



**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 7**

**August 2006**

**includes late comments at the end of the file**

## Discussion of Government review comments and record keeping

IT IS RECOMMENDED THAT:

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

### Substantive comments

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

### Non-substantive comments

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

### General

- The record should be kept in this document, ideally electronically.
- The document becomes part of the traceable account of the Working Group II Fourth Assessment. When completed to the satisfaction of the Review Editors, a copy should be returned to the TSU by the **8<sup>th</sup> December 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-7-1           | A     | 0         |           |         |         | While some decisions on emissions policies will affect adaptation, some the statements about emissions policies in this chapter could be shortened considerably or removed (e.g. page 15 lines 17-23)<br>(Government of Canada)   | Impacts of climate change include impacts of actions which affect climate change.   |
| G-7-2           | A     | 0         |           |         |         | This chapter presents an overly general analysis of the subject matter when compared to the other sectoral chapters. In particular the authors should provide more examples and citation to support the assertions made throughout the chapter.<br>(Government of Australia)  | Research literatures on the subjects of this chapter are very limited in specific findings, but many examples are provided in sections 7.4 and 7.6. |
| G-7-3           | A     | 0         |           |         |         | There are essentially two main ideas which structure this chapter : 1) what can be learn from suddent catastrophic climatic events on industry, settlements and society and what can be expected for the future if these events become more frequent (extrapolation) and 2) what can be expected for the future according to a smooth change in temperature (forecasting by modelling). These ideas should be emphasised at the beginning (executive summary) and along the sections of the chapter, when appropriate. It is pointed out that in general uncertainties are large depending more on the unknown evolution of society due to social intricated stresses than to changes in climate event. That could be also emphasised in summary and along the chapter. Otherwise the sections of the chapter deal with all the aspects which would had to be considered. There are some redondances but due to the nature of the topic. As this topic is very large and dealing with societal items it is difficult (may be impossible) to proceed using a top down analysis and it is necessary to look at numerous examples to show that our feelings on what can happen are supported by facts. This idea could be introduced somewhere<br>(Government of France) | Considered and incorporated in appropriate sections.  |
| G-7-4           | A     | 0         |           |         |         | The chapter covers a very broad area of research and in the summary it is emphasized that the impacts of climate change in areas such as industry, settlement and society (that includes service, insurance, tourism etc) will be mainly determined by trends in human systems (which will occur both irrespective of/and as a result of climate change) . This is an important statement but unfortunately such trends are not much explored in the text (section 7.3) and it is not possible to consistently see how the discussion about impacts, vulnerabilities and adaptation take such trends into account.<br>(Government of Sweden)  | 7.3 strengthened, but reliable projections of human systems over a period of many decades are very hard to find.                                    |
| G-7-5           | A     | 0         |           |         |         | The authors seem to largely neglect the threats to infrastructure etc. from sustained "smooth" climate change, compared to extreme events. This is particularly obvious in the first two bullet points of the Executive Summary (p. 7, l. 25-32). While extreme events are currently the largest climate-related threat to infrastructure and   | Executive Summary changed and other revisions made as appropriate.  |

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|                 |       |           |           |         |         | settlements in most regions, this is not necessarily true in the future. Thawing of permafrost soils, gradual but sustained increases in sea-level rise, sustained shifts in precipitation regimes and other climatic features would all threaten the sustainability of infrastructure and human settlements. The authors should revise the Executive Summary accordingly, and strive for more balance between the threats from extreme events and from gradual climate change in the main text. (European Union) |  |
| G-7-6           | A     | 0         |           |         |         | The authors did an exemplary job in setting the context and covering the possibilities. (Government of USA)   | Thank you.   |
| G-7-7           | A     | 0         |           |         |         | Show possible solutions to the complex problem. (Government of Spain)   | Unclear as to what this refers and what literatures would be relevant.   |
| G-7-8           | A     | 0         |           |         |         | Replace 'Human Systems' by 'Social Systems' (Government of Spain)   | Human systems is better, because social systems are not always interpreted as including economic and other types of human systems. |
| G-7-9           | A     | 0         |           |         |         | References to the Arctic Climate Impacts Study should focus on the technical volume and stay clear of the political statements. (Government of Canada)  | Have examined these references.  |
| G-7-10          | A     | 0         |           |         |         | New reference: Nilsson, G., Rosqvist, H., Andersson-Sköld, Y., Starzec, P. & Norrman, J. 2005. Föroreningsspridning, Underlag för handlingsplan för att förutse och förebygga naturolyckor i Sverige vid förändrat klimat, Deluppdrag 3. Statens Geotekniska Institut, Varia 560:3, 40 pp. (Government of Sweden)   | Considered, although the author team does not read Swedish.  |
| G-7-11          | A     | 0         |           |         |         | New reference: Hultén, C., Olsson, M., Rankka, K., Svahn, V., Odén, K., Engdahl, M. (2005). Släntstabilitet i jord. Underlag för handlingsplan för att förutse och förebygga naturolyckor i Sverige vid förändrat klimat, Deluppdrag 1. Statens Geotekniska Institut, Varia 560:1, 49 pp. (Government of Sweden)  | Same as above.   |
| G-7-12          | A     | 0         |           |         |         | Introduce references related to all process of change and or adaptations of ways of social and political urbanizations. (Government of Spain)   | See revised 7.3, 7.4, and 7.6, within severe space limitations.  |
| G-7-13          | A     | 0         |           |         |         | Introduce aspects for the tracking on global change. Example: importance of environmental organizations, environmental volunteer, political programmes, How administration is adapting to. (Government of Spain)  | Incorporated in 7.4 and 7.6.   |
| G-7-14          | A     | 0         |           |         |         | In general the chapter would benefit from more focus on the economic impacts of   | Severely limited by currently available  |

