United States of America, 100(14): 8068-8073 (July 8, 2003). It presents the notion of D=PAE (development = f(population, affluence, equity)) (Thomas M. Parris, ISciences, LLC)	R
20-250	A	8	41	8	41	replace "distribution of income" with "distribution of assets and entitlements" (Thomas M. Parris, ISciences, LLC)	R
20-251	A	8	45	8	45	modify line to read: "...enhanced by, AMONG OTHER THINGS, appropriate planning that recognizes climate variability and by mechanismS that..." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-252	A	9	0	19		The final part of this section on multiple stresses covers a much broader area of	R

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						issues than multiple stresses. It addresses some overall issues of the connection between sustainability and adaptation and the different status of mitigation in the climate policy arena (pages 15 to 19). It seems to me that some of the subsections belong in introductory section with a key position in the chapter rather than in the present section on multiple stresses. Moreover the subsection on sustainable environmental management should be integrated in section 20.4 and does not fit here. (Bruggink Jos, ECN)R	
20-253	A	9	1		8	It this the wrong place, in the introduction, to inform the reader that the chapter supports a conclusion of the mentioned authors? (Edward Clay, Overseas Development Institute)	D
20-254	A	9	2	9	3	Cannot figure out what is meant by this "explanatory phase". Try different wording (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-255	A	9	2	9	3	To make easier the understanding provide one example of Type II adaptation. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-256	A	9	3			I would suggest rephrasing 'global publics good nature of the climate change problem' to 'pervasive, complex, public and global character of climate change' (Irene Lorenzoni, University of East Anglia)	D
20-257	A	9	6	9	6	It appears from the way in which the sentence is written that mainstream development is synonymous with sustainable development - I disagree with this. (REF!)	D
20-258	A	9	11			section on Multiple Stresses: Add a paragraph that discusses the relationship between CC as a stress due to variability and observed impacts in the short term and expected CC that happens over longer time frames. (Kirsten Halsnaes, Riso International Laboratory)	Agree
20-259	A	9	11	9	20	Section 20.3. Overall this is a poorly written section with a poor introduction and confused messages. (REF!)	Section to be redrafted for better clarity
20-260	A	9	11			20.3 It seems that mitigation is treated like a step-child..... may the remaining text will rectify this notion (Paul Vlek, University of Bonn)	Mitigation more directly treated in WGIII
20-261	A	9	13	9	20	Consider referencing two recent important papers on this topic: Turner, B.L., Kasperson, R.E., Matson, P., McCarthy, J.J., Corell, R.W., Christensen, L., Eckley, N., Kasperson, J.X., Luers, A., Martello, M.L., Polsky, C., Pulsipher, A. and Schiller, A., 2003. A Framework For Vulnerability Analysis In Sustainability Science. Proceedings, National Academy of Sciences, 100(14): 8074-8079.; Turner,	Agree

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						B.L., Matson, P., McCarthy, J.J., Corell, R.W., Christensen, L., Eckley, N., Hovelsrud-Broda, G., Kasperson, J.X., Kasperson, R.E., Luers, A., Martello, M.L., Mathiesen, S., Polsky, C., Pulsipher, A., Schiller, A. and Tyler, N., 2003. Illustrating The Coupled Human-Environment System For Vulnerability Analysis: Three Case Studies. Proceedings, National Academy of Sciences, 100(14): 8080-8085. (Colin Polsky, Clark University)	
20-262	A	9	16			The term "precursors of sustainable development" is new to me. Maybe also for other readers. Perhaps this term needs some further explanation at this point. (Bruggink Jos, ECN)	Agree
20-263	A	9	17	9	17	Perhaps phrases like "the devil is certainly in the confounding details" can be avoided for reasons of easy comprehension by non-native English readers. (Ulka Kelkar, TERI (The Energy and Resources Institute))	Agree
20-264	A	9	23			20.3.1. Too many examples and not enough choice examples. For example, the discussion on p. 12 is too detailed. Better yet, find some examples where the litany of environmental change cited in this section has been caused or exacerbated by CLIMATE change. This is not done here. Karen O'brien and Brian O'Neill may provide some literature on this. (David Carr, University of California, Santa Barbara Department of Geography)	Agree
20-265	A	9	23			Section 20.3.1. There is an implicit emphasis so far, as reflected in most of the case studies, on the direct impacts of climate change on the developing world. Typically in these situations, environmentally-vulnerable economies often combine with chaotic governance and externally dependent trade, aid and finance. By comparison the vulnerability for many developed nations appears small in comparison. Therefore we should make a more clear distinction between the adaptation and vulnerability issues of the developing vs the developed world. The developed world in its own territory is generally better equipped for impact defences and adaptation (except perhaps oneoff cases such as New Orleans). However their relative material and institutional capital, can be observed as instrumental and inter-dependent with the relative poverty and disorganization of developing nations. (Joe Ravetz, University of Manchester)	No guarantee that cases such as New Orleans are in fact "one-off" exempels. Evidence suggests otherwise. But in general, agree with this point
20-266	A	9	23	12	23	Section 20.3.1. I think this has the wrong focus. I would re-write taking into account: i) poverty; ii) globalisation; iii) other causes of environmental change (i.e. the MEA stuff); iv) conflict. At present these ideas are somewhat jumbled together with an excessive focus on the MEA and Africa. (REF!)	Agree. Overemphasis on environmental stresses at expense of governance, marginalization, etc. Will be addressed
20-267	A	9	29	9	30	Efforts at such an approach are provided in Goklany (1999, 2000, 2005, 2005b)	Thanks for references

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						(Indur Goklany, Office of Policy Analysis, Department of the Interior)	
20-268	A	9	38	10	2	I would delete all these numbers from the MEA, the ideas are communicated in Table 20.1 - so this is a duplication. (REF!)	Need numbers for clarity; otherwise table is too categorical
20-269	A	9	42	9	43	But aggregate withdrawals in some developed countries (e.g., the US) have started to decline despite increases in population and gdp. Don't just give the pessimistic side. See Kates and Parris (2003), Proceedings of the National Academy of Sciences of the United States of America 100(14): 8068-8073 (July 8, 2003) (Thomas M. Parris, ISciences, LLC)	Good point if true; differences in reporting account for some of cited trend
20-270	A	10	5			Drivers and indirect drivers of change' - newly introduced concept which needs to be clarified and referenced (Edward Clay, Overseas Development Institute)	Agree
20-271	A	10	9	10	12	This sentence presents an overly simplistic view of trends in human well-being around the world. I would suggest incorporating the findings of Goklany (2002b), Globalization of Human Well-Being, Policy Analysis, No. 447, Cato Institute, available at <a href="http://www.cato.org/pubs/pas/pa447.pdf">http://www.cato.org/pubs/pas/pa447.pdf</a> . In fact, most indicators of well-being (with the possible exception of GDP per capita) indicate that divergences between wealthy and poor countries have declined since the 1950s, although Sub-Saharan Africa has, once again been falling back since the 1980s (partly because of AIDS, malaria, lack of economic growth, poor governance, etc.). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Disagree. Work on human well-being was result of 4 year international process of experts and looked both at gains and losses in different component of well-being
20-272	A	10	11		12	A broad, simplistic generalisation that is arguable. Many poorer countries have been making the transition to middle income and even highly industrialised economy status. (Edward Clay, Overseas Development Institute)	Good point on being specific
20-273	A	10	11	10	14	What these aggregate figures hide is: much of the massive increases in consumption have taken place in industrialised economies with trivial negative increases in well-being, whereas such increases in pre-industrial developing nations are critical but made difficult by extraction histories of more powerful nations (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	Good point
20-274	A	10	16	11	6	It could be mentioned that this report is available (free of charge) on the web at the following URL " <a href="http://www.millenniumassessment.org/proxy/document.356.aspx">http://www.millenniumassessment.org/proxy/document.356.aspx</a> ". The table is a not too good adaptation of the original figure. With the authors and editors permission, it could maybe possible to use the original one! It would also simplify the text. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	Agree
20-275	A	10	16			It is annoying when the authors repeatedly refers to figures in other publications,	Agreed, but cannot reproduceer all available

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						which the reader may or may not have easy access to. If the figure is important, why not include it here? (Tord Kjellstrom, Australian National University)	literature due to space constraints
20-276	A	10	31			age structures also matter (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	Agree
20-277	A	10	33	10	35	Sentence is incomplete. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	Will fix
20-278	A	10	35	10	37	The stress is not only site-specific. It can also have consequences on contiguous sites. A good example of this issue is the transboundary river watersheds. The water withdrawal or the hydraulic works on water courses cause stresses not only in the local region, but also in the downstream regions. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	Agree
20-279	A	11	2			Table 20.1: What is the overall value of this graphic? Unclear. (P. H. Liotta, Pell Center for International Relations and Public Policy)	Will clarify
20-280	A	11	9			The reader needs to be reminded of the special nature of the African example - the continent in which there have been high population growth but the lowest rates of economic development - so that the issues are different from Asia in which there has been high rates of growth. (Edward Clay, Overseas Development Institute)	D
20-281	A	11	9	11	21	The causal environmental scarcity->conflict connection has been very difficult to establish outside of anecdotal/qualitative narratives. I would use caution in relying so heavily on this. (Thomas M. Parris, ISciences, LLC)	D
20-282	A	11	9			The analysis of the problems of the African continent do not seem to have been done justice in the 2 paragraphs on page 11. Much of the violent conflict discourse is very ambivalent about the causes...The Senegal river story is anecdotal and should go to a box. There are examples where water scarcity actually led to better international arrangements and cooperation. (Paul Vlek, University of Bonn)	D
20-283	A	11	11	11	11	Murkirwa. Complete reference. See also Page 50 Line 22 (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-284	A	11	11			consequences for what? compared to what? urbanisation is also response to opportunity and may still be a lot better than staying in the country (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-285	A	11	12			Contracting rural labour supply is not general case. (Edward Clay, Overseas Development Institute)	D

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20-286	A	11	15	11	15	Ogbonna. Complete reference. See also Page 50 Line 44 (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-287	A	11	18			Another not necessarily typical case of migration from resource poor to resource richer areas. See below Page 17, line 18) (Edward Clay, Overseas Development Institute)	D
20-288	A	11	19			Again this is better for the poor than staying in one place and just dying (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-289	A	11	19	11	21	There are a large number of papers refuting environmental determinism in conflicts, e.g., Homer-Dixon. (Richard S.J. Tol, Uni. Hamburg)	D
20-290	A	11	21	11	21	Correct: "Darfur" (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-291	A	11	22	12	23	How robust is this case given the focus on 1970s and 1980s during which there was a downward, but possibly cyclical movement in rainfall levels in the Sahel region, apparently reversed in the period since c. 1986? If the climatic variability/change issue is unclear, then it should not be made the subject of a high profile case study that will be the focus of criticism by sceptics. At least it should be made clear that these can be the effects of variability and so are likely to be the effects of change. This is more like a box that a section of the main argument. (Edward Clay, Overseas Development Institute)	D
20-292	A	11	23	11	25	The main issue is not the freshwater availability, but the persistence of the drought which have began during the 70's. See: L'Hôte, Y., G. Mahé, B. Somé, and J. P. Triboulet. 2002. Analysis of a Sahelian annual rainfall index from 1896 to 2000; the drought continues. Hydrological Sciences Journal 47:563-572. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-293	A	11	23			Although the story described here is very informative, it seems too detailed. For instance, is the number of farmers killed or held in custody necessary? (Kiminori Itoh, Yokohama National University)	D
20-294	A	11	23			On the contrary many of these shifts to urban areas may reduce vulnerability to CC especially if "allowed" to be industrialised by ag-protectionist countries elsewhere (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-295	A	11	25	11	29	This sentence is complex and introduces several different concepts: (1) the variability (not uncertainty) of the spatial and temporal distribution of precipitations (See for example: Lebel, T., A. Diedhiou, and H. Laurent. 2003. Seasonal cycle and interannual variability of the Sahelian rainfall at hydrological scales. Journal of Geophysical Research Atmospheres 108 (D8):Art. No. 8389.); (2) the consequence of this variability on the water resources availability (which includes groundwater);	D

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						(3) the water needs by the population at local scale, and moreover at regional scale, which lead to transboundary issues. It is necessary to rewrite the sentence in a more clear way. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	
20-296	A	11	26	11	27	It's not clear that a decline in water availability is the "norm" under climate change. Arnell et al. (2002) and Arnell (2004) suggest that more water may be available to more people with climate change than in the absence of climate change, at least through 2085. The underlying problem will not disappear even if CC does not exacerbate matters, assuming it does (in the first place). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-297	A	12	1	12	20	This case study should be reduced. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-298	A	12	1	12	1	Correct "Senegal" (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-299	A	12	1	12	23	This is less a story that confirms the environmental scarcity leads to conflict than one of changes in property rights imposed by a centrally planned and culturally insensitive project leading to conflict. The last sentence reads, "it is impossible to guarantee that similarly inspired hostilities will not again erupt in West Africa." Of course, it is also impossible to guarantee that they will. Is anyone willing to "guarantee" that the US will not have another civil war in the next 100 years? (Thomas M. Parris, ISciences, LLC)	D
20-300	A	12	18	12	26	This essentially argues for greater focus in the near to medium term on dealing with current urgent problems, and lesser emphasis on whether, or how much, CC will add to them. However, this should be done in a manner that also advances the ability to deal with the future problems due to climate change (Goklany 2005). In the near to medium term (i.e., for most of the remainder of this century), the contribution of CC to climate-sensitive hazards (e.g., water shortage, malaria, dengue, diarrhea, habitat loss), will likely be smaller than that due to other factors (Goklany 2000, 2003, 2005). Over this time frame, it would be much more effective (and economic) to address the total (CC plus non-CC related) problems than through efforts to address only the CC-related components. There are two general approaches, which are not mutually exclusive, whereby this can be achieved: (a) reduce vulnerability to these problems (because they are urgent today and might be exacerbated by future climate change) and (b) broadly advance sustainable development (particularly in developing countries since that would generally enhance their adaptive capacity to cope with numerous problems that currently beset them, including climate-sensitive problems). But meeting the MDGs	D

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						is what the second approach is all about. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	
20-301	A	12	22	12	23	A balanced presentation of conflict issues would also draw attention to US interventions in certain oil-rich countries in middle-east. These are energy-related and crucial to global sustainability. (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-302	A	12	23			Although the story described here is very informative, it seems too detailed. For instance, is the number of farmers killed or held in custody necessary? (Kiminori Itoh, Yokohama National University)	D
20-303	A	12	23			Of course but this itself has little to do with climate change (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-304	A	12	26	13	29	Section 20.3.2 is very general and seemingly based on few references. Some of the concepts are in need of clarification as the next few comments illustrate. (Edward Clay, Overseas Development Institute)	R
20-305	A	12	26	12	29	This is a very political conclusion. Section 20.3.3 The section is a key part of the Chapter 20 conclusions, but the style of the arguments are too abstract and will be very difficult for readers to understand if they are not familiar with general work on social capital and the underlying literature (Kirsten Halsnaes, Riso International Laboratory)	R
20-306	A	12	26			20.3.2 The first paragraph is so convoluted that most policy makers will skip it. This is a recurrent problem and a serious distraction for a text that should convince exactly those people. e.g.....Since when do boundaries define vulnerability? In the remaining text, the lists are self explanatory. However, the text in between makes all of it rather disjointed. What does This second tier refer to? Second to the list of three referred to earlier? Only a very attentive reader will follow that story line. (Paul Vlek, University of Bonn)	R
20-307	A	12	28			section 20.3.2 The relationship between the two lists of elements in adaptive capacity is not so clearly explained in the short version (Kirsten Halsnaes, Riso International Laboratory)	R
20-308	A	12	33			its adaptive capacity- whose? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-309	A	12	34	12	35	perhaps most fundamentally the role adaptive capacity in defining.....! "Most fundamentally" is a strong statement. Needs a reference. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R

