



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

Specific Comments

GOVERNMENT REVIEW COMMENTS

Chapter 17

August 2006

IPCC WGII AR4 SOD *GOVERNMENT* Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
G-17-1	A	0				Up to now chapter 17 is only a listing of examples. One can find much more of those examples. I miss the criteria for selecting just these measures presented here. There is the danger of being arbitrary. (Government of Germany)	Addressed in Table 17.1 for example
G-17-2	A	0				This is an opportunity. Can the chapter go further to offer new insights -- beyond the TAR -- that would be useful to resource managers at particular scales interested in lessons with regard to adaptation? What have we learned since the TAR that would be helpful? The TAR acknowledges that, " because the vulnerabilities of climate change occur at various scales, successful adaptation will depend on actions taken at a number of levels." It then goes on to provide examples of initiatives to enhance adaptive capacity at a global scale, a national level and a local level. This should be the starting point for the 4AR. For example, what insights could be made available with regard to the steps that need to be taken to identify where adaptation may be necessary, what type of adaptation is appropriate, and what needs to be done to implement adaptation effectively? The chapter currently does not address these issues sufficiently. More information on the stages of decision-making in the context of adaptation and evaluation of adaptation measures would be useful. The authors should go further and assess the emerging literature and real world experiences that could provide insights to resource managers at particular scales interested in effective implementation of adaptation strategies. Pieces exist throughout but as the chapter is currently organized it is difficult to follow. (Section 17.2.2, in particular, is an opportunity to expand based on a relatively large body of research looking at adaptation in practice and extract insights from examples that would be meaningful to practitioners.) Recommended literature and sources of literature: Pulwarty, R. and J., Hall 2004: Designing effective assessments for decision support: The Regional Integrated Sciences and Assessments Program. In Knight, G and J. Jager (eds) Integrated Regional Assessments of Global Change. IGBP/IHDP Systems for Analysis Research and Training (START) Washington DC (submitted). Climate Impacts Group -- University of Washington (Miles, Snover, etc.) CLIMAS Research Group -- University of Arizona (Morehouse, Garfin, Jacobs, etc) (Government of USA)	Addressed in 17.1 – what’s new since TAR
G-17-3	A	0				This chapter might consider adopting Figure 11.2 from chapter 11 as a way of illustrating the process of adaptation. The figure would be more helpfully placed in this chapter, as it is generally applicable in all regions.	Considered, not adopted

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Government of Finland)	
G-17-4	A	0				There is a useful distinction between autonomous and planned adaptation in Chapter 17. This should be drawn out in the executive summary. (Government of Australia)	Addressed
G-17-5	A	0				The selection of examples in chapter 17 should be a collection of best-practice-examples or at least some sort of good-practice on adaptation measures. The outcomes of these examples should be more generalized. Question is: What lessons can the reader learn from these special examples for other adaptation measures? (Government of Germany)	Addressed
G-17-6	A	0				The examples presented in chapter 17 should also be judged on their intention (why are they implemented, is this really because of climate change?), their aims regarding to climate impacts and the effectiveness in reaching these aims. (Government of Germany)	Addressed
G-17-7	A	0				The chapter notes that “the limits of many adaptation options are already apparent.” It would be extremely useful information to summarize our understanding to give a relative sense of capacity across regions and sectors. The chapter contains a good amount of conceptual discussion and examples, but gives little overall feel for actual adaptation and adaptive capacity. The chapter would be much more effective if it included a synthesis summarizing current knowledge on regional (and sectoral?) adaptive capacity and why (drawing from the other chapters), main regional/sub-regional constraints on adaptation, confidence in adaptive capacity characterizations, adaptation plans, and adaptation policy options, what do we need to know that we don’t already know, and recommended research agenda? Some discussion of this is included in Ch. 19, but with a focus on key vulnerabilities. This chapter could provide a more detailed summary of adaptive capacity regardless of vulnerability. (Government of USA)	Addressed
G-17-8	A	0				The chapter highlights the importance of social scientific understanding of climate change in relation to development issues. It is good that social development is not treated as a "ceteris paribus" background condition for climate change. There is a need to develop a coherent picture of social systems (institutions, decision-making) and how they operate (Government of Finland)	Addressed
G-17-9	A	0				The authors tend to see any form of action that relates to climate change, and which is not mitigation, as adaptation. This takes a broad view of the IPCC definition of adaptation as "the adjustment in natural or human systems in response to actual or	Addressed

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						expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities". The authors need to, therefore, more clearly define the ambit of the Chapter. (Government of Australia)	
G-17-10	A	0				Overall, the chapter is well structured and reads well. The use of examples (text boxes) is very welcome (Government of Finland)	Addressed – now even more boxes
G-17-11	A	0				Our concern is in the uncritical embrace of and high hopes set on participatory approaches. The final sentence of the summary: "participatory approaches are recognized as important for overcoming constraints". Although we would certainly agree that non-participatory approaches have proven not to work, that does not make the opposite true. Participatory approaches, or multi-stakeholder inclusion, are as well full of constraints, that need to be recognised and addressed. Among these are: their lack of discretion due to a lack of institutionalisation; problems of representation and power; limited agenda-setting capacities; problems of scale-appropriateness; and problems of capacity. In attach a piece of literature addressing these issues for disaster response. See: Jeroen Waarder, Pieter Waalewijn, Dorethea Hilhors, Public participation in Disater-Prone watersheds. Time for multistakeholder Platforms, Wageningen University 2002 ISBN 90-76657-07-6 (Government of Netherlands)	Addressed
G-17-12	A	0				Just like globalisation, “vulnerability” and “adaptation” – even if they are defined specifically with reference to climate change – encompass a number of politicised and subjective academic debates. How these terms and the values ascribed to outcomes or processes associated with them are interpreted has a clear bearing on how they are treated in a policy context. (Government of Norway)	Addressed – full references to all terms used e.g. globalisation
G-17-13	A	0				It would be helpful to have a discussion of how thinking and the literature have evolved since the TAR. (Government of USA)	Addressed
G-17-14	A	0				Globalisation is referred to as a “stressor” to which vulnerable communities are exposed. It is also portrayed as a force that is imposed on communities from “above” and “beyond” their spheres of influence and control. There is a need to acknowledge the range of processes, outcomes and values associated with contested concepts like globalisation, and to clearly point out that different actors see and experience “globalisation” differently.	Addressed