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|                 |       |           |           |         |         | climate change- much of the discussion centres on qualitative information rather than quantitative.<br>(Government of UK)   | literatures.  |
| G-7-15          | A     | 0         |           |         |         | Climate change issues on nature-based tourism and recreation is reported very shortly. There is already a plenty of literature concernig impacts of climate change on recreation and tourism and adaptation methods. One important aspect, which is missing totally here, is the impacts on changes in opportunities for close-to-home recreation in natural environment which is recognised to be very important for human health and wellbeing. Climate change can be also an issues of quality of life in terms of recreation opportunities. One example: climate change cause decreasing skiing opportunities in southern Finland, and that will have the strongest impact on city poor, because they cannot afford to travel farther north to ski (ongoing study by Pouta et al.) . These kinds of impacts and inequity between social groups will certainly be expected from many other places. These types of issues should also be addressed in this report.<br>(Government of Finland) | Brevity is imposed by chapter length constraints. Have added cross-references to other chapters (11 and 14). Regarding changes in opportunities, see 7.6.2. |
| G-7-16          | A     | 0         |           |         |         | At various points throughout the chapter the authors tend to provide information that pertains more to mitigation than impacts and adaptation. The authors should review the chapter to ensure that the information provided stays within the mandate of the WG2 report.<br>(Government of Australia)   | Impacts of climate change on industry, settlement, and society include impacts of climate change response actions.  |
| G-7-17          | A     | 0         |           |         |         | 1. Grammatical errors, wrong context, misspellings and omissions<br>(Republic of Korea)   | Considered on case-by-case basis.   |
| G-7-18          | A     | 0         |           |         |         | ◦ Suggestions for unifying the terms<br>- The three terms of 'settlement', 'human settlements' and 'settlements' are mixedly used through the text; however, if the meaning of the three is the same, it is desirable to choose any one of them and use it instead of the other two.<br>- The two phrases, 'developing countries' and 'less developed countries' are used at the same time through the text; however, if the meaning of the two is the same, it is desirable to choose one of them and use it instead of the other.<br>(Republic of Korea)  | Effort made to be more consistent in word usage.  |
| G-7-19          | A     | 0         |           |         |         | ◦ Note that when in-text referencing:<br>- the comma between the name of the author and the publication year should be removed<br>- In case several references need to be cited, a semicolon should be put after the author and the publication year in order to distinguish them.<br>- When citing a reference that contains more than one author, the style of  | Same as above.  |

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|                 |       |           |           |         |         | referencing should be consistent; for example, it should be either '(Subak et al. 2000)' or '(Subak et al., 2000)'.<br>(Republic of Korea)  |  |
| G-7-20          | A     | 0         |           |         |         | ◦ Generally, the first letter of all the words in titles and subtitles within a text is capital except for prepositions.<br>- Therefore, for example, the title written as '7.6 Adaptation, practices, options and constraints' should be replaced with '7.6 Adaptation, Practices, Options and Constraints', and '7.6.5 Social issues' with '7.6.5 Social Issues'.<br>(Republic of Korea)  | Styles are determined on a consistent basis for all WG II chapters.  |
| G-7-21          | A     | 1         | 1         | 43      | 45      | It seems that the boxes in this chapter almost exclusively deal with impacts and adaptation in settlements in the developed world. For instance, the boxes on storms do not consider the impacts from hurricanes in developing countries, while clearly, the largest impacts are located here. Perhaps more focus on developing countries would be welcome.<br>(Government of Netherlands)  | Attention to developing country cases increased throughout the chapter, where published sources are available. |
| G-7-22          | A     | 1         | 3         |         |         | Chapter 7 ? Industry, Settlement, and Society<br>→ Chapter 7. Industry, Settlement and Society<br>(Republic of Korea)   | Matter of stylistic preference, does not affect content.   |
| G-7-23          | A     | 1         | 44        |         |         | 7.6 Adaptation, practices options and constraints<br>→ 7.6 Adaptation, practices, options and constraints<br>(Republic of Korea)  | Same as above.   |
| G-7-24          | A     | 3         | 1         | 4       | 41      | This ES has been improved considerable. The authors did really a good job.<br>(Government of Austria)   | Thank you (but ES changed significantly)   |
| G-7-25          | A     | 3         | 3         | 3       | 18      | Not clear. There is a mixture of words: settlements, industry, service .....mobility, which give some confusion. Why do not keep here and in the following of the chapter the three key words of the title : Industry, settlement and society (be careful to their order in writing which sometimes change, and to wording which is sometimes qualified as human, see line 18, 51 page 5 lines 24 page 6 and so on) and to give somewhere their links with services, infrastructure and so on . In lines 4 and 7 the concern of "them" and "these other systems " is unclear.<br>(Government of France) | Effort made to be more consistent throughout the chapter.  |
| G-7-26          | A     | 3         | 4         |         | 4       | Replace “For them, climate” with “Climate”. According to the previous sentence, the “For them” refers to everyone.<br>(Government of USA)   | Changed (but ES completely replaced)   |
| G-7-27          | A     | 3         | 6         | 3       | 6       | "Human systems" is vague. Perhaps replace by "non-climate factors".<br>(Government of Netherlands)  | Human systems is the correct term here.  |
| G-7-28          | A     | 3         | 7         |         | 7       | Replace “these other” with “these”.   | Changed.   |