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20-310	A	12	38			"sorting out" suggests the insights are obscure! I agree (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-311	A	12	38	12	49	20.3.2, pg. 12, lines 38-49: Again, inter-textual reference, see Chapter 18.3.4, and possibly Chapter 17. (P. H. Liotta, Pell Center for International Relations and Public Policy)	R
20-312	A	12	38	12	49	"determinants" is much too strong of a word. "factors influencing" might be more appropriate. Bullets 3 and 7 are effectively the same thing. (Thomas M. Parris, ISciences, LLC)	R
20-313	A	12	39			Influences rather than determinants (Edward Clay, Overseas Development Institute)	R
20-314	A	12	39			It is worthwhile to list in brackets the 3 factors again (exposure, baseline sensitivity and adaptive capacity). (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-315	A	12	42			structure of critical institutions' (Edward Clay, Overseas Development Institute)	R
20-316	A	12		14		in the discussion on adaptive capacity the willingness to act is missing; pages 12-13 don't include this, other than in page 13 lines 27-28 about actually using the adaptive capacity, suggesting that the concept does NOT include willingness to act. However, page 14 mentions the political will as a prerequisite. (Rob Swart, MNP)	R
20-317	A	13	1			the public's perceived attribution' implies a conception of a society which is not specified (Edward Clay, Overseas Development Institute)	R
20-318	A	13	1	13	18	Unclear why a discussion of indicators appears here. Suggest deleting lists (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-319	A	13	9		18	system/population and elements/groups are analytical unclear, 'fudges' which must be unpacked (Edward Clay, Overseas Development Institute)	R
20-320	A	13	20		29	This model presents the process of adaptation as being highly formal, when in reality much adaptation is informal. (Edward Clay, Overseas Development Institute)	R
20-321	A	13	23	13	23	Change "if it were" to "for it" (Michael MacCracken, Climate Institute)	R
20-322	A	13	29			Disagree; capacities may not be "used" for strategic reasons and also because other powerful actors e.g.. Nation states prevent them from being exercised (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R

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20-323	A	13	29	13	29	Consider referencing two recent important papers on this topic: Turner, B.L., Kasperson, R.E., Matson, P., A recent paper could be mentioned in this context, as the paper discusses 8 steps for effective vulnerability assessments: Polsky, C., Schröter, D., Patt, A., Gaffin, S., Martello, M.L., Neff, R., Pulsipher, A. and Selin, H., 2003. Assessing Vulnerabilities to the Effects of Global Change: An Eight-Step Approach. Research and Assessment Systems for Sustainability Program Discussion Paper 2003-05. Environment and Natural Resources Program, Belfer Center for Science and International Affairs, Kennedy School of Government, RHarvard University, Cambridge, Massachusetts. <a href="http://ksgnotes1.harvard.edu/BCSIA/sust.nsf/pubs/pub75">http://ksgnotes1.harvard.edu/BCSIA/sust.nsf/pubs/pub75</a> . (Note that this paper will soon be published formally: Schröter, D., Polsky, C. and Patt, A., 2005. Assessing Vulnerabilities to the Effects of Global Change: An Eight Step Approach. Mitigation and Adaptation Strategies for Global Change(Winter).) (Colin Polsky, Clark University)	R
20-324	A	13	32			Section 20.3.3: Simplify to “The determinants of adaptive capacity” (David Carr, University of California, Santa Barbara Department of Geography)	D
20-325	A	13	32			20.3.3 Implications of or for? Diversity? (David Carr, University of California, Santa Barbara Department of Geography)	D
20-326	A	13	32			20.3.3 As in 20.3.1 this section could be reduced by removing unnecessary detail from case studies and by making one or two key points that are then backed up by 1 or 2 choice case studies. Other case studies could be cited parenthetically to support the key points to be made. (David Carr, University of California, Santa Barbara Department of Geography)	D
20-327	A	13	32		40	Another paragrapah full of unanalysed constructs. (Edward Clay, Overseas Development Institute)	D
20-328	A	13	32			Define "diversity" - remind reader of what the IPCC 2001a noted. (Anthony Leiserowitz, Decision Research)	D
20-329	A	13	33	13	34	It is not very convincing that Adgers and Vincents work is consistent with the “weakest link” hypothesis. When this hypothesis subsequently is followed up by health literature, it sounds very much that adaptive capacity is narrowly seen in the context of disaster management and very short term related responses. (Kirsten Halsnaes, Riso International Laboratory)	D
20-330	A	13	34	14	40	The authors here present a model of the process of adaptation which is not generally accepted. The 'weakest link' hypothesis could be criticised as simplistic in presenting a complex process as one in which there are binding constraints rather than multiple influences which may inhibit adaptation. Some influences will be more important, but it is unlikely that any one will be an overriding binding	D

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						constraint. The controversial nature of the hypothesis becomes clear in the listing of prerequisites including such unanalysed constructs as 'political will'. Such a construct is difficult to formulate in terms of a testable hypothesis. The authors of a report which is supposed to be based on a full literature review should consider presenting alternative, competing hypotheses. (Edward Clay, Overseas Development Institute)	
20-331	A	13	41	13	44	20.3.3 pg. 13, lines 41-44: The Yoke and Tol research is critical and requires emphasis. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-332	A	13	46			This sentence is an example of vague statements that do not give the reader any useful information (Tord Kjellstrom, Australian National University)	D
20-333	A	13	49	14	8	This list seems similar to the many factors that drive environmental improvements in various countries, as noted in Goklany (1999a). Goklany argues that prior to any improvements, society must first perceive the problem. Accordingly, it first goes through a "period of perception." This is, of course, only possible if the problem is perceived as causing a reduction in well-being. Once this is perception sets in, then a society -- particularly if it is a democratic society or has some means of converting public desires into action -- can generate the political will to do something about it, which results in an "environmental transition." (See Goklany 1999a; a simpler version is available in Goklany (1998), on the web at <a href="http://www.cato.org/pubs/regulation/regv21n4/air.pdf">http://www.cato.org/pubs/regulation/regv21n4/air.pdf</a> . (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-334	A	14	3	14	7	If want to keep the earlier list then suggest a figure to show mapping. But need to also argue why this is just for understanding SD and CC links and more so than other frameworks (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-335	A	14	3			what are the numbers in italics and brackets after each item listed? (Irene Lorenzoni, University of East Anglia)	D
20-336	A	14	10	14	11	The reference numbers are referenced to the first (Page 12) or to the second list (Page 13)? (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-337	A	14	13			Why cannot a heat-related event affect more than one individual? If a person suffers from heat stroke or even dies, the family and the community will loose a person, whose work input may be essential. A heat wave can make a whole community less productive due to the impact heat has on the work ability of individuals. Sustainability has to do with the ability a community has to sustain the	D

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						work input required to produce food and other essentials for teh community to survive and be healthy. Heat is a hazard that can have direct and indirect collective effects, even though these effects are not contagious as in the example of measles. (Tord Kjellstrom, Australian National University)	
20-338	A	14	14	14	19	20.3.3 pg. 14 lines 14-19: Unclear. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-339	A	14	16	14	19	This way of concluding is not convincing, and the same is the case for page 14, lines 27-30, where more details are neededD (Kirsten Halsnaes, Riso International Laboratory)	D
20-340	A	14	18	14	18	I would avoid the use of the terms 'social and human capital' comment made above. (REF!)	D
20-341	A	14	21	14	49	It should be noted that a major weak link is the inability -- for whatever reason: theological, ethical, social, or whatever -- to harness available technologies and sometimes reject "second best" solutions (because they are not perfect) (Goklany 2000). For example, the resurgence of malaria in many parts of the world was partly due to a cessation of the use of DDT (Goklany 2001: 15-20). What makes this example even more remarkable is that indoor residual spraying with DDT is very cheap, and easy to implement. Similarly, inhibitions regarding GM technology could and, as Zambia and Zimbabwe's response to GM corn sent by the US as aid during their recent famines indicates, compromised the ability to deal with hunger and malnutrition (Goklany 2001: 29-56; 1999c: 123). As another example, consider that the Norse colonists of Greenland apparently would not employ technologies used by neighboring cultures (Goklany 1995). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-342	A	14	27	14	30	Vague, explain (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-343	A	14	28	14	49	This sounds confuse. How useful is the public health conclusion that the limiting factor is capability to deal with the problem? To deal with the problem is necessary to invest in social capital, what takes long time. The other example is quite different. If availability and distribution of resources helps adaptive capacity then, it is useful to blame political will. With political will, in these conditions, it should be easy to execute the drivers of adaptive capacity.. Also, in line 49 it is useful to explain why through the public health lens the diseases risk spreading would not be identified as the weakest link. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-344	A	14	29			Mixed metaphors - "framed from the lens"?	D

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						(Anthony Leiserowitz, Decision Research)	
20-345	A	14	32			meaning obscure (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-346	A	14	32	14	40	I do not dispute Kovats and Koppe, but this is not adaptive capacity. This is adaptive capacity to heat in the USA. No broader implications can be suggested. (Richard S.J. Tol, Uni. Hamburg)	D
20-347	A	14	39			"Political will" - fails to recognise that "relevant" political will which is lacking may lie in other countries (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-348	A	14	48	14	49	Do you mean that generally the link isn't identified but that Gubler and Wilson (2005) did pinpoint it in their work? Perhaps clarify. (Irene Lorenzoni, University of East Anglia)	D
20-349	A	15	2			Rubbish. Adaptive capacity ideas are also workable for non-specific and poorly understood problems. (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-350	A	15	2	15	5	Please, be more clear on how you come to the conclusion that links between economic intervention and desired outcomes is an empirical issue. Not enough clear. Are you trying to show, by the discussion starting on this same page on line 8, that diversity of drivers are so many that it is impossible to forecast the success of any economic intervention in one particular region? I understand that carrying out research on these issues it would be possible, some day in the future, to inform policy-makers on how to interfere with better chance of success. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-351	A	15	2	15	11	Bangladesh example. Can you explain why the public lens would be unable to conclude the key issue is why arsenic is in the water? (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-352	A	15	8			Needs some rephrasing - what probs and limitations? Based on what you say here, would lack of information or knowledged form part of the determinants listed on p 13? (Irene Lorenzoni, University of East Anglia)	D
20-353	A	15	9		11	Delete 'temporal' The assertion that 'short temporal scale ' is a key issue is probably incorrect or needs to be clarified - see for example Ravenscroft, P. et al. 2004 'Arsenic in groundwater of the Bengal Basin, Bangladesh: distribution, field relations, and hydrogeological setting' Hydrogeology Journal . The chapter quotes a secondary source from the climate change literature rather than a peer group	D

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						reviewed source concerned with the scientific problem in question. (Edward Clay, Overseas Development Institute)	
20-354	A	15	13	15	24	includes many important conclusions, but the text is so general that the reader cannot understand if there is evidence for the last – rather far going – conclusion of the paragraph (Kirsten Halsnaes, Riso International Laboratory)	D
20-355	A	15	13	15	16	Gobbledygook. Rephrase (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-356	A	15	13			20.3.3 The first part of the 2nd Para on page 15 is unnecessarily convoluted. (Paul Vlek, University of Bonn)	D
20-357	A	15	15	15	16	What is 'effect' referring to? Was it intended to be 'influence on adaptive capacity'? (Irene Lorenzoni, University of East Anglia)	D
20-358	A	15	16	15	19	How is this relevant to chapter? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-359	A	15	26		40	Such a report should not be the place to pursue evidence to support a hypothesis - the weakest link approach. (Edward Clay, Overseas Development Institute)	D
20-360	A	15	26	15	40	Consider citing findings of the State Failure Task Force/Political Instability Task Force. <a href="https://mitpress.mit.edu/journals/pdf/wash_28_1_9_0.pdf">https://mitpress.mit.edu/journals/pdf/wash_28_1_9_0.pdf</a> (Thomas M. Parris, ISciences, LLC)	D
20-361	A	15	32			Colin Butler, Australian National University, has also published a number of papers on "civilization collapse" (Tord Kjellstrom, Australian National University)	D
20-362	A	15	32			"social fabric" - meaning unclear (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-363	A	15	32	15	40	20.3.3 pg. 15, lines 32-40: Rather than over-relying on Diamond, clear emphasis must be given to the ground-breaking work of Andrew Dugmore of the University of Edinburgh. His field work and research are far more nuanced than Diamond. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-364	A	15	32	15	40	20.3.3 pg. 15, lines 32-40: Rather than over-relying on Diamond, clear emphasis must be given to the ground-breaking work of Andrew Dugmore of the University of Edinburgh. His field work and research are far more nuanced than Diamond. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-365	A	15	33			why "scholarly"? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-366	A	15	38	15	40	"... but why?" -- part of the answer may lie in the previous comment. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R

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20-367	A	15	43	16	32	This review could be strengthened by looking at Goklany (2001a), "Economic Growth and the State of Humanity," available at <a href="http://www.perc.org/publications/policyseries/econgrowth.php">http://www.perc.org/publications/policyseries/econgrowth.php</a> (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-368	A	15	45	15	47	Goklany (1995, 1999) would be appropriate references for this since these papers were among the first to note the synergies between not only sustainable development but also the ability to adapt and the ability to mitigate. I would also take a look at Goklany (2005: 675-678). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-369	A	15	45	15	47	Big assertion. Is it believable? Are the arguments really there - or is it a circular reasoning? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-370	A	16	2			"overall stability" of what? might this mean "stability" in a bad state in which case claim is false. Charge is required. Consider bad dictatorship (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-371	A	16	8			20.3.4. The last paragraph could be cut. (David Carr, University of California, Santa Barbara Department of Geography)	R
20-372	A	16	8		32	There are multiple influences listed in this paragraph and there is a serious problem as the literature confirms a serious difficulty is specifying them in a measurable way. (Edward Clay, Overseas Development Institute)	R
20-373	A	16	8			Doesn't sound like very recent citation. What is meant by "Large Enough" (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-374	A	16	8	16	32	What point are these examples demonstrating? That the driving forces in any given situation are highly contextual and particular to that particular place? Is this what is meant by "empirical question" in line 5? If so, the term "empirical question" is misleading and inappropriate. What are "human capital externalities"? What does "deficiency in governance determinants" mean? (Anthony Leiserowitz, Decision Research)	R
20-375	A	16	8	16	13	The terms human and social capital are used here. There needs to be a definition of human capital and social capital somewhere in this chapter. (REF!)	R
20-376	A	16	8			20.3.5 In a chapter that needs to be readable for a wide audience, jargon such as "human capital externalities" may need to be replaced by their translation. That does not make the paper less scholarly. (P. 16, L. 8). This paragraph also is strongly skewed towards development and does not make the point that sustainable development and adaptation rely on the same factors.	R

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Paul Vlek, University of Bonn)	
20-377	A	16	14	16	15	This is a case where one factor is shown to compensate for others. (Elizabeth Malone, Joint Global Change Research Institute)	R
20-378	A	16	18			budget ... - explain (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-379	A	16	31	16	32	One can as well based on other studies conclude the opposite, and since this is a very political issues it would be better to exclude it. (Kirsten Halsnaes, Riso International Laboratory)	R
20-380	A	16	35			Sections 20.3.5 and 20.3.6. The reading of both sections leads me to make one remark. Unsustainable development provoques sometimes hazards with lifes and economic losses. But without any logic, the causes (and responsibilities) are frequently attributed to the climate change. An ordinary exemple is the uncontrolled urbanisation or the overfarming, which generate flash floods in case of heavy rainfalls. In industrial countries (South of France, for example) as in developping countries (Central America, North Africa) recent experiences show that the immediate indictment by the victims (civil society or public authorities) is directed to the climate change. Why? It is probably because the global change indictment don't put in question the unsustainable policies, and, moreover, moves away the concept of adaptation, which needs personnal or collective investment. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-381	A	16	35	17	47	Section 20.3.5. This section does not explain the causality, or justify the title of this section. It seems to be more a review of hazards literature. It does not address the differences between adaptive capacity for climate change and adaptive capacity for climate variability, nor how each might cause sustainable development to occur. The section also does not show how sustainable development leads to the emergence of adaptive capacity. (REF!)	R
20-382	A	16	35	17	47	Section 20.3.5. I disagree with the premise that there is a two way causality between climate change and sustainable development. (REF!)	R
20-383	A	16	37	17	10	References for these paras should include Goklany (1995, 2000, 2003, 2005), all of which deal precisely with the issues addressed here. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-384	A	16	37	16	38	If there is a strong link between sustainable development and adaptive capacity as mentioned in pg 15, then the conclusion that one influences the other is obvious. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R