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						(Government of Norway)	
G-17-15	A	0				General comment - there seems to be a lack of explicit discussion on the interaction/integration between assessment of climate risks and other risks - ie that climate often isn't the only or even main driver for change. This needs to be recognised in order to understand what induces people to adapt behaviour. (Government of UK)	Addressed
G-17-16	A	0				Differences in style and structure of chapter compared to ch 18; statements on confidence are not included in the main messages (Government of Finland)	Addressed
G-17-17	A	0				Ch. 17 or 19 should provide more specific details on adaptation limitations across regions. (Government of USA)	Addressed
G-17-18	A	0				A recurring theme in this chapter, and one of the most prominent conclusions, is that ability to adapt to climate change is limited in developed countries (and elsewhere) and that the actual climate change-related exposures should be focussed upon (presumably through mitigation efforts?). To avoid the implicit acceptance of a status-quo global economic situation that this position represents, perhaps some text could be added making clear the fact that the vulnerability of developing countries to climate change could indeed be reduced by minimizing the magnitude of climate change, or else by addressing the underlying structural reasons for underdevelopment (Government of Canada)	Addressed
G-17-19	A	0				A new section dealing with "Future adaptation needs" would be desirable. (Government of Sweden)	Addressed
G-17-20	A	2	3	2	3	The heading "Adaptation can reduce...." does not comfortably match the dot points beneath it. Suggest the authors revise the heading. (Government of Australia)	Addressed
G-17-21	A	2	5	2	7	This paragraph largely focuses on agriculture and should be broadened to include other adaptation efforts such as business risk management, technology, research and development. (Government of Australia)	Addressed – many other examples in the chapter
G-17-22	A	2	5	2	7	The phrase "crop adjustment" may be added before "crop switching" in line 6, as the latter does not cover the adaptation measures involving a change of the planting date. (Government of Pakistan)	Addressed
G-17-23	A	2	5	2	7	Adaptative means in urban planning such as rules and regulations in land use planning (eg. lowest construction heights and minimum measures of infrastructure	Addressed

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						such as sewage pipes) and traditions in choosing settlement locations should be mentioned, too. (Government of Finland)	
G-17-24	A	2	9	2	10	This paragraph only refers to cold areas. Amend to focus on other areas. Also include "temperature" and "hydrological cycle" as other impacts. (Government of Australia)	Addressed
G-17-25	A	2	9	2	10	The bullet points listing adaptation possibilities and risks to be adapted to seem very heavily weighted towards the Arctic. (Government of Canada)	Addressed
G-17-26	A	2	9	2	10	Suggest deletion of "outside the range of experience". If something is outside the range of experience, it is necessarily novel. (Government of Australia)	Addressed
G-17-27	A	2	12		12	Insert "variability" after adaptation (Government of USA)	Addressed
G-17-28	A	2	13		13	Add a new bullet that would read: "Measures that would reduce vulnerability to current climate more often than not would also aid in reducing future vulnerability to climate change." (Government of USA)	Addressed
G-17-29	A	2	14	2	15	Not a homogenous/systematical categorisation - either sectors (public, private), actors (eg. governmental agencies, private companies, interest organisations, scientific community, citizens). (Government of Sweden)	Addressed
G-17-30	A	2	17	2	20	Concern regarding the sensitivity of juxtaposing "changes in livelihood strategies in response to permafrost melt by the Inuit in Nunavut (Canada)" with "increased use of artificial snow-making by the alpine ski industry". Suggest either using a different example of adaptations to observed changes in climate or inserting "increased use of artificial snow-making by the alpine ski industry" as a separate sentence or a separate paragraph. (Government of Australia)	Addressed
G-17-31	A	2	20			Add at the end: "The last measure has ecological impacts that makes it undesirable from the point of view of environmental protection and sustainable development. (reference: IPCC WG II, chap. 12, p.28, l. 22-23) (Government of Germany)	Addressed
G-17-32	A	2	23	2	26	Please include some reference to scale and location of the examples of adaptation measures. (Government of Australia)	Addressed
G-17-	A	2	31	2	31	Please insert the word "change" in between "climate" and "considerations".	Addressed