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|                 |       |           |           |         |         | (Government of USA)   |   |
| G-7-29          | A     | 3         | 7         |         |         | Remove 'other' from “with these other systems”<br>(Republic of Korea)   | Changed.  |
| G-7-30          | A     | 3         | 11        | 3       | 12      | It is strongly suggested to avoid characterization of climate change as "considerable" and "relatively little" because this might be interpreted by different people in different locations quite different. Eg. For some AOSIS countries practically speaking any climate change above historic variability is likely to be considerable due to their specific situtaion whereas for people in cities in high latitudes and not along the cost might feel that 3 degrees temperature incerase of global average temperature is only relatively little climate change. The authors are encouraged to assign some concrete figures in order to add clarity.<br>(Government of Austria) | ES totally recast.  |
| G-7-31          | A     | 3         | 11        |         | 12      | The phrase "from prospects involving relatively little climate change" is unnecessary.<br>(Republic of Korea)   | Authors disagree, but ES has been totally recast.   |
| G-7-32          | A     | 3         | 12        | 3       | 13      | Is this really true? Classic research has focussed on impacts. Vulnerabilty is a relatively new concept. See also comments on page 11, lines 20-23.<br>(Government of Netherlands)  | Research in the Netherlands may be an exception, but worldwide the ability to project climate change at a relatively localized scale has been too limited to support impact research. |
| G-7-33          | A     | 3         | 15        |         | 18      | The meaning of the overall sentence is not clear.<br>(Republic of Korea)  | ES recast.  |
| G-7-34          | A     | 3         | 25        | 3       | 25      | "... are mainly to extreme ...", please add "related".<br>(Government of Netherlands)   | Changed, but ES recast.   |
| G-7-35          | A     | 3         | 25        |         |         | "are mainly to" → are mainly related to<br>(Republic of Korea)  | Same as above.  |
| G-7-36          | A     | 3         | 26        |         |         | "e.g., increases" → like increases<br>(Republic of Korea)   | Stylistic preference.   |
| G-7-37          | A     | 3         | 27        |         |         | "lies mainly in related changes" → lies mainly in changes<br>(Republic of Korea)  | Same as above.  |
| G-7-38          | A     | 3         | 33        | 3       | 33      | depend considerably on relatively geographic", please add "local".<br>(Government of Netherlands)   | “Specific” applies to both geographic and sectoral  |
| G-7-39          | A     | 3         | 36        |         |         | "Climate change impacts" → The impacts of climate change<br>(Republic of Korea)   | Sylistic preference.  |
| G-7-40          | A     | 3         | 45        |         |         | "and tourism" → or tourism<br>(Republic of Korea)   | Same as above.  |
| G-7-41          | A     | 3         | 47        |         |         | "to impacts of climate change" → to the impacts of climate change   | Same as above.  |