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20-385	A	16	43	16	45	This conclusion is not only due to Swart et al (2003). This is one of the major conclusion of IPCC-TAR and is derived from the new IPCC SRES Scenarios. See for example. Chapter 1, TAR-Mitigation. Obviously, I agree that Swart et al. (2003) is also a good reference. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-386	A	16	43	16	45	The two way nature of the links between sustainable development (SD) and climate change (CC) have been recognised clearly in earlier work (e.g., IPCC 2000), and detailed more recently (MMRS 2005). (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	R
20-387	A	16	45			I believe Swart et al have not stated that linkages between sustainable development and climate change have been primarily defined as mitigation measures, in fact I disagree (Rob Swart, MNP)	R
20-388	A	17	1			alternative to what? for whom? The wealthiest or poorest in a country? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-389	A	17	6			the same programs however could make it hard to meet livelihood and sustainability objectives for the poor or be socially unjust (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-390	A	17	6			It would be interesting to provide some examples of where action on climate change could contrast or even constrain action on adaptation or increasing of adaptive capacity. (Irene Lorenzoni, University of East Anglia)	R
20-391	A	17	8	17	10	20.3.5 lines 8-10. The “would be” language is inappropriate here. (David Carr, University of California, Santa Barbara Department of Geography)	R
20-392	A	17	14	17	17	Should note that: [1] globally the loss of life due to extreme events is declining [Goklany (2005c). Is Climate Change the 21st Century’s Most Urgent Environmental Problem?. Lindenwood Economic Policy Lecture, Series 7, Lindenwood University, St. Charles, MO, available at <a href="http://www.junkscience.com/may05/Goklany_Final_Publication.pdf">http://www.junkscience.com/may05/Goklany_Final_Publication.pdf</a> . Also forthcoming in Society (Transaction Publications). [2] At least in the US property losses are rising because more property is at risk, (at least for hurricanes and floods), see: [1] Goklany (2000), [2] R.A. Pielke, Jr. and C.W. Landsea, “Normalized hurricane damage in the United States: 1925-1995,” Weather and Forecasting 13: 621-631 (1998), [3] Mary W. Downton, J. Zoe Barnard Miller, and Roger A. Pielke Jr. 2005 Reanalysis of U.S. National Weather Service Flood Loss Database. Natural Hazards Review. February 2005: 13-22.	R

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						(Indur Goklany, Office of Policy Analysis, Department of the Interior)	
20-393	A	17	16		17	increase in absolute or relative terms? Unclear (Edward Clay, Overseas Development Institute)	R
20-394	A	17	16			"losses" - true but may mostly reflect higher losses of protecting infrastructure (e.g.. Floods); "loss of life" as a result of what? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-395	A	17	16			insert "particularly" before "in developing countries" (Rob Swart, MNP)	R
20-396	A	17	18		19	C.f. page 11 lines 18-19 with opposite flow from marginal to more resource endowed areas. (Edward Clay, Overseas Development Institute)	R
20-397	A	17	19			many places show impressive falls in loss of life (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-398	A	17	29			why is this relation expected to be general (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-399	A	17	37			authors may note Gilberto and Gallopin and colleagues use this term in a neutral sense rather than only for "bad" clusters (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-400	A	18	1	19	23	Delete this section. It is a good discussion of sustainable development, but the links to climate change are mentioned only in passing. It is not adding value to WG II's report. If the section were deleted, the text would still flow from the previous section to the next one. (Lenny Bernstein, IPIECA)	D
20-401	A	18	1	19	23	There should be a para on reducing subsidies for overexploiting natural resources. See, e.g., Goklany (1995, 2005b). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-402	A	18	1	19	23	Section 20.3.6. This section is poorly written and uses a strongly authorial voice that is preaching 'deep green' conservation. There is too much use of the word 'exploitation' this could also be referred to as 'development' depending on the perspective. I also get a sense of a Malthusian tone coming through - that all problems are the result of growing population....obviously the way to deal with this is to reduce population growth....but I do not think this discussion is the aim of this section. This section needs to be strongly toned down in language, or the detractors from this view point e.g. Lomborg etc need to have their alternative argument voiced. I think this section should focus much more on transitional states (i.e. how you move from unsustainable to sustainable) (REF!)	D

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
20-403	A	18	1			20.3.6 This section reads so much easier and makes its point concisely. The change in style may be due to multiple authorship, but a lead-author should try to iron out these differences. (Paul Vlek, University of Bonn)	D
20-404	A	18	3			Sustainability is "often seen as a developing country issue"? Really? My experience with the sustainability literature is hard to reconcile with this statement. (Anthony Leiserowitz, Decision Research)	D
20-405	A	18	3	18	5	This shows yet another definition of sustainability - I think this is the 3rd so far. This one says that sustainability is about: sustainable development, environmental management and resource exploitation. There is no mention of corporate social responsibility, putting people at the centre of development or have long term visions and making active choices. There needs to be one central definition of sustainable development in this chapter that everyone needs to buy into. (REF!)	
20-406	A	18	3	18	20	Possibly delete the whole first and second paragraphs? (REF!)	D
20-407	A	18	3	18	4	delete the first sentence (REF!)	D
20-408	A	18	4			by whom? Surely the main issue is unsustainable practices of over-consuming industrial and post-industrial societies. This chapter incredibly does not mention term consumption once (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-409	A	18	5	18	8	delete the sentence beginning "This is relevant..." (REF!)	D
20-410	A	18	6		7	Arguable indeed - what about India and China? (Edward Clay, Overseas Development Institute)	D
20-411	A	18	6			"drivers" - unclear (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-412	A	18	8	18	12	logical flow unclear (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-413	A	18	8	18	10	The growing recognition of SD-CC linkages in the policy community (both internationally and nationally) is described in some detail in MMRS 2005 (chap.1 & 11). (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	D
20-414	A	18	14	18	20	delete this, unneeded and doesn't link the prior and following paragraphs very well. (Anthony Leiserowitz, Decision Research)	D
20-415	A	18	17	18	17	Should "abstraction" be "extraction"?	D

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						(Michael MacCracken, Climate Institute)	
20-416	A	18	18			Perhaps but there were trade-offs made in development. Depends on your perspective (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-417	A	18	22			delete "or" (Rob Swart, MNP)	D
20-418	A	18	32			what are these? Do you mean extractions (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-419	A	18	32			What is a water "abstraction"? Do you mean extraction? (Anthony Leiserowitz, Decision Research)	D
20-420	A	18	34	18	36	This is the literature which needs to be reviewed (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-421	A	18	34	19	9	This section starts with the statement, "the published literature on the links between sustainable management...and climate change...is very sparse, but what does exist tends to focus on the following areas..." Only (1) actually links these. (2) and (3) both end with the statement that neither of these studies consider or incorporate climate change. Then why are they included in a list of the literature that does? (Anthony Leiserowitz, Decision Research)	D
20-422	A	18	38	19	23	All the discussion in this space deals with potential "sustainable" measures but are criticized since they don't incorporate climate change. This sounds to me a conflict with the main thesis of this paper which says that adaptation measures are always coherent with sustainable measures. Shall we understand the reverse isn't true - Sustainable measures are not always in tune with adaptation to climate change? (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-423	A	18	43	18	44	This example looks so interesting that a footnote could be added with one example of non-structural flood management. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-424	A	18	44			meaning? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-425	A	18	46			meaning? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-426	A	18	47			term very broad and vague (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-427	A	19	11		23	Only when climate change is OFFICIALLY recognised as stressor, can one expect public programmes and private programmes to address it explicitly and separately	D

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						from environmental impacts (Edward Clay, Overseas Development Institute)	
20-428	A	19	11	19	12	Similar arguments can be made with respect to GH6 emissions - anticipating future agreements (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-429	A	19	15			the Water Framework Directive indeed does not address climate change, but the subsequently planned (draft) Floods Directive and Marine Framework Directives do take climate change and sea level rise explicitly into account. These are not yet very concrete though, but the EU does take climate change into account in policy development outside the environment area. (Rob Swart, MNP)	D
20-430	A	19	26			20.3.6 How is sustainable development different from environmental management in this context? Lines 14-20: these sorts of studies are quite well documented and should form a “given” to this chapter which instead needs to provide more examples of human impacts resulting in CLIMATE change and human-induced CLIMATE change leading to environmental and development outcomes. The Journal Climate Studies may be useful. Hallie Eakin’s work may provide some choice case studies. (David Carr, University of California, Santa Barbara Department of Geography)	D
20-431	A	19	26			Section 20.3.7 There is a literature and some international activities related to SD and vulnerability/adaptation seen from a social perspective. GEF has also initiated programmes that emphasizes these relationships. (Kirsten Halsnaes, Riso International Laboratory)	D
20-432	A	19	26			"Try "from overconsumption to sustainable energy" - "mitigation" - this is clearly the main issue (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-433	A	19	26			Please reference Chapter 18, especially, 18.3.5. Inter-textual relationships are essential here, especially since the cohesive center of Chapter 20 is far less convincing. Section 20.3.6 should receive consideration for earlier emphasis in the chapter. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-434	A	19	26			203.6: The opening lines on sustainability should receive emphasis, immediately, at the chapter’s beginning. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-435	A	19	26	20	42	Section 20.3.7. Poor section. I think that there is a lot of literature that focusses on development and adaptation, particularly the work of Neil Adger and others in Resilience Alliance. Also, see Mak Pelling (Kings College London) and Judith	D

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						Petts (Birmingham). Again there is a strong authorial voice and very few references - this needs to be refocussed - perhaps with another section heading, such as 'the changing sustainable development focus' (REF!)	
20-436	A	19	26			20.3.7 Climate change and development are linked on the adaptation and the mitigation side. The fact that the UNFCCC and others have paid more attention to the mitigation side is no argument to largely ignore it in this chapter. If the authors feel that this is justified, it would be more logical to take this section to the introduction as a justification for the bias towards adaptation in this chapter. (Paul Vlek, University of Bonn)	D
20-437	A	19	28	19	42	I would add to the list of papers cited here, Goklany (1995, 1999, 2000, 2003, 2005, 2005b). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-438	A	19	28	19	34	Relatively more attention in this chapter should be given to this work (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-439	A	19	28	19	31	Reference list - MMRS 2005 contains most recent research on CC-SD links. (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	D
20-440	A	19	29	19	31	Please, add in the reference list the IPCC-TAR. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-441	A	19	31			add Munasinghe and Swart, 2004: Munasinghe, M and R. Swart, 2004. Primer on Climate Change and Sustainable Development, Cambridge University Press (Rob Swart, MNP)	D
20-442	A	19	41	19	42	I would add that good part of the reason is that most "adaptationists" were shy about pushing solutions that would compete with mitigation, and for a long time the "mitigationists" frowned upon adaptation as a method of avoiding hard choices about controlling emissions. It also seems to me, looking at this chapter, that part of the problem is a certain insularity among the adaptationists. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-443	A	19	41	19	42	SD-CC links have been recognised for some time, although the TAR did not give sufficient coverage to the issues -- see IPCC (2000) for TAR based review and citations. (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	D
20-444	A	20	0			20.9 This section is one of the few where expansion would help. (David Carr, University of California, Santa Barbara Department of Geography)	D
20-445	A	20	0	20	31	GEF is a small part of the relevant national and private investments in adaptive capacities. Why focus on it so much?	D

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						(Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	
20-446	A	20	1	20	5	There are obvious strategic reasons for initial focus on mitigation. After all it is GH6 that is root cause, and emphasising "adaptation" could have and may still lead to reduced concerns with mitigation by those who can most afford adaptation costs (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-447	A	20	7	20	16	20.3.6, pg. 20, lines 7-16: Good encapsulation. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-448	A	20	7	20	15	Because the main MDGs are poverty related, implicitly vulnerability is included, just as implicitly mitigation is included (to a much lesser degree) in one of the MDGs. This does not justify the finding that mitigation is included more. (Rob Swart, MNP)	D
20-449	A	20	15			This emphasis is not surprising because elevated CO2 in atmosphere from fossil fuel burning is one of the clearest examples of unsustainable resource use (including services of plants, ocean, and atmosphere sinks) (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-450	A	20	18	20	20	I would add a sentence following this one that reads: "On the other hand, Goklany (1999) has argued that it is poverty and lack of sustainable development that's a greater problem since it diminishes the ability to cope not only with climate change but other sources of adversity, including those which are hurdles to sustainable development. Moreover, given that the problems resulting from the lack of SD are here and now, and they exceed in magnitude the current impacts of climate change (and probably future impacts, at least for the next few decades), he would emphasize strategies that would boost sustainable development now. He identifies two general approaches to do this, either of which would boost adaptability and mitigative capacity: (a) reduce the vulnerability of society to climate-sensitive problems that might be exacerbated by climate change, and (b) develop approaches to more broadly enhance resiliency to all manners of stresses through advancing economic growth and society's technological prowess, e.g., through institutions to foster free markets, etc. (Goklany 1995, 1999, 2000, 2003, 2005). " (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-451	A	20	20	20	20	the sentence ending '...and extremes' needs to be supported by references (REF!)	D
20-452	A	20	27	20	42	I would delete these two paragraphs - I do not think they are relevant or appropriate (REF!)	D
20-453	A	20	28	20	42	Explain the abbreviation "LDC Fund". (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-454	A	20	44	20	44	OK!	D

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						(Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	
20-455	A	21	1	24	11	Section 20.4. Poor section. I would delete the two opening paragraphs and move the sections around, see specific comments below (REF!)	C
20-456	A	21	1			20.4 I am not sure that the separation into just developing and developed countries is adequate. China and India are not the same as Chad. For instance, they finance a lot of their own development projects. A more differentiated treatment would be desirable. For instance, at what point of development does a country start taking climate change into account? China certainly is. (Paul Vlek, University of Bonn)	C
20-457	A	21	3	21	14	delete this paragraph - too general at this point in the document (REF!)	C
20-458	A	21	7	21	9	Modify the sentence starting on line 7 to read: "The United Nations Framework Convention on Climate Change (UNFCCC) recognizing this fact AND THE NEED FOR BALANCE IN PROGRESS TOWARD SOCIETY'S SOCIAL, ENVIRONMENTAL AND ECONOMIC GOALS, included such concern into Article 4, which states..." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	C
20-459	A	21	16			20.4 The last paragraph is very important and should not be buried here but rather form part of a central thesis that is developed. There is also poor flow between this paragraph and the following section. (David Carr, University of California, Santa Barbara Department of Geography)	C
20-460	A	21	16			There is also a middle-scale: e.g. river basin management in relation to climate change (Tord Kjellstrom, Australian National University)	C
20-461	A	21	16	21	24	I think this discussion would benefit from mentioning the ISO standard on environmental management, which is employed internationally in a certification program under which >66,000 organizations have chosen to be certified. Although not focused on climate change, the standard promotes integrated environmental management. See <a href="http://www.iso.org/iso/en/prods-services/otherpubs/iso14000/index.html">http://www.iso.org/iso/en/prods-services/otherpubs/iso14000/index.html</a> (Elizabeth Malone, Joint Global Change Research Institute)	C
20-462	A	21	16	21	24	delete this paragraph - says nothing new (REF!)	C
20-463	A	21	17			This is a very narrow view of environmental management; excludes farmers, fishers, etc. (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	C