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33						(Government of Australia)	
G-17-34	A	2	31	2	33	Is this paragraph sufficiently fleshed out in the body of the Chapter? Currently inadequate coverage in the Chapter for inclusion in the Executive Summary. Suggest either including more on this item in the Chapter or removing from the Executive Summary. (Government of Australia)	Addressed – ES now rewritten and clearer line of sight to chapter
G-17-35	A	2	35			based on the underlying text please insert after "be effective": "due to a high benefit-cost ratio" (Government of Germany)	Addressed
G-17-36	A	2	37		38	The first sentence is misleading. Please clarify. In fact, some estimates global costs and benefits of adaptation are provided in Goklany (2005a). Revise this to read as follows: "Some multi-sectoral estimates of the global costs and benefits of adaptation indicate very high benefit-cost ratios for much of the remainder of this century, particularly if such adaptation is designed to reduce vulnerability of current climate-sensitive problems that might be exacerbated by climate change." (Government of USA)	Addressed
G-17-37	A	2	38			eliminate "and speculative" In order to communicate uncertainties or confidence levels of findings please only use wording from the "Guidance Notes for Lead Authors of the IPCC Fourth Assessment Report on Addressing Uncertainties" (July 2005). (Government of Germany)	Addressed
G-17-38	A	2	46			Please insert from the underlying text (p.6, l.20 to 21) after "high benefit cost ratio": "In some cases it could be more cost-effective to implement adaptation measures early on, particularly for long-lived infrastructure." (Government of Germany)	Addressed
G-17-39	A	3	1	3	1	The capacity to adapt is not simply a discrete have or have not. This statement is misleading. Suggest revising to indicate that there are degrees of adaptive capacity. (Government of Australia)	Addressed
G-17-40	A	3	1		23	With economic development, adaptive capacity could increase. (Government of USA)	Addressed
G-17-41	A	3	3	3	6	In order to balance the statement regionally please give a second example for the developed world. (Government of Germany)	Addressed
G-17-42	A	3	11	3	13	This is a strong statement. It reads as a policy judgement which extends a Caribbean example of hurricane preparedness to the rest of the world. Suggest re-writing as an example for that region. (Government of Australia)	Addressed

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G-17-43	A	3	11		13	This statement might be true for hurricane preparedness but isn't necessarily true for all key vulnerabilities. Accordingly, insert "in some situations" before "appropriate". (Government of USA)	Addressed
G-17-44	A	3	15	3	15	"Globalisation" is a loaded term which has a variety of meanings. Suggest removing or defining by stating exactly which aspect of globalisation referring to i.e. global trade (possible in a separate dot point). (Government of Australia)	Addressed
G-17-45	A	3	15		18	Globalization is not always a source of stress. Sometimes it (along with trade) can aid adaptation and relieve stress. For example, globalization is one of the major reasons why global food prices are 75 percent lower today than they were in the 1950s. This is one reason why hunger is lower today than it used to be then. Accordingly: Replace the first sentence in the current 3rd bullet with the following: "Multiple factors affect exposure to adaptive capacity – some positively, others negatively. Such factors include HIV, AIDS, violent conflicts and globalization." Append a new sentence at the end of the 3rd bullet that would read: "same time globalization and trade have helped reduce global food prices over the past several decades which has helped reduce world hunger substantially; such benefits should continue even under climate change." (Government of USA)	Addressed
G-17-46	A	3	16	3	16	Delete "India" as farming communities globally can be exposed to the impacts of market changes and climate change. (Government of Australia)	Addressed
G-17-47	A	3	23		23	Change "continue to experience high levels of mortality" to "have experienced high levels of mortality during particular heat waves. However, what should be a one-off event could become a chronic problem unless greater emphasis is placed on adaptation and reducing vulnerability." (Government of USA)	Addressed
G-17-48	A	3	25	3	32	The section lacks a consideration of cognitive and institutional uncertainty as a limit to adaptation (see p. 32, line 26-28 where uncertainty is shortly mentioned as a limit). (Government of Sweden)	Addressed
G-17-49	A	3	25		25	Modify the heading to read as follows: "If climate change is excessive or too rapid, limits to adaptation might be reached." (Government of USA)	Addressed
G-17-	A	3	27	3	32	This paragraph is expressed in generalised technical jargon. It would be helpful for	Addressed

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50						the purposes of an Executive Summary if this could be rewritten in more practical terms for the wider audience (and use in TS/SPM). (Government of Australia)	
G-17-51	A	3	27	3	29	Framing and cognition of risk (add -and its consequences and lack of adequate knowledge...). (Government of India)	Addressed
G-17-52	A	3	27	3	27	Change phrase "Adaptation is ultimately limited" to " The are limits to adaptation" to present a less emotive view of the potential of adaptation. (Government of Australia)	Addressed
G-17-53	A	3	27		32	Recommend replacing the sentence on lines 27 to 29 with the following: "There are constraints on adaptation that can reduce their effectiveness. These include inertia, governance issues, risk framing and risk cognition." Note that we are unsure by what is meant by "technology thresholds". (Government of USA)	Addressed
G-17-54	A	3	27			Please add an introducing first sentence (summarizing section 17.1, p. 5, l. 29 to 30): "Human response to climate change is uneven: vulnerabilities remain following adaptation, and new vulnerabilities will emerge despite adaptation." (Government of Germany)	Addressed
G-17-55	A	4	1			Section 17.1. Often governmental adaptation is reactive in nature, too. In land use planning constrains set by extreme weather events are only one sector to be taken into account, and often only gain attention after experienced extreme weather events (as mentioned in 17.4.2.4., p. 33 lines 7&8). Human memory in this respect is found being very short, relating to 17.4.2.4. Thus lessons learned are easily forgotten unless the weather events occur repeatedly. (Government of Finland)	Addressed
G-17-56	A	4	21	4	23	The statement that "potential adaptations to climate change are often highly desirable in its (sic) own right" should be expanded upon slightly to indicate more clearly that these adaptations contribute to sustainable development or other goals independent of any threats posed by climate change. (Government of Canada)	Addressed
G-17-57	A	4	21			Should use the phrase 'win-win' or 'no/low-regret' and refer to the fact that adaptation can also improve resilience to NON CLIMATE risks (this is not clear at present) and thus improve the potential for achieving more sustainable development (Government of UK)	Addressed
G-17-58	A	4	23		24	The last sentence in this para sounds right but needs references and evidence. (Government of USA)	Addressed
G-17-	A	4	33	4	33	Suggest redraft '...will adapt, however successfully, to both ...'. This picks up idea	Addressed