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|                 |       |           |           |         |         | (Republic of Korea)  |  |
| G-7-42          | A     | 3         | 49        | 4       | 2       | This sentence is not correct. Do costs become more intense and frequent? Probably the extreme weather events are meant here.<br>(Government of Netherlands)  | Revised.   |
| G-7-43          | A     | 3         | 49        | 4       |         | Some extreme events (such as cold temperatures) decrease in frequency. It would make the text more objective if such beneficial effects were also mentioned and discussed. The conclusion VERY HIGH CONFIDENCE should rather be HIGH CONFIDENCE here, because of the disappearance of some extremes and because there are too little reliable data on the changes in the extremes so far.<br>(Government of Finland)   | Changed.   |
| G-7-44          | A     | 3         | 51        | 4       | 1       | "in larger, more developed and diversified"<br>→ in more developed and diversified<br>"in smaller less developed, less diversified, and/or more natural resource"<br>→ in less developed and diversified, and/or more natural resources<br>(Republic of Korea)   | Changed.   |
| G-7-45          | A     | 4         | 3         | 4       | 3       | Please change to "even more catastrophic", as 25% of GDP already seems quite catastrophic.<br>(Government of Netherlands)  | Changed.   |
| G-7-46          | A     | 4         | 5         | 4       | 5       | "lifestyles will change", this is very vague. How will lifestyles change in response to climate change, and why?<br>(Government of Netherlands)  | Specifically directed by governments to comment on lifestyle effects, but beyond tourism research literatures are limited.       |
| G-7-47          | A     | 4         | 14        |         |         | "at highest risk" → at the highest risk<br>(Republic of Korea)   | Stylistic preference.  |
| G-7-48          | A     | 4         | 21        | 4       | 22      | "options are available ... that are not being adopted". This immediately raises the question why these options are not adopted and how this could be improved. Please address this in the Executive Summary, as this notion is not easily picked up from Section 7.6.<br>(Government of Netherlands)   | Changed.   |
| G-7-49          | A     | 4         | 30        |         |         | "institutional capacities and to rise" → institutional capacities, and to rise<br>(Republic of Korea)  | Stylistic preference.  |
| G-7-50          | A     | 4         |           |         |         | Include at 7.4. 'Social Impacts': Subsection 7.4.1. 'Populations impact as social - demographic base': -Quality life expectancy: Heat waves, allergies. - Capability of biological reproduction as social structure balance: rate evolution by gender , evolution by volume of sperm, rate evolution older than 75 years. - Migrating process : - Common : South - North, abandoned productive land and forest in the south and concentrate at poor sustainable cities at the North c. -Horizontal migrations: from inner land to coast , Lack of water and coast destruction. | Considered in revising 7.4.5, along with appropriate sections of 7.4 and 7.3. Limited by both space constraints and literatures. |



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|                 |       |           |           |         |         | Subsection 7.4.2. 'Economic base impact in society': Risk to economic base and land use; Economic rate and social status; Employment: Technology. Subsection 7.4.3. 'Social and cultural organization impact': Social Structure.<br>(Government of Spain)   |  |
| G-7-51          | A     | 5         | 5         |         |         | "in industries" → in industry<br>(Republic of Korea)  | Sylistic preference.   |
| G-7-52          | A     | 5         | 6         |         |         | "carbon emissions ? such as" → carbon emissions, such as<br>(Republic of Korea)   | Same as above.   |
| G-7-53          | A     | 5         | 8         |         |         | Remove 'also' from "also underlie"<br>(Republic of Korea)   | Same as above.   |
| G-7-54          | A     | 5         | 9         |         | 10      | "to climate change impacts" → to the impacts of climate change<br>(Republic of Korea)   | Same as above.   |
| G-7-55          | A     | 5         | 13        |         |         | "Settlements and industry" → Industry and settlements<br>(Republic of Korea)  | Same as above.   |
| G-7-56          | A     | 5         | 28        | 5       | 29      | The authors need to be careful that the treatment of Hurricane Katrina is consistent throughout the report. Generally it has been made clear that while Hurricane Katrina cannot be directly attributed to climate change, it is illustrative of possible effects of extreme weather events on communities. This sentence should be redrafted to reflect the general treatment of Hurricane Katrina.<br>(Government of Australia) | Considered throughout the chapter, but this sentence is appropriate in making a different point. |
| G-7-57          | A     | 5         | 47        | 5       | 48      | Title of Figure 7.1 to read 'September 2005' and not September 205.<br>(Government of India)  | Thank you.   |
| G-7-58          | A     | 5         | 47        | 5       | 47      | in the figure caption the date should be 2005<br>(Government of France)   | Same as above.   |
| G-7-59          | A     | 5         | 47        |         | 47      | Replace "205" with "2005".<br>(Government of USA)   | Same as above.   |
| G-7-60          | A     | 6         | 8         |         | 9       | (Environmental Canada, 1997, Kates and Wilbanks 2003, London Climate Change Partnership 2004, Orien, Sygna and Haugen 2004; Ruth, Donaghy, and Kirshen 2006).<br>→ (Environmental Canada 1997; Kates & Wilbanks 2003; London Climate Change Partnership 2004; Oayqrien, Sygna & Haugen 2004; Ruth, Donaghy & Kirshen 2006).<br>(Republic of Korea)  | WG II styles used.   |
| G-7-61          | A     | 6         | 21        | 6       | 21      | "These topics" refers to what? : Industry ... or services ..financial issues .... Clarify<br>(Government of France)   | Changed.   |
| G-7-62          | A     | 6         | 23        | 6       | 31      | Are the the topics listed here the human systems of 7.1.3 . If so introduce the wording   | Good idea: done.   |