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20-464	A	21	18			much of the important social response may have more to do with transnational networks and coalitions than these agreements (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	C
20-465	A	21	27			20.4.1 Mainstreaming? (David Carr, University of California, Santa Barbara Department of Geography)	C
20-466	A	21	27	21	27	Re-name this section (20.4.1) as section 20.4.2 (REF!)	C
20-467	A	21	29	21	30	Modify the sentence to read: "Considering the central role of people in development and recognizing that a development plan or project could, DESPITE SOME GAINS, ALSO produce SOME effects THAT MIGHT BE detrimental to the welfare of..." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-468	A	21	29	21	33	CC-macroeconomic policy links are not adequately covered. The development literature has gone well beyond project level analysis -- major research findings in the 1990s showed how macroeconomic policies had far stronger impacts on the environment than individual projects. Examples of literature on links between economywide policies and environment include World Bank and other publications (MMWC 1994, MM 1997, MM 2002b). These linkages have been expanded to include broader links between Macro-SD policies and CC (MM 2002a, MMRS 2005). A specific tools called Action Impact Matrix (AIM) has proved very useful to engage development planners in the process -- to identify, prioritise, and address CC-SD issues (MIND 2004, MMRS 2005).  (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	N/A
20-469	A	21	30			why focus on "projects" - rights, policies, regulations are at least as important (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-470	A	21	31			too narrow (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-471	A	21	32			Remove the word "role". (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-472	A	21	40	21	41	The Caribbean Development Bank has also recently (in 2004) completed a sourcebook on the integration of climate change adaptation within the environmental assessment process. (Charlotte Benson, Independent)	R
20-473	A	21	47			A bigger issue for Climate Change than EIA of individual projects and one that is technically and politically more difficult is cumulative assessment. Should discuss	R

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						e.g.. Canadian experiences (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	
20-474	A	21	49			This paints a rather bleak picture of current use of EIA. I would have thought that governments take this more seriously (in e.g. China, Thailand, etc.) (Tord Kjellstrom, Australian National University)	R
20-475	A	21	50	22	1	What is the basis for making the statement "In developing countries...most development projects are externally funded"? (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-476	A	21	50			Some care on the consideration about donor driven. There are presently a bunch of developing countries with enough national financial resources to generate their own large projects. Even, if the number of developing countries in this situation is small, they represent a significant share of the investment in this category of countries. Thus, national policies in developing countries should also be analysed under the framework the text is considering. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-477	A	22	0	24		Subsections 20.4.2 and 20.4.3 lack concrete relevance for adaptation and sustainability, contain no references to scientific literature and are of a very general nature. Consider revision and improvement. (Bruggink Jos, ECN)	R
20-478	A	22	1	22	6	interesting enough for executive summary/conclusions (Rob Swart, MNP)	R
20-479	A	22	1	22	1	sentence ending "...externally funded" needs supporting references (REF!)	R
20-480	A	22	4	22	6	20.4.1, pg. 22, lines 4-6: excellent points here. (P. H. Liotta, Pell Center for International Relations and Public Policy)	R
20-481	A	22	9			Good title. Text that follows is about something else - indicators - rewrite section (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-482	A	22	9			Section 20.4.2) System conditions and multiple stresses: The mention of 'harm to the system' seems to pre-suppose that the system is already in some kind of equilibrium or optimum before the climate impacts. If we understand the system in terms of a typical state of imbalance, dependency, conflict, corruption and other factors of unsustainability, then the climate change impacts are one more factor of change amongst many multiple stresses. The example of the Senegal River Basin showed how such stresses can combine synergistically, but the text needs to follow this approach through. The implication is that thresholds or tipping points may be complex, sudden, unpredictable and path dependent, as is shown by the example.	R

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						The implication is that the determinants of vulnerability and hence adaptation capacity, need to be identified in this larger context of multiple stresses. (Joe Ravetz, University of Manchester)	
20-483	A	22	9	22	9	Re-name this section (20.4.2) as section 20.4.1 (REF!)	R
20-484	A	22	9			20.4.2. The EVI may need to be described a bit more to have meaning for the reader. (Paul Vlek, University of Bonn)	R
20-485	A	22	11		14	Any system' is a conceptual fudge that is carried across into the summary (Edward Clay, Overseas Development Institute)	N/A
20-486	A	22	11	23		the contents is about environmental indicators, not reflecting the title. If sustainable indicators are maintained, two important sets are missing: the CSD and EU sets (Rob Swart, MNP)	R
20-487	A	22	11	22	18	delete this paragraph- it repeats the earlier stated idea that vulnerability depends on exposure, sensitivity and adaptive capacity (REF!)	R
20-488	A	22	16	22	34	Not relevant enough (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	N/A
20-489	A	22	20	23	18	Section 20.4.2 Comment: I do not agree with "Attempts to produce indicators of environmental sustainability (ESI 2005, World Economic Forum, Levy 2002, Prescottt-Allen 2001, Consultative Group for Sustainable Development Indicators 2001) have succeeded at aggregating these individual indicators so that they respond to demands for measures of sustainability trends" (p. 23, 3-6). Ebert and Welsch (2004) provide a characterization of meaningful environmental indices - sensible or meaningful for a comparison of environmental states. A meaningful environmental index is described as an index whose underlying preference ordering is independent of admissible transformations of the variables which describe environmental states. They show that indices in the form of an arithmetic mean are mostly not meaningful. The Environmental Sustainability Index, described in Table 20.2., is an example that employs standardization as a normalization device and uses the arithmetic mean to aggregate the normalized data. Meaningful indices for environmental variables that are ratio-scale noncomparable are constructed in the form of a geometric mean. The ad-hoc nature of many indexes and the problems of aggregation, e.g. described by Ebert and Welsch (2004), should be discussed.	R

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						Ebert, U. and H. Welsch (2004), Meaningful environmental indices: a social choice approach, <i>Journal of Environmental Economics and Management</i> 47, 270–283 (Andreas Löschel, European Commission, DG JRC-IPTS)	
20-490	A	22	20	22	32	Consider citing Parris and Kates (2003) <i>Annual Reviews of Environment and Resources</i> 28:559-586 (Thomas M. Parris, ISciences, LLC)	R
20-491	A	22	34			Table 20.2. Explain the abbreviation "US-EPA" and give the reference of the source, as it is done in the other rows of the table. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-492	A	22	34			It would be better if the table starts with the efforts to develop environmental and sustainability indicators made by international agencies. The whole point of having such agencies is to work out a global consensus on technical matetrs of this type. The UN Commission on Sustainable Development started making lists of indicators already in 1993. UNEP has indicators used in their <i>Global Environmental Outlook</i> reports. UNDP includes indicators in the <i>Human Development</i> reports. OECD has a list of environmental indicators. It is also suprising that teh Ecological Footprint as an indicator of sustainability is not mentioned anywhere in the chapter. (Tord Kjellstrom, Australian National University)	R
20-493	A	22	34			Reference could be also made in this table to ISO14001 environmental standard as this has driven several companies, businesses and corporations to enact environmental initiatives. However, one also has to be careful in using these as examples of best practice. In some cases they are only used to pay lipservice to environmental requirements. The literature on corporate citizenship (focusing on the interactions between businesses, their environment and communities, both locally and globally) would also make worthwhile references in this section. (Irene Lorenzoni, University of East Anglia)	R
20-494	A	23	0			Regarding the TABLE, it's not clear that the ESI is indeed meaningful. The best one can say about this is that it is purported to be meaningful. I would recommend columns indicating pros and cons of the various indicators, which should be filled based on a critical review. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-495	A	23	6			why? The choices are reasonable (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	N/A
20-496	A	23	8	23	9	CO2 has been mis-spelt - the 2 should be subscript. (Irene Lorenzoni, University of East Anglia)	R
20-497	A	24	1			Section 20.4.3, The mitigation concerns not only the objects with a climate interaction, but also the objects affected by the technological development.	D

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						Example: within the Seine River basin, downstream from Paris, a recent modelling approach (Ducharme et al., 2004, <a href="http://medias.obs-mip.fr/gicc/bdggicc/fichiersHTML/APP01/Projets/Rap_finaux/integral-801.zip">http://medias.obs-mip.fr/gicc/bdggicc/fichiersHTML/APP01/Projets/Rap_finaux/integral-801.zip</a> ) show that the signal of the water treatment technologies will present a positive effect on water quality significantly stronger than the negative effect of the climate change scenarios. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	
20-498	A	24	2	24	11	what is the added value of this section? Delete? (Rob Swart, MNP)	D
20-499	A	24	2	24	2	delete header (REF!)	D
20-500	A	24	2			20.4.3 The title promises a lot more than what is covered in the one paragraph (Paul Vlek, University of Bonn)	D
20-501	A	24	4	24	11	move this text to the become the introduction to section 20.4 (REF!)	D
20-502	A	24	9			This is panglossian fallacy. Climate Change is classic example where the majority of world's people have very little influence on the sustainability problem but must bear most of the burdens and risks (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-503	A	24	14			20.5 could be included with 20.3 under the rubric of trends in risk and adaptation. Both these sections could then be condensed. (David Carr, University of California, Santa Barbara Department of Geography)	R
20-504	A	24	14	26	2	Good section. Well written.No comments. However, it did strike me that this is first section I have read so far that has: a clear introduction; good references; a clear flow of thoughts and ideas. The other sections should be structured like this one. (REF!)	R
20-505	A	24	14			20.5 This section is rather qualitative. It does not give the policy maker much to go on. I would have expected a strong recommendation that risk managers start assessing the increased risks and measures associated with climate change. (Paul Vlek, University of Bonn)	R
20-506	A	24	17			Only if "env. Management" is understood correctly as "management" of human activities. Disasters have a large social component that cannot be reduced to conventional "environmental management" responses and measures. ALSO RE. DISASTERS, RISKS, ETC. SEE MICK KELLY: THE DEVELOPMENT OF METHODS FOR STUDYING VULNERABILITY (DEFINED BY THE POTENTIAL TO COPE WITH AND ADAPT TO ENVIRONMENTAL STRESS) AND CASE STUDY ANALYSIS OF COPING AND ADAPTATION IN	R

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						VIETNAM, BASED ON THE METHODOLOGY WE HAVE DEVELOPED. SEE: ADGER, W. N. AND KELLY, P. M. (2000) SOCIAL VULNERABILITY TO CLIMATE CHANGE AND THE ARCHITECTURE OF ENTITLEMENTS. MITIGATION AND ADAPTATION STRATEGIES , 4, 253-266. LOCKE, C., ADGER, W. N., KELLY, P. M. (2000) CHANGING PLACES: MIGRATION'S SOCIAL AND ENVIRONMENTAL CONSEQUENCES. ENVIRONMENT , 42(7), 24-35. KELLY, P. M. AND ADGER, W. N. (2000) THEORY AND PRACTICE IN ASSESSING VULNERABILITY TO CLIMATE CHANGE AND FACILITATING ADAPTATION. CLIMATIC CHANGE , 47, 325-352. ADGER, W. N., KELLY, P. M. AND NGUYEN HUU NINH (2001) ENVIRONMENT, SOCIETY AND PRECIPITOUS CHANGE. IN: LIVING WITH ENVIRONMENTAL CHANGE: SOCIAL VULNERABILITY, ADAPTATION AND RESILIENCE IN VIETNAM , EDS. W. N. ADGER, P. M. KELLY AND NGUYEN HUU NINH, 3-18. ROUTLEDGE, LONDON. THE AIM OF THIS WORK HAS BEEN TO OPERATIONALISE AN APPROACH TO PRESENT-DAY VULNERABILITY ASSESSMENT THAT CAN BE APPLIED TO THE QUESTION OF ADAPTATION TO LONG-TERM CLIMATE CHANGE. FOR EXAMPLE, STUDY OF THE STORM WARNING SYSTEM IN VIETNAM HAS INDICATED PRESENT-DAY PROBLEMS THAT MUST BE ADDRESSED AS A FIRST STEP IN ENSURING TIMELY ADAPTATION TO FUTURE TRENDS IN STORM OCCURRENCE. CAPACITY STRENGTHENING WORK IN INDOCHINA ON SEASONAL CLIMATE FORECASTING, ANOTHER CURRENT INVOLVEMENT OF MINE, CONTRIBUTES TO IMPROVING THE ABILITY OF THESE SOCIETIES TO RESIST THE IMPACT OF LONGER-TERM CLIMATE TRENDS. (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	
20-507	A	24	20			References - The first book to explore SD-disaster links was MMCC (1994), based on a joint World Bank-US National Academy of Sciences Symposium held at the World Conference on Disasters (Yokohama 1994).. (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	R
20-508	A	24	30	24	34	it is important to consider the cultural plurality in risk attitudes implies that the question of how society ought to deal with risks can only be answered in public debate - adebate in wich people will neccessarily discuss their perception of risk and risk management from different points of view and different conceptual and ethical frameworks. (Leila Devia, National Institute of Industrial Technology)	R
20-509	A	24	30	25	50	some ideas from the hazard literature should be interesting enough to make it into	R

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						the conclusions/executive summary. I would expect a distinction between areas/sectors that are vulnerable and become more vulnerable because of climate change and areas/sectors that are not vulnerable now but become vulnerable in the future and which could learn from the others (Rob Swart, MNP)	
20-510	A	24	34			In practices these often shift risks onto less powerful actors. Some caveats are needed here. (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-511	A	24	40			Ditto (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	R
20-512	A	24	44	24	44	One cannot "manage the hazard"! One prevents the hazard or manages the crisis due to the hazard. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-513	A	25	5	25	6	The issue cannot be reduce to an economic approach. An interesting case: after recent floods(September 2005) in South of France, a TV channel interviewed a victim, who's house, built in an exposed place, was flooded for the third times in 4 years. The victim was explained that he was not understanding why the authorities don't build a levee to protect his house, which had a cost of 200 000 euros. One minute later in the same sequence, the channel interviewed a representative of the authorities explaining that the cost of the protection per house was two or three times the cost of the house! The New Orleans disaster present probably similar cases. My conclusion is that the points of view are difficult to reconcile, especially as, in a democracy, the victim is a voter, and the authority an elected! (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-514	A	25	10	25	15	Ok!! (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-515	A	25	15			What is meant with traditional measures (p. 25 l. 15). Please define NAPA or LDC NAPA. (Paul Vlek, University of Bonn)	R
20-516	A	25	16	25	16	Zhao (2002) also suggested a market-based mechanism, Trading Rights of Flood-control Forest to eliminate the dilemma among forest protection, flood hazard alleviation and ecosystem reservation. (Yong Zhao, China Huaneng Technical Economics Research Institute)	R
20-517	A	25	20	25	24	I would add Goklany (1995, 2000, 2003, 2005) to this list of references, and note that Goklany estimates that through much of this century, for most climate-sensitive hazards, reducing vulnerability to current climate-sensitive risks and/or meeting the Millennium Development Goals would provide much greater benefits	R