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59						of line 23 that there are limits to adaptation. (Government of Australia)	
G-17-60	A	4	38	4	42	the actors undertaking adaptation are more varied here than in Ch 18. This formulation about who conducts adaptation should be communicated to authors of ch 18, where the stress seems fo be on individual adaptation (Government of Finland)	Addressed
G-17-61	A	4	40		42	Change “is undertaken by governments...” to “are undertaken, e.g., by governments ...” (Government of USA)	Addressed
G-17-62	A	4	48	4	51	According to the definition of adaptive capacity (p. 5, p 18), the distribution of resources and prior stressors are part of adaptive capacity. (Government of Sweden)	Addressed
G-17-63	A	5	2	5	3	The reference to ecological exposure is confusing given that the focus of the chapter is on social exposure and human adaptation. (Government of Norway)	Addressed
G-17-64	A	5	8			Eliminate “evolve in order”, although we would agree that the ability to evolve as the nature and magnitude of the threat changes would be an important – but not the only aspect of aspect -- adaptive capacity. (Government of USA)	Addressed
G-17-65	A	5	9	5	10	The statement that adaptive capacity is a "vector" of resources and assets is unclear due to the novelty of that particular usage of the word "vector". (Government of Canada)	Addressed
G-17-66	A	5	29		30	Insert “can” before “remain” on line 29. On line 30, change “will” to “might”. (Government of USA)	Addressed
G-17-67	A	5	41	5	41	What is televance of the word ‘donor agencies’ ? (Government of India)	Text has been modified, “donor agencies” deleted.
G-17-68	A	6	12	6	13	The potential synergies and conflicts between climate change adaptation measures and development priorities seem to merit slightly more explanation. (Government of Canada)	Examples (shrimp-farming & coastal mangroves) have been added to clarify the statement.
G-17-69	A	6	36	6	36	check spelling of ex-post (no e) (Government of Finland)	Both are possible.
G-17-70	A	6	37		39	Disagree with the sentence that commences with “In many cases...”. Despite uncertainties inherent to climate risk estimates, there are numerous adaptation that are possible that do not have to be “reactive”. Consider, for example, malaria or other climate-sensitive diseases. Impacts analyses regarding where or when such diseases might spread because of CC are not reliable. Despite that there are numerous methods to reduce vulnerability to such diseases. For malaria, we could,	Sentence has been removed.

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						for instance, try to develop a malaria vaccine or more effective treatments. Neither of these have to be reactive to specific climate changes at particular locations. Similarly, we expect that with climate change, agriculture might have to expand into drier areas with more saline soils. Therefore, general research in these areas now would advance future adaptation in the agricultural sector. (Government of USA)	
G-17-71	A	6	41	6	41	It would be helpful if the authors explained irreversible and non-linear damages in a little more depth. (Government of Australia)	“Non-linear” removed; Examples of “irreversible” damages are now provided: species extinction and unrecoverable ecosystem damages (Easterling et al 2004)
G-17-72	A	6				Section 17.2.2: This chapter could have a more extended assessment of examples (Government of Germany)	The chapter contains some new elements, inter alia, a new table on adaptation practices.
G-17-73	A	6				Figure 17.1: figure can be eliminated, no specific news compared to respective text (Government of Germany)	done
G-17-74	A	7	2	7	18	In the list of barriers to effective adaptation it is important to highlight the emerging forms of resource based conflicts around the world as one of the barriers. (Government of India)	This is discussed under limits to adaptation (17.4); here, reference is made to a particular study which does not discuss resource-based conflicts.
G-17-75	A	7	13	7	13	The new sentence here may start with "The" instead of "A". (Government of Pakistan)	Text has been modified (according to comment E-17-126).
G-17-76	A	8				There should be a table analogous to Table 17.1 that lists general adaptation practices measures by sector. For example for malaria, adaptation measures that could be listed include development of measures to better treat and prevent malaria that would reduce current (and, therefore) future vulnerability to climate change. Equally importantly, work on these measures can commence despite the lack of location specific impacts assessments that one can have too much confidence in. (Government of USA)	Not possible due to space limitations; sectoral limitations are discussed in sectoral chapters.
G-17-77	A	8				Table 17.1 comment: The comment relates to the heat warning system in Germany. A heat warning system with concrete activity measures for responsible agencies and offices has only been implemented in Hesse. That means it is not a national but a sub national (or regional? how are the scales defined?) measure. (Government of Germany)	Table 17.1 has been revised.
G-17-78	A	8				Table 17.1 - sensitivity column should really be site or sector column - it describes the affected sector(s). A sensitivity column should give an indication of the level of sensitivity (and exposure?) - ie high, medium, low. (Government of UK)	Table 17.1 has been revised.
G-17-	A	9	23	9	23	The word "water" may be added after "90-100 million m3".	Accepted.