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|                 |       |           |           |         |         | (Government of France)   |  |
| G-7-63          | A     | 6         | 23        | 26      | 28      | Not much information within the chapter about opportunities as a result of CC<br>(Government of Canada)  | Considered throughout the chapter where literature is available.   |
| G-7-64          | A     | 6         | 44        | 7       | 2       | This paragraph provides little relevant information to readers and tends to confuse the relationship between human activity and climate. Suggest deletion.<br>(Government of Australia)  | For the audiences of this report, including the social sciences, we believe this context is needed.          |
| G-7-65          | A     | 6         | 47        |         | 49      | The sentence beginning "Second..." needs some editing.<br>(Government of USA)  | Done.  |
| G-7-66          | A     | 7         | 9         |         | 10      | Remove the unnecessary underlines of "these two chapters... a part of this one chapter..."<br>(Republic of Korea)  | Disagree.  |
| G-7-67          | A     | 7         | 10        | 7       | 11      | Make clear the "substantial part" devoted to subject not directly addressed in previous IPCC reports. That seems essential for the reader to know what is really new<br>(Government of France)   | Done.  |
| G-7-68          | A     | 7         | 41        | 7       | 46      | One important objective of the international development and donor community is the set of Millennium Development Goals. Please mention these, as these are much more concrete and urgent for sustainable development and the international political context than the general objectives that are mentioned later in this section. A good starting point for settlements is this document by Rockstrom et al. on the MDGs: Sustainable Pathways to Attain the Millennium Development Goals: Assessing the Key Role of Water, Energy and Sanitation, available at <a href="http://www.sei.se/SustMDG31Auglowres.pdf">http://www.sei.se/SustMDG31Auglowres.pdf</a><br>(Government of Netherlands) | MDGs are included in 7.7. In general, the time horizons of the WG II AR 4 are well beyond those of the MDGs. |
| G-7-69          | A     | 7         | 41        | 7       | 46      | Also the relation between poverty and climate change could be emphasised much more. See for example this major multi-agency paper of 2003 "Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation" by UNDP, UNEP, World Bank, ADB, AfDB, GTZ, DFID, OECD, and EC.<br>(Government of Netherlands)  | Limited literatures, but considered in 7.4 and 7.6.  |
| G-7-70          | A     | 7         | 46        | 7       | 46      | While Hurricane Katrina was a high profile event, there are many other extreme rainfall events that have resulted in damaging floods in communities. Please reconsider the focus on one event<br>(Government of Canada)  | A dramatic piece of recent evidence, related to AR 4 –wide attention to mega-delta impact issues.            |
| G-7-71          | A     | 7         | 50        | 8       | 3       | Consequences for human health and ecology due to contaminated land should be described (See Nilsson et al., 2005).<br>(Government of Sweden)   | Space limitations.   |
| G-7-72          | A     | 8         | 5         |         |         | Add to sentence: "infrastructure" after "such as"  | Do not understand why this would be  |

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|                 |       |           |           |         |         | (Government of Sweden)   | desirable.  |
| G-7-73          | A     | 8         | 35        | 8       | 36      | Same ideas are repeated at many places e.g. Page 8 line 35, 36, page 8 line 50, 51 and page 15 line 14, 15 has same idea.<br>(Government of India)   | Appears to make sense in several different contexts. Some of the duplication removed. |
| G-7-74          | A     | 8         | 48        | 8       | 51      | Replace those lines by the following more explicit text "Another case is the sensitivity of energy production to heat waves and drought; in the summer of 2003, the temperature of many French rivers raised in a way that the power generation potential of thermal units was lowered due to compliance with water heat release regulation and some power units (conventional and nuclear) came close to a shutdown consequently"<br>(Government of France)   | Thank you. Very helpful. Changes made.  |
| G-7-75          | A     | 8         | 48        | 8       | 51      | Please move this paragraph to Box 7.1.<br>(Government of Netherlands)  | Passage on French power crisis moved. Rest of paragraph does not belong in Box 7.1.   |
| G-7-76          | A     | 9         | 9         | 9       | 11      | Please cross-reference to Chapter 8 on Health.<br>(Government of Netherlands)  | Done.   |
| G-7-77          | A     | 9         | 16        | 9       | 16      | "vulnerable to climate impacts", please change to "particular climate impacts". This may not be true for all climate impacts.<br>(Government of Netherlands)   | Done.   |
| G-7-78          | A     | 9         | 48        | 11      | 9       | Assumptions About Trends contains some data about demography and urbanisation and refers to the four SRES scenarios and a barbarisation scenario as being useful for exploring the adaptive capacities of industry, settlements and society. However, which trends concerning technological development, foreign policy, trade patterns, housing, attitudes etc that are considered in these scenarios is not explained. For example, are current developments concerning energy and security policies considered in those scenarios entailing that some industrial societies may increase the use of nuclear power/ domestic bioenergy as a way of lessening the dependence on imported oil/gas? Such changes could indeed affect the adaptive capacities of the energy sector. What about the expected increased global food trade as a result of climate change (see chapter 5) and the challenges facing global trade as a result of climate change? The reader need some more factual information about the trends considered in the four SRES scenarios and in the barbaric one concerning industry, settlement and society. If the scenarios made no specific assumptions about these sectors/issues it is good to know this. The connection between the five scenarios considered and the conclusion is missing as well as the discussion about sustainable development.<br>(Government of Sweden) | Section rewritten.  |
| G-7-79          | A     | 9         | 49        |         | 49      | "SRES" should be spelled out and defined.  | Done.   |