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						than actions to adapt specifically to the impacts of climate change or to mitigate climate change [Goklany 2005]. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	
20-518	A	25	20	25	22	Do we really need studies to demonstrate that reducing vulnerability to current climate variability is in line with reducing vulnerability to climate change? This sounds a natural consequence that climate change just enlarge the climate variability. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-519	A	25	23	25	24	Do you have clear conception of "sustainable measures"? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-520	A	25	37			what if they fall with climate change (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-521	A	25	43	26	1	Explain the abreviations "LDC NAPA" and "NAPA Primer". (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-522	A	25	43			Spell out and explain what LDC NAPA is (Irene Lorenzoni, University of East Anglia)	R
20-523	A	25	44			in what way do these need "enhancement" (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-524	A	26	0	30		Two basic questions regarding this section. First, is an elaborate discussion of global aggregate impacts necessary in this chapter and is this not covered extensively elsewhere in the WGII report as I would expect? Secondly, from the point of view of the connection between sustainability and adaptation should the major message here not concern the potentially misleading message of such aggregate estimations in terms of the disparately large impacts on some communities. Thus the discussion on pages 29 bottom and 30 top is of crucial importance and appears now as a final cautious note rather than the main message. (Bruggink Jos, ECN)	R
20-525	A	26	5			20.6 could be condensed to a brief discussion of the challenges of scale with a couple of choice examples. The parts of this chapter that report on global and regional findings should be placed early in the chapter as part of the introduction (very briefly) or as part of a larger section (as proposed in my section #2 of trends in impacts). (David Carr, University of California, Santa Barbara Department of Geography)	N/A
20-526	A	26	5			This section marks a sudden shift from the adaptation literature to economic impacts and attempts to determine the social costs of various GHGs - this needs a transition paragraph. More broadly, this section was very interesting, but not	R

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						explicitly connected to sustainable development. Contextualize these findings and their implications for SD. (Anthony Leiserowitz, Decision Research)	
20-527	A	26	5			(S.20.6) This then points to the underlying theme which needs to be further highlighted, that of multiple and cumulative causation paths, in situations of rapid and chaotic change. This suggests an alternative kind of complexity-based modelling approach (conceptual and quantitative) which takes on such fundamental dynamics such as globalization, liberalization, modernization, innovation, urbanization, segmentation, networking and individuation (e.g Batty 1995). Climate change impacts and the adaptation process are then further factors of dynamic pressure and opportunity to be added to this rapid and potentially self-organizing change. This failure on the part of the mainstream modelling community to recognize the complex and dynamic nature of human-environment interactions, characterizes the results of various integrated assessment / economic impact models:. Many such models can be shown to assume for their convenience, smooth production and elasticity functions, ignoring factors which are less easy to model, such as institutional capital, social resilience, change / transition management and so on (Shackley & Wynne 1998). (Joe Ravetz, University of Manchester)	C
20-528	A	26	5			In the discussion on aggregate impacts the debate of Lomborg's Copenhagen Consensus would be useful, based on Bill Cline's paper (see <a href="http://www.copenhagenconsensus.com/Default.aspx?ID=165">http://www.copenhagenconsensus.com/Default.aspx?ID=165</a> ) (Rob Swart, MNP)	R
20-529	A	26	5			Section 20 should begin with a much more detailed definition of sustainable development that all authors buy into. I would include this long definition and explanation in section 20.1 and ask all authors to follow it. (REF!)	R
20-530	A	26	5			20.6. This section might have been more sensible at the beginning of this chapter 20. (Paul Vlek, University of Bonn)	R
20-531	A	26	5			Finally, my reading of section 20.6 leads me to believe that the summary statement about it in the Executive Summary is dangerously extreme. The danger is that advisors to policy makers who are in principle opposed to more rapid reduction in green house emissions will seize on any statement of uncertainty as an excuse for delay and inaction. The statement that worries me is: "Uncertainty in aggregate global and/or regional estimates of net impacts is expanding in part because global	R

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						coverage of robust net impacts is incomplete.” Apart from the questionable signal such a summary statement gives, it is not an accurate reflection of section 20.6 in my opinion. (Ben Wisner, London School of Economics & Benfield Hazard Research Centre)	
20-532	A	26	6	26	6	Section 20.6 needs an introduction (REF!)	R
20-533	A	26	7	26	35	This is a much better section. Good use of literature (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-534	A	26	7	28	34	This section refers to two ways to estimate global impacts of climate change and yet it appears as if only one is shown, and the section trails off into a discussion of the social cost of carbon - without any clear explanation why. I cannot comment on climate modelling aspects as this is not my area - however I found this section hard to follow. (REF!)	R
20-535	A	26	7			20.6.1.Introduce both approaches in the intro (p. 26; l. 9-12). This sub-section is rather focussed on mitigation and GHG trade. If it were dealt with earlier the point could be made that mitigation has its strength but will not obviate the need fir adaptation. (Paul Vlek, University of Bonn)	R
20-536	A	26	33	26	35	The implications of these numbers need to be explained more fully. (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-537	A	26	34			explain the reasons behind the numbers, which range from positive to negative (Rob Swart, MNP)	R
20-538	A	26	35			Can you explain how aggregation can use output as a weighting factor? Output of what? GNP? Also, can you give a brief idea how the author uses equity as a weighting factor? (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-539	A	27	7	27	11	I don't understand these 2 sentences. Is the premise that resilience is positively or negatively correlated with globalisation etc? If positively, then the sentence running from lines 9 to 11 contradicts the previous sentence. If negatively, then, the second sentence is wrong and it does not make it easier to ignore/dismiss sources of resilience. (Charlotte Benson, Independent)	R
20-540	A	27	7	27	7	I would suggest changing "action" to "action or inaction" (Michael MacCracken, Climate Institute)	R
20-541	A	27	21			BOX 20.2	R

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						The key role played by social capital in strengthening resilience against impacts of the Asian Tsunami complement the Adger results (see MIND 2005 - report prepared for UNDP) (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	
20-542	A	27	21			BOX 20.2. Last sentence in convoluted. (Paul Vlek, University of Bonn)	R
20-543	A	27				Box 20.2. On the place of this theoretic approach on the resilience to coastal disaster, it could be very illustrative to present the New Orleans case study, showing the different approaches by the victims in accordance with their social statute, by the local authorities, or by the US Government. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-544	A	28	0			make the link with sustainable development explicit (Rob Swart, MNP)	R
20-545	A	28	2	28	3	Use tonne instead of ton. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-546	A	28	3			the term social costs of carbon seems to be common in the UK, but elsewhere may need some more explanation, e.g. insert the word "now" behind "emissions"? (Rob Swart, MNP)	R
20-547	A	28	5	28	8	I don't totally agree. The weight of the "democracy" effect (see comment above) introduce a bias in this reasoning. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-548	A	28	5			This may be the way economists see the sustainability issue, but it ignores the issue of global limits. If there is social cost involved with emissions reductions, we may just have to accept them and mitigate their impact on low income people through a more equitable resource allocation, otherwise we may jeopardize the very survival of the ecosystem we need for survival. (Tord Kjellstrom, Australian National University)	R
20-549	A	28	5	28	11	Here is an example where the analysis devolved into a pure economic analysis, seeming to violate the Maurice Strong statement at the beginning. Exact matching of economic cost and benefit leaves out all the other considerations that should be involved. Asserting, somehow, that this type of economic balancing is then "correct" is a bit much--there is lots of uncertainty about how to measure impacts, discount rates, coverage and scope, etc. There are also factors other than CO2 to consider--particularly soot and methane, the cleaning up of which has other benefits--and so it is really unreasonable to be expecting that one can do such a balancing except within broad bands--and then one has to consider all the other	R

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						factors. (Michael MacCracken, Climate Institute)	
20-550	A	28	6	28	7	The discussion about social cost and economic cost should emphasize the concept of total costs = social + economic costs. This is fully explored in TAR-Mitigation, Chapter--- (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-551	A	28	9	28	10	The price of tradable permits will be the same as the social cost of carbon only if all externalities are internalized and if the market is perfect, two assumptions that are unlikely to occur. The authors raise an interesting point, but they need to explore it further. (Lenny Bernstein, IPIECA)	R
20-552	A	28	13	28	26	Put the money values in the same currency at the same date, in order to make relevant comparisons (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-553	A	28	13		26	Use only one currency to avoid confusion. (Edward Clay, Overseas Development Institute)	R
20-554	A	28	13	28	21	convert to one unit for comparison (if needed in parentheses) (Rob Swart, MNP)	R
20-555	A	28	13	28	13	Clarkson and Dayes did not propose this number. They probably wrote 7 pounds, and then someone slipped in a zero. In any case, the report does not support the conclusion, and HM Treasure is backtracking. (Richard S.J. Tol, Uni. Hamburg)	R
20-556	A	28	19	28	26	The results of Hope (2003) and Tol (2005) are perhaps more appropriately reported in WG III (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-557	A	28	23	28	24	There is a long discussion about what discount rate should be used. When quantifying social and intergeneration costs. It would be useful to add a footnote referring to such literature. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-558	A	28	28	28	32	Another study which used socioeconomic scenarios with climate change scenarios is the Indo-UK Climate Impacts Programme <a href="http://www.defra.gov.uk/environment/climatechange/impacts-india/">http://www.defra.gov.uk/environment/climatechange/impacts-india/</a> (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-559	A	28	34	28	34	Reference of the "Fast Track" studies? (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R

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20-560	A	28	34			"numeraires" - Unfamiliar term: what are these? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-561	A	28	37	28	37	Insert the following sentences on line 37: "Their results can also be used to estimate the relative contribution of climate change to the magnitude of various climate sensitive hazards as compared to the contribution of non-climate change related factors. Using the results of Arnell et al. (2002), Goklany (2003, 2005) estimates that the contribution of climate change to the total global population at risk (PAR) for malaria, hunger, and water shortage is small compared to the contribution of other factors, at least through 2085. On the other hand, the reverse is true for coastal flooding. Nevertheless, based on consideration of the costs of adaptation and mitigation, he concludes that, for the next several decades, risks and/or threats associated with these hazards would be lowered much more effectively and economically by reducing current and future vulnerability to those hazards rather than through stabilization or the Kyoto Protocol. Accordingly, he argues, over the next few decades the focus of climate policy should be to: (a) broadly advance sustainable development (particularly in developing countries since that would generally enhance their adaptive capacity to cope with numerous problems that currently beset them, whether or not they are climate-sensitive), (b) reduce vulnerabilities to climate-sensitive problems that are urgent today and might be exacerbated by future climate change, and (c) implement "no-regret" emission reduction measures while at the same time striving to expand the universe of such measures through research and development of cleaner and more affordable technologies." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-562	A	28	38	28	40	There are real problems with Table 20.3. First, because it doesn't provide estimates of the population at risk (PAR) in the absence of climate change, it can be misleading and, by itself, can present a distorted view of the future, especially to policy makers. This is because the total PAR with climate change (TPAR) = PAR-in-the-absence-of-climate-change (P0) + PAR-due-to-climate-change-alone ( $\Delta P$ ). Consequently, with respect to hunger, for instance, TPAR for hunger in the A1FI world may be lower than the TPAR in the, say, B1 world despite the fact that $\Delta P$ is smaller for the latter. [See Goklany (2005a).] Second, by ignoring TPAR, this table is not faithful to the subject of this chapter, namely, the relationship and interaction between sustainability and climate change. If we are concerned about hunger (for instance, because eliminating that is a critical sustainable development goal), we should have an idea as to what fraction of the hunger problem is (or will be) due to climate change and what fraction due to other (non-climate change related) factors.	R

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						<p>Without information on both <math>\Delta P</math> and <math>P_0</math> (or TPAR), as a start, it is difficult, if not impossible, to figure out how important climate change is relative to other factors, and to figure out where resources should be directed to formulate effective and economic policies to address hunger. [Again, see, Goklany (2005a)]. Third, it seems to me that the estimates for hunger are based on the assumption that CO<sub>2</sub> will not affect crop yields [see Parry et al (2004: Figure 14)]. This should be noted, and information should be provided on alternative estimates that assume CO<sub>2</sub> effects on yields. Fourth, I was unable to do a crosswalk between Arnell (2004) and the estimates furnished in this table. In fact, contrary to what is indicated in Table 20.3, Arnell (2004) shows that fewer people end up in water-stressed areas under each scenario due to climate change in 2085 [see Arnell (2004: Tables 8, 14 and 15)]. It seems that the estimates furnished in Table 20.3 -- no matter how they were arrived at -- do not account for the population for which climate change reduced water stress. While that would meet a lawyer's definition of "people adversely affected by climate change", it is misleading, at best. This table should provide estimates for the NET changes in populations at risk with and without climate change. Fifth, the sum of regional estimates under the A1 and B1 scenarios for water stress in Table 20.4 do not total to the global estimate provided for the scenarios in Table 20.3.</p> <p>(Indur Goklany, Office of Policy Analysis, Department of the Interior)</p>	
20-563	A	29	0	30		<p>the text gives numbers different from the tables, maybe stick to tables and in the text make the main point: that different numeraires are used to describe impacts for human development (affected people, dollars). Make the link with SD. Section 20.6.2 does not interpret aggregates, but just presents some. It would be better to add an assessment of these results in the SD context.</p> <p>(Rob Swart, MNP)</p>	R
20-564	A	29	1	29	15	<p>The numbers of people impacted by various aspects of climate change given here are different from the values given in earlier chapters. They should be made consistent, or if not, the reasons for choosing different values explained.</p> <p>(Lenny Bernstein, IPIECA)</p>	R
20-565	A	29	1			<p>Table 20.3: Insufficient and arbitrary. I would be happy to provide further reference. The examples provided here are quite limited.</p> <p>(P. H. Liotta, Pell Center for International Relations and Public Policy)</p>	R
20-566	A	29	1	29		<p>Tables 20.3 and 20.4: According to the table, lots of people will be affected by climate change, compared to the situation without climate change. But of course without climate change no one will be affected by climate change. Is this a wording issue or a problem?</p>	R

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						(Elizabeth Malone, Joint Global Change Research Institute)	
20-567	A	29	2	29	2	In the first row, I do not understand what "(C from 1961-1990)" relates to. These numbers also look very small for heat impacts--how can they possibly be so small--all it would take is one heat wave in a metropolitan area to affect this many people. Just consider the European heat wave (a 5 or 6 sigma event if natural) and one has a hundred times as many people being affected. Similarly, in the last row, this looks very small. Coastal flooding--if by storm surge might not go too far inland, but the storms also produce huge amounts of rain, and this causes flooding from the coast to the inland hills, etc. and involves many, many more people. (Michael MacCracken, Climate Institute)	R
20-568	A	29	17			If world population affected, more meaningful measure needed to understand variation (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-569	A	29				Tables 20.3. & 20.4. Specify that the titles of the columns are SRES scenarios. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-570	A	29				Table 20.3. Note that the Parry, Arnell and Lieshout estimates ignore adaptation. These estimates are invalid. (Richard S.J. Tol, Uni. Hamburg)	R
20-571	A	30	3			Likewise, how is this section connected to sustainable development? (Anthony Leiserowitz, Decision Research)	R
20-572	A	30	3	33	5	Sections 20.6.3 and 20.6.4 Two way linkages between CC and SD at the global level have been described in MM (2000) and MMRS (2005); and analysed more specifically at the country level using the Action Impact Matrix - in MIND (1994) (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	R
20-573	A	30	3			20.6.2 The sub-section is written as if all readers are familiar with RICE and what it models. If one is not, one can only guess. Please elaborate on what the model outputs are in RICE. Doe the "aggregate approach" (bottom up) have the same problem? (Paul Vlek, University of Bonn)	R
20-574	A	30	7	30	10	Sentence "with drawers", which should be simplified. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-575	A	30	23			Is this loss annual or cumulative? (Tord Kjellstrom, Australian National University)	R
20-576	A	30	33	32	32	Delete or substantially rewrite this section. Its title is consistency and tension across global policies on CC and SD, but other than mentioning the UNFCCC and its Kyoto Protocol, the section does not mention climate change. Nor is there much	D