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79						(Government of Pakistan)	
G-17-80	A	10	40	11	21	The examples mentioned could include adaptation measures with more direct human interest, such as lowest construction heights on residential areas adequate in case of floods or storm surges etc. (Government of Finland)	Reviewer did not provide literature to support such statements.
G-17-81	A	11	10	11	10	Copenhagen metro is mentioned; Underground construction in all is on the rise in many places (namely Finland) and often increases city regions vulnerability towards water-related effects (such as storm surges and flash floods) of cc. This point could be introduced. (Government of Finland)	Reviewer did not provide a suitable reference of published literature to support such statements. Also, Copenhagen metro is only one example; the list of examples given, however, is not exhaustive.
G-17-82	A	11	32	11	33	The Dutch case of 50 cm needs some detail: over what time period, how are extremes dealt with in the regulation? (Government of Finland)	The authors refer to the Second Netherland's National Communication which does not provide any details that would allow for answering these questions. The source report is in Dutch {TAW (1995): Basisrapport Zandige Kust. Behorende bij Leidraad Zandige Kust. Ministry of Transport, Public Works and Water Management, Delft. }
G-17-83	A	11	36	11	38	Finland is also one of the countries that have already produced a National strategy for adaptation to cc. The theme is studied further in recent FINADAPT-project (http://www.ymparisto.fi/default.asp?contentid=165486&lan=EN). Many cities in Finland are studying the issue as well. (Government of Finland)	Reference to Finland's National Strategy for Adaptation to Climate Change is now made in the text.
G-17-84	A	11	37	11	37	May delete the word "to" appearing after the phrase "national strategies". (Government of Pakistan)	Accepted.
G-17-85	A	12	9	12	13	The distinction made between public goods and private agents is oversimplistic. In many cases the distinction between public and private is blurred. Public goods may today be provided by private actors (cf. the discussion on governance and partnership). (Government of Sweden)	Text/section has been modified.
G-17-86	A	12				Section 17.2.3: Would be helpful to be sketched in the SPM (Government of Germany)	Done.
G-17-87	A	12				Section 17.2.3: the assessment seems to be rather incomplete. What about urban planning, tourism, health, built environment, finance sector, ...? (Government of Germany)	We stand by the assessment.
G-17-88	A	14	44	14	44	May replace the word "costal" by "coastal". (Government of Pakistan)	Accepted.

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G-17-89	A	14	47	14	49	Is it worth explaining the difference between flood proofing and coastal protection? (Government of Canada)	Examples have been added to clarify the meaning of “floodproofing”.
G-17-90	A	15	4	16	13	Please ensure consistency and/or draw from information in Chapter 5, page 4, lines 34-36. (Government of USA)	There is no inconsistency between chapters 5 and 17; however, chapter 17 examines slightly different issues.
G-17-91	A	15	15	15	15	Insert after "tropical regions", "than in temperate regions", otherwise the statement is too broad and fails to account for polar regions, SIDS, etc. (Government of Australia)	Accepted.
G-17-92	A	15	19	15	22	A brief description of what are being called the "extensive adaptation measures" may be provided here to give a clear picture of the idea how adaptation strategies could offset agriculture loss. (Government of Pakistan)	Examples have been added for clarification.
G-17-93	A	15	34	15	35	The words "2000 US\$" may be put in parenthesis like it has been done for "(1990 US\$)" on page 18, lines 17 and 18. (Government of Pakistan)	Accepted.
G-17-94	A	15	36	15	37	The content of these lines may be compared with those of lines 20 to 21 on page 15. The same source is quoted at both these places to show very different values: 84% versus 90 to 107 percent. The discrepancy may be rectified. (Government of Pakistan)	Text has been modified to better highlight the different nature of the results presented.
G-17-95	A	16	33	16	33	The phrase "the 2010-1039 period" may be replaced by "the 2010-2039 period". (Government of Pakistan)	Accepted.
G-17-96	A	17	42			not sure if the following 'many other cities would not incur any cost' in terms of adaptation of social infrastructure' is badly phrased or a careless generalisation. (Government of UK)	Text has been modified.
G-17-97	A	17	47			Section 17.2.3.2 Global estimates. The UK is conducting a review of the economics of climate change - Stern Review. Reference to this may be very helpful. (Government of UK)	Could not refer to Stern Review as it has not been published at the time of writing this chapter.
G-17-98	A	18	21	18	22	Typo error – ‘Obtained’ in place of obtain . (Government of India)	Accepted/text has been modified.
G-17-99	A	18	23	18	23	The phrase "1055 US billion" may be replaced by "1055 US billion \$". (Government of Pakistan)	Accepted.
G-17-100	A	18	28			Sec. 17.3 – Good bits and pieces, but would benefit greatly from a more structured typography that initially lists and describes factors and relationships and then discusses the literature, geographic scale, etc. There is good and relevant material for this in Sec. 17.3.3 and 17.4.2. A figure illustrating relationships could be very useful at the beginning of section 17.3 as well. Also, there is overlap with the adaptive capacity discussion in Ch. 18. Consistency in terminology, definitions, and	Addressed through rewrite