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|-----------------|-------|-----------|-----------|---------|---------|---|--|
|                 |       |           |           |         |         | (Government of USA)   |  |
| G-7-80          | A     | 10        | 3         |         |         | “in 2030 (UN, 2005)” → in 2030 (UN 2005)<br>(Republic of Korea)   | Stylistic preference.  |
| G-7-81          | A     | 10        | 5         |         | 5       | Replace “people live” with “people will live”.<br>(Government of USA)   | A general statement about population distribution, not a projected change in the future. |
| G-7-82          | A     | 10        | 26        |         | 27      | Need more explanation of the “turning point”. The world is always at a turning point in some sense and it always has a broad range of possible futures.<br>(Government of USA)  | Deleted.   |
| G-7-83          | A     | 10        | 35        |         |         | Remove '?' from “□entral in determining adaptive capacity?”<br>(Republic of Korea)  | Done.  |
| G-7-84          | A     | 10        | 37        |         | 38      | Replace the two question marks in “In the □arbarization? scenario □bsolute ... poor?... countries ?” with commas<br>(Republic of Korea)   | Section rewritten.   |
| G-7-85          | A     | 10        | 40        | 10      | 41      | Despite a paragraph of description there is only one reference to this methodology - is it widely supported, can other references using it be cited?<br>(Government of Canada)  | Several new references added.  |
| G-7-86          | A     | 10        | 40        |         |         | Remove a comma and a question mark from “in the richest countries,?”<br>(Republic of Korea)   | A result of electronic transmission of the draft, not in the document itself.            |
| G-7-87          | A     | 11        | 15        |         | 18      | Excellent point by the authors. The uncertainties in human systems, particularly such issues as land use change, need to be taken into context no matter what the degree of climate variability.<br>(Government of USA)   | Thank you.   |
| G-7-88          | A     | 11        | 20        | 11      | 23      | Is there evidence that this is the case? Has research really mostly focussed on vulnerabilities instead of projections of impacts? I think it is the other way round. In the 1990s climate research had a top-down approach (see Dessai and Hulme 2002 in Climate Policy 4(2), 107-128 for definitions), using bio-physical regional and global models and climate projections to assess impacts. Later, bottom-up approaches addressed issues such as equity, economic resources and adaptive capacity. Although the latter is a traditional approach for the natural hazards community, it is relatively new for climate scientists.<br>(Government of Netherlands) | This is true for climate impact research rather than climate research more generally.    |
| G-7-89          | A     | 11        | 28        | 11      | 32      | What does climate-associated mean? Do you mean indirect impacts? Also, many changes that lead to costs are independent from climate change, e.g. land-use change, urbanisation, etc. Please acknowledge this and mention these factors.<br>(Government of Netherlands)  | The chapter makes a special point of this.   |
| G-7-90          | A     | 11        | 47        | 11      | 50      | What does it mean if extremes are more important than averages, and abrupt  | Revised.   |

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|                 |       |           |           |         |         | climate change is not anticipated by normal response planning? What would this mean for adaptation? The disaster risk management community does in fact recognise that there is a planning cycle, the so-called disaster cycle, with different stages of design, implementation and monitoring of measures for managing impacts from extreme weather events. Perhaps this knowledge is relevant also for planning adaptation?<br>(Government of Netherlands)  |  |
| G-7-91          | A     | 11        | 48        | 11      | 49      | The authors should explain how and why it is of "special concern" that abrupt climate changes are not anticipated by normal response planning, and why this is so.<br>(Government of Australia)   | Revised.   |
| G-7-92          | A     | 11        | 48        | 11      | 50      | However, links between climate adaptation and disaster risk management is only sporadically addressed by this chapter, while there are many papers that address this issue. For instance: Sperling and Szekely 2005 "Disaster risk management in a changing climate"; Red Cross 2004 "Preparedness for Climate Change"; Thomalla et al. 2006 Disasters 30(1), 39-48; Bouwer and Aerts 2006 Disasters 30(1), 49-63.<br>(Government of Netherlands)   | Considered. Thank you.   |
| G-7-93          | A     | 12        | 3         | 12      | 6       | What is this broad generalisation based on? Please provide a reference. For instance, the EM-DAT data that is presented in the annual Disaster Report series of the Red Cross shows that increasingly more people are affected by natural disasters in the developing world, while most damages occur in the developed world. It would be good to show such data in a graph here. This fact was also already reported by IPCC TAR WG2 Chapter 8. See Red Cross "World Disaster Report 2005".<br>(Government of Netherlands) | Edited. Length limitations do not permit a graph in this section: see section 7.5. |
| G-7-94          | A     | 12        | 4         | 12      | 5       | The authors should explain the difference between human and monetary damages and how they such damages are differentiated.<br>(Government of Australia)   | Revised.   |
| G-7-95          | A     | 12        | 9         | 12      | 9       | "carbon fertilisation effects", please add "longer growing season".<br>(Government of Netherlands)  | Added.   |
| G-7-96          | A     | 12        | 22        |         | 23      | "by climate change response policies" → by policies responding to climate change<br>(Republic of Korea)   | Stylistic preference.  |
| G-7-97          | A     | 12        | 42        | 12      | 48      | These illuminating sentences which give light on the objective should be placed at the beginning of the chapter in the Executive Summary<br>(Government of France)  | ES redone, in consultation with WG II leadership.                                  |
| G-7-98          | A     | 13        | 1         |         |         | "Other sectors sometimes included... classifications, such as..."<br>→ Sometimes other sectors, included... classifications such as..."   | Stylistic preference.  |