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						analysis of either consistency or tension. (Lenny Bernstein, IPIECA)	
20-577	A	30	33	32	32	Section 20.6.3 reads like a background paper to a ministerial declaration. I don't think most of this belongs in an IPCC document, which ought to be more analytic and should be restricted to providing information/analysis on matters related to scientific, technical and economic aspects of climate change and/or sustainable development. For example, instead of repeating political statements like "a strong appeal has been made for changing sustainable patterns of production, ...particularly in developed countries" (p. 31, lines 36-38), I would, at best, note that there is no consensus on what that statement means and report on the work that might have been done to figure out what this implies, and how robust such work might be. I recommend excising everything between p. 31, line 4 and p. 32, line 17; but retain p. 31, line 22 to line 36. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-578	A	30	33	32	32	Regarding consistency on global policies on CC and SD, I would recommend the author look at Goklany (1995, 2005, 2005b), which deals with this aspect in some detail. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-579	A	30	33			delete "on" - text below does not fit title. It is catalogue without comparison or analysis (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-580	A	30	33	32	32	Despite the title, this section does not comment on the consistency or tensions between climate and SD policies. It just provides a rough summary of recent developments in SD policy, while saying nothing about climate policies or their relationship to SD. (Anthony Leiserowitz, Decision Research)	D
20-581	A	30	33			20.6.3, Subheading Line: Do NOT abbreviate; unnecessary and unhelpful. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-582	A	30	33			Spell out CC(Climate Change) and SD(Sustainable Development). This is a heading. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-583	A	30	33			20.6.3 Title has poor syntax. Also the last sentence of the first paragraph is unnecessarily convoluted. A listing of conventions seems a bit boring. I don't see consistency and tension clearly addressed. Last para: basic thrust of what? ..what can be achieved.... With respect to what? (Paul Vlek, University of Bonn)	D

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20-584	A	30	35	36	9	The relevance of this part of the chapter for adaptation and impacts is not clear to me. I feel the authors should avoid to dwell too long on very general issues of sustainability and sustainability policies, where the link with the knowledge domain of WGII is not clear and the relevance for climate change policies weak. (Bruggink Jos, ECN)	D
20-585	A	30	35	30	37	Another definition of sustainable development - there needs to be consistency among the definitions. (REF!)	D
20-586	A	30	42	30	44	Very general (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-587	A	30	47	31	2	Run-on, convoluted sentence. (Anthony Leiserowitz, Decision Research)	D
20-588	A	31	4	31	20	Class the protocols and conventions by dates (unbiased) or by importance (subjective) (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-589	A	31	4			This list of conventions does not include the key issue of Human Rights. If we take the declarations on this topic seriously we need to ensure that people in one part of the world are not affected by activities by people in other parts of the world. The high greenhouse gas emissions in high income countries leading to serious climate change effects primarily in low income countries can be seen as a breach of the human rights of the people in low income countries. (Tord Kjellstrom, Australian National University)	D
20-590	A	31	4			List them and assume rather than assess consistency as proposed in section title (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-591	A	31	5	31	20	The long list of international agreement that have sustainable development aspects shows due diligence on the part of the authors, but serves no other purpose. It should be deleted, or relegated to a footnote. (Lenny Bernstein, IPIECA)	D
20-592	A	31	5	31	5	The sentence notes that the dates of the conventions are noted in parentheses. The author needs to be explain 'data of what'? Is it ratification? The day the convention came into force? (REF!)	D
20-593	A	31	21			See also Kates, Robert W., Thomas M. Parris, and Anthony A. Leiserowitz. 2005. Environment: Science and Policy for Sustainable Development 47(3): 8-21 on the contribution of the different international accords and their contribution to sustainability. (Irene Lorenzoni, University of East Anglia)	D

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20-594	A	31	22	32	32	This section is too verbose. One concise analysis is TERI's review and critique of WSSD <a href="http://www.teriin.org/wssd/consensus.pdf">http://www.teriin.org/wssd/consensus.pdf</a> (Ulka Kelkar, TERI (The Energy and Resources Institute))	D
20-595	A	31	22	31	43	Unclear why this is being reviewed without linking to climate (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-596	A	31	24	31	26	Why no mention of the 2002 Johannesburg Summit earlier in the chapter? It is a very important step (even with this negative aspects) occurred since the TAR publication. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-597	A	31	27	31	27	Specify the year of the Rio Summit (1992) (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-598	A	31	38			"In this context" - unclear, ambiguous (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-599	A	31	42			Most effective preventive health activities are carried out by other sectors than the health sector. The perspective here of health care services as the key sustainability issue for health sends the wrong message. (Tord Kjellstrom, Australian National University)	D
20-600	A	31	46			Not the "wake" but at least past the "boat" (even the Titanic for some) (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-601	A	32	6			Globalisation is another unanalysed construct - say what is meant by it in this context (Edward Clay, Overseas Development Institute)	D
20-602	A	32	9			recognised by whom? Why this level of social organisation singled out (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-603	A	32	12			The drivers are not in these countries. Something is wrong with your logic (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-604	A	32	13	32	17	When discussing sustainable development for developing countries, instead of presenting information about ODA why not say a few words about losses caused by OECD countries in many developing countries through the strong agriculture protection.. This is a good real example to be discussed in the text. External debt is also another good example. In many opportunities it is quoted the cost of climate change mitigation as around one percent of GNP for developed countries. This amount sounds too much and can impair national development. What about developing countries that are expending near 10% of their GNP to pay debt services? (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D

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20-605	A	32	15			It should be pointed out here that the call for a foreign aid level at 0.7% of GDP in developed countries was made in the early 1970s by the UN General Assembly. Only 4 countries have consistently reached this level, while the average for all developed countries is about 0.25%. The rich large countries are in fact the most parsimonious when it comes to foreign aid. Some large countries need to increase their aid level by a factor of 4-5 to reach the target mentioned in the text. (Tord Kjellstrom, Australian National University)	D
20-606	A	32	19			Why focus on nation states and not, say, corporations. Or Financial Institutions or Multi-lateral banks.... (Louis Label, Unit for Social and Environmental Research, Chiang Mai University)	D
20-607	A	32	19	32	32	The wording here is sloppy and full of generalities. The "consistency and tension" of policies for SD and CC is lost -- or it looks like the tension between what SD organizations and agreements have called for and what will actually happen. What is the "reality check" -- a vulnerability/resilience analysis? (Elizabeth Malone, Joint Global Change Research Institute)	D
20-608	A	32	26	32	27	This suggests that the drivers of sustainable development are the institutional framework and access to reosurces. I believe earlier in the document that the drivers of sustainabel development were described in more detail. I would include in section 20.1 a discussion of what is sustainable development and what generates it. (REF!)	D
20-609	A	32	29			"appropriate technologies" - At this point it should be useful to explain that technologies means soft and hard technologies. And provide examples of each of them. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-610	A	32	35	33	43	The title of this section is commonality across goals and determinents, but the text and case study describe a lack of commonality. Also, since there are no references, the text appears to be the author's personal evaluation, not an assessment of the literature. (Lenny Bernstein, IPIECA)	D
20-611	A	32	35			Section 20.6.4. and S20.8: This all points to what is arguably the most fundamental factor in sustainable development, i.e. the global system of trade, finance, development, and the expropriation of resources from developing to developed world. (Joe Ravetz, University of Manchester)	D
20-612	A	32	35			20.6.4. Title in meaningless. There is little logic backing the point that is made	D

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						here. As it appears an important point, it may be worth the effort of re-writing this sub-section. The box (20.3) may make the point better. (Paul Vlek, University of Bonn)	
20-613	A	32	37	33	5	The previous comment applies here too. In particular, Goklany (2005, 2005b ) deal with the relationship between achieving MDGs and advancing adaptive capacity (and mitigative capacity). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-614	A	32	37	32	37	I believe IPCC capitalizes "Earth" giving it the respect it deserves instead of putting it down compared to the God that is claimed--rather than perhaps the gods of the many religions of the world. (Michael MacCracken, Climate Institute)	D
20-615	A	32	46			Sentence unclear - Probably typo error. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-616	A	32	48			what? logic unclear (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-617	A	33	1			not clear to this reader. Try again with simpler sentences (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-618	A	33	4			"extraordinarily" - why so? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-619	A	33	5			This sounds more like opportunism of those with interest in climate agenda than a rational argument for integration (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-620	A	33	9			Might not the interiors of large continents be subject to much large temperature rises because of slow respn of oceans. Please consider if this is just "sea-level" rise argument or not (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-621	A	33	9	33	43	Why a focus on the Phillipines? Is the Philippines representative of other countries? If so, which ones? Further, line 23-24 contradicts what was said back on p. 32, lines 46-47, which say that MDG 7 doesn't discuss climate change (Anthony Leiserowitz, Decision Research)	D
20-622	A	33	39			what are the real uncertainties here. This needs some supporting refs (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-623	A	33				Box 20.3. This case study is not very illustrative, not very concrete et don't present significant examples highlighting the purpose of the main text. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-624	A	34	0	35		Table 20.5. Panel A is based of present observations (last 20 years of the XXth	D

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						Century). But Panel B don't display any time scale. Is-it correct? I'm not specialist, but it seems not very rigorous. For example, the "effects of technological change" should be dated (even in simulations made with scenario's hypothesis). (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	
20-625	A	34	1			20.7 This section should either be excised or developed more fully under the concept of implications for development as in my suggested section #5. (David Carr, University of California, Santa Barbara Department of Geography)	R
20-626	A	34	1	36	9	Arrow and others (2004) is a key text on sustainability, one of the most significant since the 3rd Assessment and whose importance to the chapter overall is not brought out fully because it is only introduced in Section 20.7. This is perhaps because of the lack of a road map at the beginning of the chapter and the lack of a fuller analytic discussion of the concept of sustainability and its application in economics. (Edward Clay, Overseas Development Institute)	D
20-627	A	34	1	36	9	There ought to be a dispassionate critical evaluation of the Arrow et al. study. How robust is it, etc. I am somewhat skeptical that all areas (to date) have positive damages associated with CO2. What is this based on? Does this take into consideration the effects of CO2 on crop yields, increased vegetation cover, etc. What is the real world evidence that these damages have been positive to date? (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-628	A	34	1	36	9	This section is interesting, but needs much more explanation/elaboration as it is a complex analysis. And is it worth it? It is currently 2.25 pages, would need to be at least 3. That's a lot of space dedicated to the findings of a single article. (Anthony Leiserowitz, Decision Research)	D
20-629	A	34	1	37		Section 20.7 is only about one article that is certainly important, but the current text makes this difficult to understand as long as terms as genuine investment and adjusted genuine wealth are not clearly explained and linked to sustainability. It looks like these variables are equated with sustainability in general (e.g. page 35, line 17) , but this seems debatable. Also on page 37 (line 13) genuine investment seems to be used as the only criterion for sustainability. Arrow et al.'s definition certainly tries to take into account many aspects of sustainability, but remains one particular view from the domain of economics trying to capture sustainability into a small set of numbers. (Rob Swart, MNP)	D
20-630	A	34	1			20.7. Interesting, but why is it not immediately linked with 20.5? Also, where is the link to climate change? The section is unfinished, but looks to become rather disjointed and it is not clear what point shall be made.	R

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						(Paul Vlek, University of Bonn)	
20-631	A	34	4			This section could mention the concept developed by Krik Smith at Univ of Calif, Berkeley: the natural debt (Tord Kjellstrom, Australian National University)	R
20-632	A	34	4	34	16	Section 20.7. The introduction is not very clear. (REF!)	D
20-633	A	34	5	34	15	The results are interesting but should be presented along with critical sasessment of the limitations (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-634	A	34	5			At least the authors recognise the problem with the chapter. Why not get straight to the point from the beginning (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-635	A	34	5			With reference to Arrow et al's 2004 study, I would appreciate a more critical overview of this study, carefully considering the limitations of the approach reported in the paper and what the statistical data provided may mask (for instance, local scale inequalities, misrepresentation of data) - in other words, is it a true reflection of sustainability at all levels? are there other studies that can back their conclusions? Is it valid to say, as the authors of this chapter 20 suggest on lines 16-17 page 35, that the developed world is doing reasonably well in terms of sustainability? There would be many scientists and academics who would strongly oppose this argument! A few useful references might be found at: <a href="http://sustsci.harvard.edu/keydocs.htm">http://sustsci.harvard.edu/keydocs.htm</a> . (Irene Lorenzoni, University of East Anglia)	D
20-636	A	34	9	37	9	The concept of GDP (Gross Domestic Product) is generally wellknown, but, because it is used in this chapter as reference, it could be useful to remind its definition - [it was also used earlier in this chapter (Page 20, Line 14)]. Briefly: GDP = consumption + investment + exports – imports. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-637	A	34	19	34		Why does table have a strong Asia biad but no info on South?latin America or Eastern Europe? Japan would be an obvious addition (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-638	A	34	20	35		Table 20.5 - I think the adjusted genuine wealth scoring of 8.33 for China is worthy of comment. It is currently totally ignored in the related text. (Charlotte Benson, Independent)	D
20-639	A	35	15	35	18	The text refers to 'much of the developed world' but does not define it. The subsequent sentence seems to suggest that it includes Sub-Saharan Africa, which of course it doesn't. I suggest that the term 'most of the developed world' should be	D

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						defined. Presumably the analysis covered a number more developed countries than those included in Table 20.5. If not, the term should not be used at all. Also assuming that the results shown in Table 20.5 only relate to those for some of the countries and regions analysed, it would be useful to have a better sense why these results, in particular, have been selected for inclusion in Table 20.5. The text mentions other countries too and ignores some of those in Table 20.5. (Charlotte Benson, Independent)	
20-640	A	35	15			This is really a weird presentation of the economics of sustainability: the developed world is consuming the energy riches of certain regions of the developing world, but the calculation presents the effect on sustainability as one that is of concern to the developing countries. This cannot be right. It is the consumers in the developed world that consume the energy resources of the developing world that undermines sustainability. Thus, the developed world should be presented as the one with deficits in genuine investment and genuine wealth !! (Tord Kjellstrom, Australian National University)	D
20-641	A	35	15	35	16	It is very difficult to justify the conclusion based in data of uneven quality. Considering the last column of Panel B, figures are all in the range of -3.82 to +2.29, except for China. In other words, the conclusions should be taken with care and with modest confidence. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-642	A	35	21	36	3	This is a political statement that does not belong here. Given the view expressed here, trade would be deemed exploitative, as opposed to mutually beneficial (on the whole). I would note that oil exporting countries, for instance, are happy to be exploited by developed countries who want to buy their oil! I fact, if higher supply did not reduce their revenues they would happily keep pumping even more oil to export to the rest of the world. There is a lot of literature on this aspect. I would recommend, as a good place to start, looking at the references in Goklany (2001a), "Economic Growth and the State of Humanity," available at <a href="http://www.perc.org/publications/policyseries/econgrowth.php">http://www.perc.org/publications/policyseries/econgrowth.php</a> (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-643	A	36	4	36	4	About MEA, see above comment #15 (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-644	A	36	12			Section 20.7.1. & 20.7.2. The study case of the 2003 Heat Wave could be presented in a box. The linkage of this study case with the purpose of the section 20.7 should be improved. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D

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20-645	A	36	12	36	28	This section belongs in the health chapter (no. 8?), not here. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-646	A	36	12	36	28	What's the point of this example? (Anthony Leiserowitz, Decision Research)	D
20-647	A	36	12			two other interesting reviews of the 2003 heatwave from a French perspective and the difficulties in adapting to it (and even enacting sustainable and long term responses) are: (1) Marc Poumadère, Claire Mays, Sophie Le Mer and Russell Blong (2005), The 2003 Heat Wave in France: Dangerous Climate Change Here Dand Now, Risk Analysis, 25 (6) (out in December). (2) Lagadec, P. (2004). Understanding the French 2003 Heat wave experience: Beyond the heat, a multi-layered challenge. Journal of Contingencies and Crisis Management, 12, 160-169. (Irene Lorenzoni, University of East Anglia)	D
20-648	A	36	14	36	28	Why is this in this chapter? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-649	A	36	14	36	28	The death toll here is higher than in the health chapter. Most of the deaths were due to incompetence rather than to heat. (Richard S.J. Tol, Uni. Hamburg)	D
20-650	A	36	18			Typo error. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-651	A	36	27	36	28	I disagree. I am not a climate scientist - however my understanding is that we cannot attribute the cause of any one event to climate change, therefore we cannot say that the 2003 heat wave is a first signal of the early effects of climate change. This sentence should be deleted. (REF!)	D
20-652	A	36	31	36		hopefully better than 20.7.1 (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-653	A	36	34	42	25	Section 20.8: In contrast to cost-benefit and cost-effectiveness analyses, each of which provides a single optimal emission path, the tolerable windows approach identifies emissions corridors that account for both constraints on admissible climate change and unacceptable mitigation costs. This non-uniqueness gives an opportunity to take into account sustainability concerns beyond climate change. It might therefore be worthwhile to mention the tolerable windows approach (guard-rail approach) in this section. (Thomas Bruckner, Technical University of Berlin)	D
20-654	A	36	34			20.8 could be condensed to a couple of pages as part of the introduction. (David Carr, University of California, Santa Barbara Department of Geography)	D