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						content is desirable and it seems that Ch.18 should follow Ch.17's lead on this, as well as ceding the main discussion of adaptive capacity to Ch.17. (Government of USA)	
G-17-101	A	18	28			It would be appropriate to include a brief reference to Ch. 18 and the interaction between adaptation and mitigation in this sub-section. (Government of USA)	Addressed
G-17-102	A	18	41	18	42	Add 'technical' to the list of resources. (Government of India)	Addressed
G-17-103	A	18	46		47	Should be high income and high income per capita (Government of USA)	Addressed
G-17-104	A	19	21	19	22	Eriksen and Kelly, 2005 Is it the right reference? Or is it 2006? Please check. (Government of Germany)	Addressed
G-17-105	A	19	24			Replace the sentence starting with "Generic indicators include ..." with the following: "Generic indicators include measures for levels of education, income and health, and factors that affect them, e.g. food supplies per capita, levels of malnutrition, access to safe water and sanitation (Goklany 2000, 2006a)" (Government of USA)	Addressed
G-17-106	A	19	47	20	3	The finding that the capacity of societies to adapt to climate change isn't solely a function of economic development is an important finding and should be included in the Executive Summary. (Government of Australia)	Addressed
G-17-107	A	21	21	22	21	Add access to information and given knowledge base in the list of multiple process of change. (Government of India)	Addressed
G-17-108	A	21	22	21	24	The statement that districts with low adaptive capacity are more vulnerable to "globalization" employs a highly contested term to describe what seems to be, according to box 17.5, no more than the process of trade liberalization (one component or facet of globalization). Perhaps "trade liberalization" should be substituted for "globalization", or else some explanation of globalization be provided? (Government of Canada)	Addressed
G-17-109	A	23	15	23	15	The phrase "for examine" may be replaced by "for example". (Government of Pakistan)	Addressed
G-17-110	A	24	45	24	46	"Perry Caribou" should be "Peary Caribou" (Government of Canada)	Addressed
G-17-111	A	25	9	25	10	Replace "when conditions make it unavailable to some" with "when conditions would otherwise make it unavailable to some".	Addressed

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						(Government of Canada)	
G-17-112	A	25	47	25	47	The word "re-enforced" may be replaced by "re-inforced". (Government of Pakistan)	Addressed
G-17-113	A	25				Box 17.7. Yet another example of the importance of traditional knowledge when looking for functional location-specific adaptive means. Also underlines the importance of personal experience in igniting adaptive actions. (Government of Finland)	Addressed
G-17-114	A	26	11	26	31	Links between second order vulnerabilities (chain effect of vulnerability to other adjoining regions) and secondary adaptations have to be further established and explained. The word secondary adaptation in Para 1 springs up with out any prior contextual reference. (Government of India)	Addressed
G-17-115	A	27	2			Sec. 17.4 – it would be informative to discuss the explicit/implicit definitions of adaptive capacity adopted by the three countries that have prepared NAPAs. (Government of USA)	Addressed
G-17-116	A	27	4	27	4	Section 17.4.1 deals mainly with developing countries and this should be made clear in the title. Suggest title should read "International and national action for implementing action in developing countries". (Government of Australia)	Addressed
G-17-117	A	27	11			Reference Berkhout (2005) for role of public policy intervention in adaptation Berkhout, F. (2005). Rationales for adaptation in EU climate change policies. Climate Policy, 5: 377-391. (Government of UK)	Addressed
G-17-118	A	27	25	27	45	Five countries have now submitted NAPA reports, the new countries are Bhutan and Malawi. (Government of Australia)	Addressed
G-17-119	A	27	27	27	27	Typo error the words 'so that' is repeated twice. (Government of India)	Addressed
G-17-120	A	27	27	27	27	The phrase "so that" is in repetition; one may be deleted. (Government of Pakistan)	Addressed
G-17-121	A	27	29	27	29	The word "and" appearing after the phrase "and Samoa" may be deleted. (Government of Pakistan)	Addressed
G-17-122	A	27				Section 17.4.1. A nice example on mainstreaming on regional/local level are the flood gates of lake Mälaren in Stockholm, which were re-designed under the recent Interreg IIIb Baltic Sea project SEAREG to withstand the increased flow to the sea as a result of future increase of precipitation on the lake's catchment area. http://www.gtk.fi/projects/seareg/index.html .	Addressed

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						(Government of Finland)	
G-17-123	A	29	6			Add two new sentences at the end of line 6 that would read: “On the other hand, Goklany (2006a) notes that several measures to reduce hurdles to sustainable development would also enhance adaptive and mitigative capacities (e.g., efforts to reduce hunger and malaria). Such measures would, therefore, unconsciously constitute ‘mainstreaming’”. (Government of USA)	Addressed
G-17-124	A	29	12			Change the title of Section 17.4.2 to “Constraints to actions that may limit the effectiveness of or options to adaptation”. We believe that “constraints” is more accurate than “limits”. For example, in the last para on page 29 and in the remainder of this section, it would be more accurate to substitute “constraints” for “limits”. Also, while in some situations adaptation options may be limited to migration, doesn’t mean that is not a very effective adaptation option, although it may not be the most desirable (see page 30, line 26). (Government of USA)	Addressed
G-17-125	A	29	20			17.4.2 – Since the factors that constrain adaptive capacity define adaptive capacity, why not merge this discussion with 17.3 and move it forward in the chapter. This is excellent material for an initial conceptual discussion of adaptive capacity determinants and relationships. (Government of USA)	Addressed
G-17-126	A	29	22	29	31	One of the constraints is lack of knowledge sharing among experts and practitioners. Adding to our knowledge base and sharing knowledge is itself a form of adaptation. Inadequate attention to awareness raising also is a limitation. (Government of India)	Addressed
G-17-127	A	29	33	29	35	The sentence has some missing component. Please check. (Government of Pakistan)	Addressed
G-17-128	A	29	33		35	Seems a bit of an understatement – given other parts of this report – to say that “most studies of specific adaptation plans and actions also argue that there are likely to be limits to adaptation as a response to climate change.” There are most assuredly limits and some are/will be profound. Other chapters take a much stronger tone on this. (Government of USA)	Addressed
G-17-129	A	29	43	29	44	The term “geopolitical” has specific historically-determined meanings and may require significant explanation to make it meaningful to readers of this chapter. (Government of Canada)	Addressed
G-17-130	A	29	46	30	3	Substitute “constraints” for “limits”. Also on line 48, replace “ineffective” with “less effective than they could be under ideal conditions”.	Addressed