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|                 |       |           |           |         |         | (Republic of Korea)  |   |
| G-7-99          | A     | 13        | 36        | 13      | 36      | The authors should provide examples to support there claim that industry in developing countries is often small-scale.<br>(Government of Australia)  | Revised.  |
| G-7-100         | A     | 13        | 36        |         | 37      | "Impacts of climate change" → The impacts of climate change<br>(Republic of Korea)   | Stylistic preference.   |
| G-7-101         | A     | 14        | 1         |         |         | Table 7.2. The second column of the table is confusing. The subdivision into built environment, infrastructure industries, and natural resource industries is OK, but some resource based industries (not only those that are resource intensive), such as water supply, renewable energy and fisheries are left out. The meaning of "structural integrity" is also very unclear. Moreover, damage to the built environment (for example that caused by extreme events) should be mentioned. The fact that activity in the building and construction sector could potentially increase when reconstruction is undertaken (generating more value) is also not considered<br>So-called "infrastructure industries" are also vulnerable to extreme events, but it is unclear whether these damages are covered in this table. The topic should be more dealt with in the text either.<br>(Government of Norway) | Table revised.  |
| G-7-102         | A     | 14        | 1         |         |         | Table 7.2: Direct and indirect climate change impacts on industry<br>→ Table 7.2: Direct and Indirect Impacts of Climate Change on Industry<br>(Republic of Korea)   | Same as above.  |
| G-7-103         | A     | 14        | 6         | 14      | 6       | The authors should provide a reference to the USA's current electricity use, to assist readers determine whether an increase of 40GW per year, is significant.<br>(Government of Australia)  | Sentence revised.   |
| G-7-104         | A     | 14        | 6         | 14      | 6       | give increase in percentage if possible (as given otherwise)<br>(Government of France)   | See above.  |
| G-7-105         | A     | 14        | 11        | 14      | 16      | Is the GDP impact by 2100 considered significant? (<1% GDP impacts by 2100)<br>(Government of Canada)  | Probably not at a national scale. See comments elsewhere in the chapter (e.g., in 7.5) about scale as an issue. |
| G-7-106         | A     | 14        | 19        |         | 19      | Should reference to chapter 4 be to chapter 5?<br>(Government of USA)  | Paragraph deleted.  |
| G-7-107         | A     | 14        | 20        | 14      | 20      | "water consumption by society at large", please be more specific of what you mean here. Also provide a reference that shows that this consumption could actually increase.<br>(Government of Netherlands)  | Paragraph deleted.  |
| G-7-            | A     | 14        | 26        | 14      | 26      | Which chapter of the WG2 TAR concluded this?   | See section 7.1.4.  |