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20-655	A	36	34	42	25	Section 20.8: This is an especially strong section, well organized and readable. (Elizabeth Malone, Joint Global Change Research Institute)	D
20-656	A	36	34			20.8. In the later parts of the chapter the factors in adaptative capacity then need to be spelled out. The determinants of adaptive capacity need to be fitted with the wider view above, of change and transition management, and entrepreneurial modes of climate-related policy, across many policy-economic fields. (e.g. Rotmans 2002: Rayner & Malone 1997). (Joe Ravetz, University of Manchester)	D
20-657	A	36	34	36	42	Section 20.8. Good clear introduction (REF!)	R
20-658	A	36	34			20.8 The title can not stand on its own and is clear only after reading the intro. That should not be. The first sentence should be made more specific. (Paul Vlek, University of Bonn)	R
20-659	A	36	36	42	25	The title of section 8 suggests more or less pragmatic propositions with respect to potential policy actions. But I find the contents very diverse and somewhat unbalanced. Sections 1 is very theoretical and doesn't really address issues of opportunity and challenge. The message of section 2 may be important, but is unclear to me. The sections on cost-benefit analysis and participatory approaches are of a methodological nature. It is unclear why these issues are discussed under the present heading. The topics that I find very important, mainstreaming and co-benefits of combining mitigation and adaptation, on the other hand, receive relative less attention, but are of real interest for policy makers. (Bruggink Jos, ECN)	R
20-660	A	36	36	36	37	is this what you really want? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-661	A	36	45	37	28	Either tie this discussion to some aspect of climate policy, as is done below in the discussion of equity vs. efficiency, or delete it. (Lenny Bernstein, IPIECA)	R
20-662	A	36	45	37	28	There's no explicit connection in this section to climate change - no discussion of these themes in the context of climate change. (Anthony Leiserowitz, Decision Research)	R
20-663	A	36	45			Section 20.8.1 Optimality-sustainability discussion is posed mainly in economic terms -- e.g., sustainability is defined (page 37, line 6) as "non-declining social welfare". Broader definitions of sustainability that also include environmental and social viewpoints are detailed in IPCC (2000), MM (2001), and MMRS (2005) - based on "optimal" and "durable" approaches, which are complementary. The term "durability" was	R

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						introduced specifically to broaden the definition of sustainability beyond the economic (utilitarian) one. (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	
20-664	A	36	45			20.8.1. Some of this text may be a bit hard to stomach be non-economists though one does get a sense of its importance. May be some of this can be freed of some of the jargon. (Paul Vlek, University of Bonn)	R
20-665	A	36	47	36	50	How many non-economists would understand this sentence?; A lot of weight is given to this 1 paper. Acknowledge it is a good one, but it isn't the "only" take on the issues of this chapter. What about institutional perspective? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-666	A	36	48	36	49	Hard to understand the difference between optimality and sustainability - what is the meaning of "discounted value of global of the social worth of consumption depicted in a standard utility context". (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-667	A	37	6			This is another weird paragraph. Sustainability is not guaranteeing neverending social welfare improvement. The limits of the resources of the Earth need to be considered. To state that the "rich are sustainable and the poor are not" is wrong and if this peculiar analysis is not deleted form the report, the IPCC process can be severely discredited. (Tord Kjellstrom, Australian National University)	D
20-668	A	37	6	37	7	"Sustainability...can be defined as guaranteeing that social welfare never declines over time..." This is a very restrictive and minimalist definition. Sustainable development is supposed to improve social welfare (as well as economic growth and environmental quality). (Anthony Leiserowitz, Decision Research)	D
20-669	A	37	6	37	7	Strong statement. Provide a reference. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	D
20-670	A	37	8	37	11	The partition between "rich" and "poor" countries seems here too distorted; moreover oil exporting regions are existing in both parts. The turn of phrase should be more qualified. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-671	A	37	12	37	13	If the sustainability of one country is achieved only at the cost to the sustainable development a second country, then the first country is not developing sustainably. (REF!)	D

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20-672	A	37	13			failure of the poor? More likely, exploitation of the poor by the rich. The current wording seems to blame the victim and will not be embraced by the "south." (Elizabeth Malone, Joint Global Change Research Institute)	D
20-673	A	37	26	37	28	There are other heuristic, easier explanations that don't rely on these calculus. Like "fair share of the pie" (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-674	A	37	31	38	10	Reverse the order of argument with the Manne and Richels coming first as the mainstream point of view and Yohe and van Engel then as a qualifier. (Edward Clay, Overseas Development Institute)	D
20-675	A	37	31			Section 20.8.2 The discussion on equity and efficiency is mainly focused on mitigation. Extensive discussions on this topic, including impacts and adaptation, are given in MM (2001), (2002a) and MMRS (2005). (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	D
20-676	A	37	31			20.8.2 This sub-section jumps over the definition of terms. The second para remains inconclusive. (Paul Vlek, University of Bonn)	D
20-677	A	37	33			20.8.2. Explain briefly the trade-off introduced in line 33. (David Carr, University of California, Santa Barbara Department of Geography)	D
20-678	A	37	33			"trade-off", equity and efficiency have special meanings which may not be understood because of their lay connotations - an explanatory box may be helpful (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-679	A	37	37	37	39	This is an overly simplistic view of the issue. While it is possible to assign greenhouse gas (GHG) emissions to nations based on where the act of burning a ton of coal, for instance, physically occurs, we should be cognizant that GHG emissions are the effluvia of civilization and all its activities. It is not only energy consumption that contributes to it, but land clearance, crop production, animal husbandry, trade, tourism, and so forth. Moreover, because of the globalized economy, which sustains today's civilization, economic activity in one country helps provide livelihoods and incomes for many inhabitants of other countries, and vice versa. In fact, a substantial portion of economic growth in developing countries is attributable to trade (Goklany 1995), and remittances and tourism from developed countries. Without such economic activities, U.S. emissions, for example, might be lower, but so would jobs and incomes elsewhere (e.g., in India or Bangladesh). Thus, the improvements in human well-being that have occurred in many developing countries (particularly since World War II) are partly due to the GHG-fueled economic growth in developed countries.	D

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						<p>The same economic growth also enabled today's rich societies to invest in research and development that helped, for instance, raise crop yields worldwide, develop new and more effective medicines (e.g., for HIV/AIDS), provide aid in times of famine or other natural disasters, provide funding for reducing TB, create and support of the Internet, and other items now considered by some to be global public goods (ODS 2003). Had there been no GHG producing activities in developed countries, what would have been, for instance, Bangladesh's level of human well-being? What would be its life expectancy (which is currently 62 years and was about 35 years in 1945) had there been no GHG emissions in the interim? What about its hunger and malnutrition rates? How many Bangladeshis and Indians were saved in the 1960s and 1970s because of food aid from the developed countries? How much of the past increase in Bangladesh's agricultural productivity is due to higher CO2 levels, or indirectly due to efforts that were possible because developed countries were wealthy enough to support/stimulate them? Also, absent such economic growth, the sum of human capital worldwide would have been much less — consider, for instance, the millions of non-Americans who have been cycled through US universities who, then, have gone back to help in their native countries' economic and technological development. Clearly, all countries indulge in activities that lead to global warming (GW), and all countries benefit from the activities that cause GHG emissions.</p> <p>(Indur Goklany, Office of Policy Analysis, Department of the Interior)</p>	
20-680	A	37	39			<p>The sentence ending on line 39 certainly offers a rationale for the language in the UNFCCC, but I am not sure that was exactly why it was in the UNFCCC. It could be merely the recognition that developing countries had fewer -- while developed countries had more -- resources. The reasons as to why anything ended up in the UNFCCC will forever remain murky, despite any offered rationale.</p> <p>(Indur Goklany, Office of Policy Analysis, Department of the Interior)</p>	D
20-681	A	37	43	37	46	<p>Serious misinterpretation of contraction and convergence. C&amp;C is about contracting and converging emissions, not economic growth!!!! Economic growth can continue everywhere, buit with less emissions.</p> <p>(Rob Swart, MNP)</p>	D
20-682	A	37	46			<p>You need a Meyer/GCI reference here.</p> <p>(Elizabeth Malone, Joint Global Change Research Institute)</p>	D
20-683	A	37	49	37	50	<p>Is this the only issue worth considering that between countries?</p> <p>(Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)</p>	D
20-684	A	38	9	38	10	<p>"less compelling" -- why?</p> <p>(Indur Goklany, Office of Policy Analysis, Department of the Interior)</p>	D

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20-685	A	38	10			"compelling"???? "rapid!" (Rob Swart, MNP)	D
20-686	A	38	13			Section 20.8.3. Even it is commonly used, I'm embarrassed with the phrase "risk management" (see above comment #30 on "hazard management"). Nevertheless, in this section the word "risk" is ambiguous: is-it concerning solely the economic point of view, excluding another approach (environment, policy, health, biodiversity, etc.), which cannot be assess only in economic terms? If yes, it should be specify. Fortunately, the first sentence of the next section (Page 39, Lines 18-20) put the "risk approach" on the right way. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	D
20-687	A	38	13	39	12	This section seems to wander away from the focus on adaptation or the climate-SD nexus. Interesting, but necessary to the current theme of the chapter? (Anthony Leiserowitz, Decision Research)	D
20-688	A	38	13			Section 20.8.3 An authoritative discussion of equity, efficiency and cost-benefit analysis in the context of climate change was provided in KAETAL (1995) (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	D
20-689	A	38	13			Section 20.8.3. & 20.8.4) The mention of participatory processes needs to be expanded with awareness of the processes of strategic power, cultural intermediation, network effects, ICT opportunities etc (Funtowicz et al 2002). (Joe Ravetz, University of Manchester)	D
20-690	A	38	13			the most extensive discussion on CBA was in the SAR, not the TAR!! (Rob Swart, MNP)	D
20-691	A	38	13			20.8.3 This section is so stooped in economic jargon that it is lost to non-experts. As this is not consistently the case in chapter 20 (some of it reads quite nicely and easily) one wonders which audience this is addressed to. I believe that an IPCC report should be digestible by policy makers, which are not all familiar with the calculation of risk premium and what it means that it .....adds to the variance of outcomes to the valuation procedure and makes hedging against the possibility of intolerable outcomes at the expense of sacrificing some average return and efficient decision.... Sorry, but I got lost. The next para is little better. Moreover, there is no conclusion on what the authors consider the best or most prudent approach. (Paul Vlek, University of Bonn)	D
20-692	A	38	15	38	21	Why not get straight to this point on first mention (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-693	A	38	31	38	32	"discounted stream of marginal benefits or marginal costs might not be finite". Please, explain what you mean by finite? Can you give an example? How can we	D

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						have an infinit marginal cost for some regions or group of people? (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	
20-694	A	38	36	38	46	Incomprehensible (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	D
20-695	A	38	48	28	50	It is important to review th concept of precautionary principle . See the following concept What the PP is not: To better understand the concept of the PP and to avoid misunderstandings and confusions, it is useful to elaborate on what the PP is not and on what key features distinguish it from other guiding principles in health and environmental policy-making. The PP is not based on 'zero risks' but aims to achieve lower or more acceptable risks or hazards. It is not based on anxiety or emotion, but is a rational decision rule, based in ethics, that aims to use the best of the 'systems sciences' of complex processes to make wiser decisions. Finally, like any other principle, the PP in itself is not a decision algorithm and thus cannot guarantee consistency between cases. Just as in legal court cases, each case will be somewhat different, having its own facts, uncertainties, circumstances, and decision-makers, and the element of judgment cannot be eliminated. (Leila Devia, National Institute of Industrial Technology)	D
20-696	A	39	6	39	6	Insert a new sentence to read: "On the other hand, Goklany (2002) argues that to ensure that the precautionary principle does not increase net risks to public health and/or the environment, one must necessarily resort to risk-risk analysis [see Goklany 2002. From precautionary principle to risk-risk analysis. Nature Biotechnology 20 (November): 1075.]" (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-697	A	39	12	39	12	Insert the following sentence at the end: "Goklany (2003 and 2005) use a risk-based approach to argue for actions in the short to medium term that would reduce the vulnerability of societies to climate-sensitive hazards that might be exacerbated by climate change, and/or advance sustainable development, e.g., by pushing forward on meeting the Millennium Development Goals. He notes that this is as good, if not better than, an insurance policy since it would, by helping address current problems that are here and now, pay dividends whether or not climate changes. No less important, it will help deal with future problems due to climate change, should they occur." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	D
20-698	A	39	15			20.8.4 This section starts with a reference. It is preferable for the authors to make	R

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						their own statements and support them with references. (David Carr, University of California, Santa Barbara Department of Geography)	
20-699	A	39	15			this section can be very policy-relevant, provided that it is strengthened and broadened. (Rob Swart, MNP)	R
20-700	A	39	15	39	41	There are several regional initiatives which have endeavoured to mainstream climate change into development planning processes that are not noted, most importantly Caribbean Planning for Adapting to Climate Change (CPACC) which became Mainstreaming Adaptation to Climate Change (MACC), see cpacc.org and the UK Climate impacts Programme (www.ukcip.org) (REF!)	R
20-701	A	39	15			20.8.4 they connected what to a risk-management approach? I do not see a logical connection between this section and the previous one. (Paul Vlek, University of Bonn)	R
20-702	A	39	18		20	What does 'made the connection' mean? They propose using the World Bank as an example? (Edward Clay, Overseas Development Institute)	R
20-703	A	39	18			Risk-management term is mostly used in a narrow sense that does not include "disaster literature". - explain or broaden (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-704	A	39	23	39	26	Is a project focus even appropriate for Sustainability considerations? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-705	A	39	44			20.8.5 This section remains in draft form with each paragraph citing some research. As in other sections, making one or two key points about particular processes and backing them up with 1 or 2 choice studies would be clearer, more powerful and more parsimonious. Lines 12-14 read like a platitude. Isn't this obvious? So how then? (David Carr, University of California, Santa Barbara Department of Geography)	R
20-706	A	39	44			Section 20.8.5. I'm surprised that the fundamental role of the NGO's is not mentioned in this section. Another surprise is that the focus is given on industrial countries examples (UK, Canada), when local NGO's initiatives in developing (rural groups in Africa) or emergent countries (womens associations in India, users unions in Latin America) occupy increasingly space in the decision processes. (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-707	A	39	44	41	25	Section 20.8.5 'Participatory' is employed without explaining what it means, and so this has to be inferred from the examples. (Edward Clay, Overseas Development Institute)	R