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Government of USA)	
G-17-131	A	30	11	30	13	The sentence's highlighting of the potential inefficacy and illegitimacy of adaptation as a response to climate change seems to imply that mitigation may be the only proper response. If this is the intent (or if it is not), it should be clarified. Also, as the rest of the chapter illustrates, there is no single adaptation to climate change, and the "efficacy and legitimacy" of various adaptation strategies is determined by numerous factors on various scales and in disparate contexts, making this statement rather at odds with the tone and content of the rest of the chapter. (Government of Canada)	Addressed
G-17-132	A	30	12			This is a very big question to be left hanging, and with no apparent conclusion. Surely the question of whether we should be adapting or whether it is a waste of time can't just be casually thrown in with no apparent answer or discussion!! (Government of UK)	Addressed
G-17-133	A	30	12			Replace "legitimacy of adaptation" with "viability of some adaptation options". It's not obvious to us why adaptation may not be legitimate, although we agree that some adaptation options may not be viable under certain circumstances. (Government of USA)	Addressed
G-17-134	A	30	45	30	46	The term "appropriate technologies" is also a contested and politically charged one that should have at least some explanation, or else an indication of where this usage is defined. (Government of Canada)	Addressed
G-17-135	A	31	1	31	4	The Thames delta is an odd example here, as the cost of flood protection in places like the Greater London area should almost always stay second to any damage caused by large floods in the area (eg. ESPACE-project). Therefore methods like cost-efficiency analysis don't have any relevance in protecting these kind of nodes. The rise of sea level of 5 meters is not anticipated in foreseeable future and thus is an odd number to present here. (Government of Finland)	Addressed
G-17-136	A	31	8			Insert "currently" prior to "beyond". And at the end of this sentence add the following: "although with economic growth and technological change in the future such projects might be more affordable." (Government of USA)	Addressed
G-17-137	A	31	9		13	It should be noted that ski resorts may adapt by providing alternative revenue generating activities, e.g., hiking or climbing. (Government of USA)	Addressed
G-17-	A	31	19		20	Insert "today" after "all". Who knows, with technological change, these won't	Addressed

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138						become more commonplace. Consider, for instance, that once upon a time articles such as cameras, pens, and mobile phones were luxuries unaffordable to most people, but today they are commonplace. This ought to be noted in the text. The notion that “they have potentially contributed to inequalities” seems speculative. It also assumes that there is no sharing of resources within these communities. Strike everything following the comma on line 19. (Government of USA)	
G-17-139	A	31	24	31	34	Please add a cross-reference to Section 1.3.8 where this issue is dealt with in more detail. (Government of Netherlands)	Addressed
G-17-140	A	31	29	32	31	The discussion of a lack of financial resources for adaptation should be expanded. There is a wide range of recent literature that discusses options for funding adaptation. Perhaps a box is useful. Some literature: Verheyen 2002 in Review of European Community and International Environmental Law 11(2), 129-143; Bouwer and Vellinga 2005 in Water Science and Technology 51(5), 89-95; Mace 2005 in Review of European Community and International Environmental Law 14(3), 225-246; Bouwer and Aerts 2006 in Disasters 30(1), 49-63. (Government of Netherlands)	Addressed
G-17-141	A	31	36	31	38	There is indeed a wide discussion on links between insurance and risk transfer for diasters / adaptation. Therefore please add some more papers, e.g. Freeman 2001 in The Geneva Papers on Risk and Insurance 26(3), 373-385; Freeman and Kunreuther 2002 in The Geneva Papers on Risk and Insurance 27(2), 196-214; Hoff et al. 2005 in Vierteljahrshefte zur Wirtschaftsforschung, 74(2), 196-207; Mills 2005 in Science 309, 1040-1044. (Government of Netherlands)	Addressed
G-17-142	A	31	41	31	41	"land planning" should be land use planning (e.g. urban and regional planning) (Government of Finland)	Addressed
G-17-143	A	32	8		14	These sentences suggest failures due to unresponsive governments. They are good arguments for wanting governments that are accountable to the governed. (Government of USA)	Addressed
G-17-144	A	32	19	32	22	The authors should clearly set out a view as to whether insurance can be properly regarded as adaptation, or not. (Government of Australia)	Addressed
G-17-145	A	32				Section 17.4.2.4. It can be argued against the magnitude and rate of change being highly uncertain; it would be more fruitful to remind on the concensus on the order and general nature of the change. If adaptation measures are guided towards diminishing vulnerability against extreme weather events experienced today, the	Addressed