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20-708	A	39	44	41	25	The potential input to decision making through participation is linked in this section to collecting other relevant knowledge. Science can provide systematic knowledge, whereas stakeholders and members of the public can offer experiential, local and anecdotal knowledge. It should be explicated how these different types of knowledge can be integrated into the assessment process. Beyond knowledge the input from participation also refers to values (for making tradeoffs), to interests for resolving distributional conflicts, (for example who pays for what?), to moral judgements (what is acceptable in terms of risks and risk reduction measures) and cultural compatibility (what is compatible with the cultural norms and values?). It might be advisable to address these other inputs as an integral part of the learning process. (Ortwin Renn, University of Stuttgart)	R
20-709	A	39	44	41	25	Section 20.8.5. I am not sure of the purpose of this section, it does not fit well in this section. I would focus more on governance, i.e. the mechanisms and processes by which we make decisions. Participatory processes are just one form of governance and others should be acknowledged and discussed too. There are limits to the success of participatory approaches, which relate to group size, relationship to the resource, distribution of benefits from resource use among group, strong leadership, and other factors (see Brown, Tompkins and Adger, 2002 - Making Waves - Earthscan). In these cases other approaches are needed. Participatory processes do not always lead to the outcome desired by the group promoting A section on governance which describes alternative approaches, including top down, expert decision making, role of science in society would be better. (REF!)	R
20-710	A	39	44			20.8.5. Easily followed examples of role of participation (Paul Vlek, University of Bonn)	R
20-711	A	39	46			This is a naïve view of how science and policy interact. See last 10 years of science policy studies literature (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-712	A	39	50			What do you call local? Is tacit included? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-713	A	40	2			Pertinent here would be reference to the following paper for interesting suggestions of 4 criteria to judge success of adaptations at different scales and sustainability paths: Adger WN, Arnell NW and Tompkins EL (2005) Successful adaptation across scales. Global Environmental Change - Human and Policy Dimensions, 15(2):77-86. Please look on the ISI web of science for other papers by Tompkins EL - she's done a lot of work on social learning and adaptation in small island states	R

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						that would be very interesting to reference here. (Irene Lorenzoni, University of East Anglia)	
20-714	A	40	4	40	14	Refs? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-715	A	40	12			In what sense is "integration" being used here? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-716	A	40	38	40	47	Each sentence in this paragraph is awkward. Rewrite (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-717	A	40	44	42	25	(Section 20.8.5 & 6) For instance, one cross cutting approach is that of innovation, which can be constructed not only as technological advance but the parallel processes of learning and change management in institutions, regulation, logistics, inter-mediation and so on (Ravetz 2006: Green et al 2000: Georghiou 2002). A further cross cutting approach is that of evaluation for sustainable development: this can be constructed as one of the key factors in a self-reflexive transparent form of governance (Ravetz et al 2004). A further cross-cutting approach is that of multi-level governance for sustainable development, and emerging concepts of ecological democracy (Lafferty & Narodoslowski 2004) references to the above: Batty, M, 1995: 'Cities and Complexity: implications for modelling sustainability': In: Brotchie, M, Batty, M, Blakely, E, Hall, P & Newton, P, (Eds): 'Cities in Competition: productive & sustainable cities for the 21st century': Melbourne, Longman Australia Funtowicz, S.; Martinez-Alier, J.; Munda, G.; Ravetz, J. (2002): "Multicriteria-based environmental policy", in: Hussein, A., Baranzini, A. (ed.): "Implementing Sustainable Development : Integrated Assessment and Participatory Decision-Making Processes", Cheltenham, Edward Elgar, p. 53-77 Rayner, S & Malone, E, 1997: 'Zen and the Art of Climate Maintenance': Nature Vol 390, 27/11/97: 332-335 Georghiou L, Impact and Additionality of Innovation Policy, in Boekholt P (ed) Innovation Policy and Sustainable Development: Can Innovation Incentives make a Difference, Brussels: IWT-Observatory 2002 Green, K., Morton, B., and New, S. (2000) 'Greening Organisations: Purchasing, Consumption and Innovation', Organisations and Environment, vol 13 (2) pp206-225 Ravetz J (2006) "Regional innovation & resource productivity – new approaches to analysis and communication" In: Randles S & Green K (Eds) Industrial ecology & spaces of innovation: Edward Elgar	R

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						Ravetz J, Coccossis H, Schleicher-Tappeser R, Steele P (2004): Evaluation of regional sustainable development – transitions and prospects Journal of Environmental Assessment Planning & Management 6(4):585-619 (Joe Ravetz, University of Manchester)	
20-718	A	40	46			Typo error. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	C
20-719	A	40	49	41	25	I would urge adding here the Arctic Climate Impact Assessment as an example. It involved 8 nations and 6 indigenous peoples councils, etc.--had many meetings and was quite collaborative (it might be worth citing the Native People's workshop and report, for example, where they put out their Albuquerque Declaration--quite an interesting document tying impacts and mitigation. Also, of course, so was the whole US assessment (perhaps cite the recent article that Granger Morgan was lead author of in ES&T). (Michael MacCracken, Climate Institute)	R
20-720	A	41	4	41	5	Check sentence. Probably it would be "Conclusions and... ice formation, which are important for". (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-721	A	41	9			What does "traditional knowledge projects" means? (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-722	A	41	14	41	25	Another initiative which used participatory approaches to discuss definitions of "dangerous anthropogenic interference" is HOT (Helping Operationalise Article Two), a science-based policy dialogue coordinated by IVM, Netherlands [See pdf version report at <a href="http://www.ivm.falw.vu.nl/Research_projects/index.cfm/home_subsection.cfm/subsectionid/605D0B31-3BCC-44CC-ACD555FB32D7332E">http://www.ivm.falw.vu.nl/Research_projects/index.cfm/home_subsection.cfm/subsectionid/605D0B31-3BCC-44CC-ACD555FB32D7332E</a> (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-723	A	41	14	41	25	No distinction is made between instrumental and normative reasons for participation (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-724	A	41	20	41	20	sentence ending "...sea-level rise" requires a reference (REF!)	C
20-725	A	41	22	41	22	Reference could be added which explores the role of expert judgment in determining the likelihood of rapid climate change. They concluded that with small groups of experts it is extremely difficult to capture likelihoods in this manner. See	R

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						Arnell, N.W., Tompkins, E.L. and Adger, W.N., 2005 in press. Eliciting information from experts on the likelihood of rapid climate change. Risk Analysis. (REF!)	
20-726	A	41	27			A section on social justice is needed in 20.8 to cover big gap in rest of chapter (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-727	A	41	28	42	25	Section 20.8.6 A challenging but speculative section without much in the way of references and evidence. The speculative nature of this section should be made clear. (Edward Clay, Overseas Development Institute)	R
20-728	A	41	28			20.8.6. There is a stark contrast in the style of writing with previous sub-section. To what extent can we choose between mitigation and adaptation? It appears to me that the time axis on which these processes deliver results are hugely different. This should be addressed in first paragraph and not in the last (where it is dealt with in a polemic way and thus not too helpful for policy makers. The second para is difficult to read. It leaves too many issues unsaid. e.g. what fronts are meant. How exactly do ... underlying commonalities bring climate issues to the table... I am trying to picture this. (Paul Vlek, University of Bonn)	R
20-729	A	41	32	41	34	References: Goklany (1999, 2000, 2005b), which note that adaptation might reduce the threshold at which CC might become dangerous and reduce the eventual cost of mitigation. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-730	A	41	36	41	40	Should note that if the threshold for CC becoming "dangerous" was determined by the "weakest link" (for example), then strengthening this weakest link's ability to cope with CC should raise the threshold. Thus, if Sub-Saharan Africa and island nations' adaptive capacities were advanced, that might have a large impact on the "demand" for global mitigation. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-731	A	41	46	42	8	References: Goklany (2003, 2005, 2005b), which deal with many of the issues addressed here. (See comments 22 and 39) (Indur Goklany, Office of Policy Analysis, Department of the Interior)	R
20-732	A	41	46			As noted at start the chapter does not have a "coherent" approach. So this is red herring (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-733	A	41	49	41	50	"nothing that the determinants of mitigate capacity describes in Yohe(2001) are almost identical to the determinants of adaptive capacity" - Here we need more explanation. Can you mention some of these determinants?.	R

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						(Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	
20-734	A	42	1			why is the country-level the only focus? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-735	A	42	5			"...complement one another on all three fronts" (which are they?) (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-736	A	42	17	42	25	I don't understand thwe logic of this paragraph, reword to clarify (Rob Swart, MNP)	
20-737	A	42	28	42	34	I would like to support the statement of Mr. Lubchenko that scientists require " the new contract " between a society and a science. Too many scientific forces are lost because of unclimed scientific researches by a society. It is especially typical of the former USSR. (Shavkat Azimov, Physical-technical Institute of Tajik Academy of Sciences)	R
20-738	A	42	28			Section 20.9. Definitely too short! (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	R
20-739	A	42	28	43	25	This is another interesting but highly speculative section. There is scope for references to the development policy literature e.g. on cataloguing best practice which otherwise appears like a new idea plucked from the air. (Edward Clay, Overseas Development Institute)	R
20-740	A	42	28	43	25	This section would be improved with a sub-section on methods. This is an area where there exists a multitude of arguably salient methods, and a considerable debate about which method(s) work best. See the cite listed for p.13, line 29. (Colin Polsky, Clark University)	R
20-741	A	42	30	42	50	Some importantes observations about uncertainty are included . Uncertainty is more than statistcal error or inexactness of numbers, more research does not necessarily reduce incertainty , in problems that are characterized by high system uncertainties, knowledge gaps, and high decision stakes , may well dominate quantifiable dimensions. (Leila Devia, National Institute of Industrial Technology)	R
20-742	A	42	37			Sections 20.9.1 & 20.9.1 This is an important section. More mention is required about the work on macroeconomy-environment-c-climate change linkages and application of the Action Impact Matrix (AIM) methodology -- see earlier comment re. page 21, lines 29-33. (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	R
20-743	A	42	37	42	47	Sections 20.9.1 and 20.9.2 both appear to be about the scientific community. If	R

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						20.9.2 is about academics and 20.9.1 is about development practitioners - then this needs to be better reflected in the text of 20.9.1. (REF!)	
20-744	A	42	37			20.9.1 I am not sure how careful analysis alone will do that. This paragraph seems disjointed and at odds with what is claimed in 20.9.2 (impossible to unravel). (Paul Vlek, University of Bonn)	R
20-745	A	42	39	43	9	It continues to be critically important, particularly in developing countries, to engage policymakers with a view to integrating climate change concerns. IIED, UK coordinated a consultative exercise in Asia, Africa, and Latin America in 2005 (Ulka Kelkar, TERI (The Energy and Resources Institute))	R
20-746	A	42	49	42	50	I would suggest that this differentiation may be difficult at present, but as the climate further changes and we recognize that climate change is affecting variability, this will not always be completely out of reach. (Michael MacCracken, Climate Institute)	R
20-747	A	42	50			Climate variability can be distinguished from climate change by analysing frequent events, for which accurate statistical analysis can be performed. Thus, if actions are taken to care about low probability events as seen by the climate variability lens then the action can be attributed to climate change So I don't agree with your statement that this distinction is almost impossible. (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-748	A	43	0			The conclusion could be more powerful by summarizing the key findings and links that form the core of the chapter's arguments followed by suggested solutions. The last two sentences refer to one key solution. What about others? (David Carr, University of California, Santa Barbara Department of Geography)	R
20-749	A	43	0			20.10 Following the first sentence could be a series of specific recommendations that could also be placed in the exec. summary. (David Carr, University of California, Santa Barbara Department of Geography)	R
20-750	A	43	0	44		20.10 Conclusions - this section could be rephrased in language that will be more accessible to a wider audience, as it will be one to which many will turn first. (Edward Clay, Overseas Development Institute)	R
20-751	A	43	2			why is all the writing as if nation states the only actors? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-752	A	43	12			20.9.3. The message is simpler than the language in which it is delivered. (Paul Vlek, University of Bonn)	R
20-753	A	43	14			it is much more than - it is also class dependent, something completely overlooked in this chapter	R

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						(Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	
20-754	A	43	28			Section 20.10 Ditto -- especially paragraph 2 which mentions development planners and development ministries. (Mohan Munasinghe, Munasinghe Institute for Development (MIND))	R
20-755	A	43	28	44	21	Section 20.10. It s an interesting conclusion, but I do not feel that it relates to the range of ideas shwon in the document, there appears to be more disagreement (particularly in notions of sustaianble development) than is reflected in the conclusion at present. (REF!)	R
20-756	A	43	28			20.10 The first para is lucid. However, I found the chapter not too convincing in linking ...the precursors of sustained support of economic growth and .....determinants of adaptive capacity. May be the chapter should strengthen the documentation of that fact. As a development “worker” myself, I am not so sure that my community has the necessary tools to assess the need to complicate the development agenda with adaptation to climate change. They may be doing it unwittingly. (Paul Vlek, University of Bonn)	R
20-757	A	43	30	43	31	"adaptation" of wealthy nations or sectors and subsets of society may place others at higher not lower risks (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-758	A	43	30	43	30	insert the word 'physical' between 'reducing' and 'vulnerability' (REF!)	R
20-759	A	43	33	43	50	Again written as if selling importance of climate change to development was issue rather than assessing. This should no longer be a marketing job - we are up to the 4th report! (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-760	A	43	36			Too much on their plates' presumably means that they are already overburdened with too many issues that they have to take into account in decisions and so mainstreaming another issue, climate change, is difficult to achieve in practice? (Edward Clay, Overseas Development Institute)	R
20-761	A	43	36	43	36	Just to note that the Villach conference in 1985 made the same point--that planners and governments need to make changes as the climate is changing. There is a long history to this, and making that clear might be quite useful--or at least appropriate. (Michael MacCracken, Climate Institute)	R
20-762	A	43	41		43	Where has this chapter clearly established a connection between the precursors of sustained support of economic growth and improved well being? Is there a problem	R

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						becauseof the introduction of 'precursors'at this point in the chapter. (Edward Clay, Overseas Development Institute)	
20-763	A	43	43			why are these seen as 2-sides? (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	R
20-764	A	44	11	44	11	I would think that "Climate" should be "Climate change" (Michael MacCracken, Climate Institute)	R
20-765	A	44	12	44	13	Probably the sentence should read: "It is, instead, ... Examination of how and why policies..." (Jose Roberto Moreira, National Reference Center on Biomass, University of Sao Paulo)	R
20-766	A	44	15	44	21	How can the conclusion of such a chapter say nothing about consumption growth, international realtions, social justics and institutional design e.g.. Kyoto. This chapter should have been written by people with expertise in development reviewing what is known about climate rather than what was obviously the other way around. As it stands it is hard to imagine the development community paying any attention at all. Suggest authors read: HUMAN CHOICE AND CLIMATE CHANGE: V. 1-4 STEVE RAYNER (EDITOR), ELIZABETH L. MALONE (EDITOR), BATTELLE PRESS, 1998.  (Louis Lebel, Unit for Social and Environmental Research, Chiang Mai University)	Two authors from those volumes, including an editor, are on the writing team.
20-767	A	44	17	44	21	20.10, Conclusions, pg. 44, lines 17-21: Ambiguous end to the overall chapter. (P. H. Liotta, Pell Center for International Relations and Public Policy)	D
20-768	A	45	0			References. I'm embarrassed with the high number of references from some of the chapter authors themself: 4 for Arnell, 3 for Cohen, 8 for Yohe. Tol, with 8 references, is'nt one of the authors of the chapter, but he wrote common paper with Yohe! I have a deep respect for the work done by the chapter authors, but a less number of pertinent references, would be probably more "politically correct". (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	Good point....will try to be more judicious
20-769	A	49	40	49	40	Incomplete reference (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	C
20-770	A	50	22	50	22	Incomplete reference (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	C
20-771	A	50	44	50	44	Incomplete reference (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	C
20-772	A	50	45	50	45	Incomplete reference (Pierre Chevallier, Institut de Recherche pour le Développement (IRD))	C

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20-773	A	54	0			Zhao, Y., 2002: Economics of Flood Hazard Mitigation (PhD thesis). Tsinghua University, Beijing, China. (Yong Zhao, China Huaneng Technical Economics Research Institute)	C