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						remaining uncertainty related to cc becomes less meaningful. In urban planning for example, many decisions are made based on uncertain predictions (such as economic trends) of the future. Therefore uncertainty of cc should not be seen as an obstacle for adaptation. (Government of Finland)	
G-17-146	A	33	3		7	The text should note that Hansen et al.'s finding is quite consistent with the notion that people tend to prioritize the risks they face, and focus on the ones they deem – rightly or wrongly – to be the ones that are most significant. (Government of USA)	Addressed
G-17-147	A	33	8	33	10	In stating that "most of the risks from climate change are presented in a time-delayed, abstract, and statistical manner", and that people are therefore "not alarmed", this section fails to address the fact that the GCM outputs on which climate change risks are based are themselves time-delayed, abstract, etc. That is, most people might actually be reacting in a manner consistent with the nature of the evidence before them... (Government of Canada)	Addressed
G-17-148	A	33	26		28	Write out acronyms (Government of USA)	Addressed
G-17-149	A	33	46	33	48	Diverse understandings and prioritizations of climate change may limit adaptive responses, but they would probably also enrich the debate on its significance, etc. Perhaps the negative image of "diverse understandings" that comes across in this sentence could be addressed? (Government of Canada)	Addressed
G-17-150	A	33		34		section 17.4.2.5 discusses risk perception. The German risk scholar Ortwin Renn has discussed risk governance from many perspectives, including risk perception. His framework could be very informative in relation to this section, but also more broadly regarding the whole chapter. (Government of Finland)	Addressed – section re-written. Renn's work on precaution not directly referred to but influences some of the more applied work referred to.
G-17-151	A	35	1	35	2	"something deeper is at work" should probably be rewritten as it doesn't seem to be in keeping with the style of the IPCC assessment process. (Government of Canada)	Addressed
G-17-152	A	35	26	35	29	Delete reference to "sovereignty" and "loss of sovereignty" in lines 26 and 27 as loss of sovereignty is not an impact of climate change while sea level rise is. Loss of habitable land is different than loss of sovereignty which is a political issue. (Government of Canada)	Addressed
G-17-153	A	35	37			Change "is granted" to "have". Rationale: no one grants countries autonomy to control their borders. It is their sovereign right.	Addressed

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						(Government of USA)	
G-17-154	A	36	12	36	12	The authors should provide a definition of "undesirable adaptation". (Government of Australia)	Addressed
G-17-155	A	36	31	36	35	The two sentences from "For example...." to "able to sustain" should be deleted as this type of value-laden and policy prescriptive as it implies that decline of state control over public services is detrimental to adaptive capacity. (Government of Australia)	Addressed
G-17-156	A	36	31	36	33	Some clarification of "structural adjustments" should be offered. (Government of Canada)	Addressed
G-17-157	A	37	8	37	8	The word "inextricable" may be replaced by "inextricably". (Government of Pakistan)	Addressed
G-17-158	A	37	11	37	13	The meaning of the equal emphasis that should be put on the natural hazard itself as well as the surrounding social environment is unclear - is this implying that the difficulties faced by developing countries in adapting to climate change make mitigation more important? (Government of Canada)	Addressed
G-17-159	A	37	15	37	24	This chapter seems to end rather abruptly; it could end with something more balanced or representative of a conclusion that outlines key research gaps and priorities (Government of Canada)	Addressed
G-17-160	A	37	15	37	24	The apparent disconnect between adaptation planning and existing policy may reflect the tendency of impacts and adaptation research to play a role in supporting the argument for mitigation, rather than the realistic characterization of policy actions for adaptation. (Government of Canada)	Addressed
G-17-161	A	37	23	37	24	The statement "in addition, many policies may discourage sound adaptation or may serve to increase vulnerability", is both vague and contains value judgements. It is not clear what the authors mean by "sound" adaptation, or what kinds of policies might facilitate or constrain it. This is a rather weak ending for the chapter. (Government of Norway)	Addressed
G-17-162	A	37	24	37	24	It would be helpful if the authors provided some examples of types policies that have discouraged sound adaptation or have increased vulnerability. (Government of Australia)	Addressed
G-17-163	A	38	3	55	21	the reference part needs to be revised. For example the reference to Poumarède et al., 2005 (mentioned p. 10, line 34) is lacking, and several references are indicated two times. (Government of France)	Addressed – all references sorted out

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G-17-164	A	43	22	43	23	EEA 2006 Is it the right reference? Or is it 2005? Please check. (Government of Germany)	2005 - sorted

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CHAPTER 17 LATE

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
17-1	LATE	1	3	1	4	<p>This chapter excessively focuses on what adaptation has been done but ignores what should be done. It must have a general assessment for adaptation including: what adaptation should be done, what adaptation has been done, what adaptation is being done, and what adaptation has not been done at present.</p> <p>Many examples are too(regional or sectoral) specifically, which is not clear where or which sector could be applied.</p> <p>Readers could not figure out what adaptation to climate change should be done and under what rudders from this chapter.</p> <p>Too many boxes in this chapter.</p> <p>General judgement must be: importance of adaptation to climate change has been widely accepted. But adaptation actions just starts up. There are only sporadic practices. Systematic adaptation to climate change has not yet been established. For example, in architecture no systematic research and development on designing houses/buildings is based on climate change. The whole chapter is too optimistical. (Government of China)</p>	<p>What should be done: IPCC cannot make value judgments but can only assess available information;</p> <p>What has been done: this is elaborated in the chapter;</p> <p>Chapter too optimistic: there is a section on barriers and limits to adaptation.</p>
17-2	LATE	5	35	6	27	<p>Adaptation practices to climate change should be the actions that consciously/intentionally consider climate change. The useful actions that inconsciously/unconsciously consider climate change should not be included (Government of China)</p>	<p>The authors disagree as (1.) consciousness is hard to attribute; and (2.) any action that reduces the impacts should be qualified as adaptation.</p>
17-3	LATE	16	16	16	37	<p>Why a poor country select A2 (medium to high emission) scenario? B2 (medium to low emission) scenarion is much more reliable. (Government of China)</p>	<p>Gambia is not (only) impacted by its own emissions but by global emissions.</p>