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| 108             |       |           |           |         |         | (Government of Netherlands)  |  |
| G-7-109         | A     | 14        |           |         |         | Table 7.2. Direct and indirect impacts on industry is an interesting way of displaying the challenges to industry and could be used for other sectors/activities as well. Particularly interesting is the statement about Changing consumer preferences and awareness here, a subject hardly touched upon in the texts other than related to climate change adaptation (need for lighter clothes and more drinking water). There are a number of surveys about public awareness about climate change that would fit well as reference material in this report but this material is not touched upon at all. Such issues should be part of this chapter, something surely well warranted as public awareness is mentioned as an important variable for the adaptive capacity of human societies. Gender aspects are also missing in the text, though the connection between them and sectors such as energy and water are documented.<br>(Government of Sweden) | Reference to awareness added to 7.4.2.1.   |
| G-7-110         | A     | 15        | 5         |         |         | "and long term" → and long-term<br>(Republic of Korea)   | Stylistic preference.  |
| G-7-111         | A     | 15        | 11        | 15      | 11      | transportation systems (shipping, pipelines etc) MAY ALSO be (not "are")<br>(Government of Canada)   | ACIA states that transportation systems are being adisrupted by climate change-induced settlement. |
| G-7-112         | A     | 15        | 22        |         |         | Remove 'for Europe' from "Kuik(2003) has shown that, for Europe, there"<br>(Republic of Korea)   | Accepted.  |
| G-7-113         | A     | 15        | 34        | 15      | 34      | The authors should delete reference to "finance" and replace it with "the insurance industry" as this more closely accords with the following discussion in the section.<br>(Government of Australia)  | We think the reference here is correct, although much of the following discussion is narrower.     |
| G-7-114         | A     | 15        | 51        | 16      | 2       | Some clarifying text is needed. It is relatively controversial to simply state that the shape of climate change may be linked to the Doha Development round without any explanation of what the linkage – or possible linkage – is or might be. Suggest using another example – preferably one that has been studied and cited.<br>(Government of USA)   | Mention of Doha dropped.   |
| G-7-115         | A     | 16        | 11        | 16      | 18      | This section could also use a reference to the implications of variability in winter road seasons (See ACIA Technical Report Chapter 16.3.6, in particular the 1st paragraph on page 934)<br>(Government of Canada)  | Added.   |
| G-7-116         | A     | 16        | 52        |         | 53      | The first letter of all the words in the title of the Figure 7.2 should be capital except prepositions.<br>(Republic of Korea)   | A matter of WG II style guidelines.  |
| G-7-            | A     | 16        | 55        | 16      | 55      | The specification out of "carbon tax legislation" as altering the geographical   | Edited.  |

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| 117             |       |           |           |         |         | distribution of raw materials, is too narrow. Suggest replacement with "market mechanism".<br>(Government of Australia)   |   |
| G-7-118         | A     | 16        | 55        |         |         | (62-65) The sentence "e.g., Agnew and Viner 2001..... Hamilton 2003)." should be reviewed and proofread.<br>(Republic of Korea)   | Checked.  |
| G-7-119         | A     | 16        | 56        | 16      | 59      | The example of a carbon tax should be broadened to climate change policy generally. Suggest replacing "and carbon tax legislation may" with "and climate change policies (e.g., a carbon tax or an emissions offset payment) may"<br>(Government of USA)                                    | Changed.  |
| G-7-120         | A     | 17        | 5         |         |         | (Chapter 12; Agnew, Viner 2001; Maddison, 2001)<br>→ (Chapter 12; Agnew and Viner 2001; Maddison 2001)<br>(Republic of Korea)   | OK.   |
| G-7-121         | A     | 17        | 7         |         |         | (Ceron, 2000) → (Ceron 2000)<br>(Republic of Korea)   | OK  |
| G-7-122         | A     | 17        | 8         |         | 14      | Some mention is needed of the impact of climate change on coastal water quality (e.g., harmful algae blooms, microbial contaminants, and unusual mortality event of marine animals) and its impact on tourism and coastal economies.<br>(Government of USA)                                 | Mentioned in 7.2, cross-references to 16.4.1 and 6.4.2.4. |
| G-7-123         | A     | 17        | 18        |         |         | When in-text referencing, firstly, if the reference has more than one author, 'and' or '&' should be put in front of the last-listed author; secondly, the comma between the name of the author and publication year should be removed.<br>(Republic of Korea)                              | OK.   |
| G-7-124         | A     | 17        | 44        |         | 44      | What does the phrase "highlighted in leadership" mean?<br>(Government of USA)   | Deleted.  |
| G-7-125         | A     | 17        | 48        | 17      | 48      | "occurrence of floods", please add storms.<br>(Government of Netherlands)   | Accepted.   |
| G-7-126         | A     | 18        | 26        |         | 33      | One could add something here about the recent decision of insurance companies not to renew homeowner policies in some flood-prone areas in states bordering the Gulf of Mexico.<br>(Government of USA)  | Now mentioned.  |
| G-7-127         | A     | 18        | 35        | 18      | 46      | Please expand this section by explaining what options the insurance industry has for its own adaptation: see e.g. Mills 2005 in Science 309, 1040-1044, IPCC TAR WG2 Chapter 8 and reports by UNEP-FI and ABI. ABI 2005 "Financial Risks of Climate Change".<br>(Government of Netherlands) | Material and references added.                            |
| G-7-            | A     | 18        | 39        |         |         | When in-text referencing, the comma between the name of the author and  | Stylistic preference.                                     |



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| 128             |       |           |           |         |         | publication year should be removed.<br>(Republic of Korea)   |  |
| G-7-129         | A     | 19        | 18        | 20      | 25      | What about infrastructure designed to work at specific temp ranges (e.g. treat water of a certain temperature) What about the potential for climate change to reduce the lifetime of usefulness of existing infrastructure (needs to be replaced more quickly to cope with change?).<br>(Government of Canada)   | Concept incorporated, subject to space limitations.  |
| G-7-130         | A     | 19        | 46        |         | 47      | Use of the word “inappropriate” implies a value judgment. Suggest replacing “this often results from inappropriate allocation of the resource rather than “ with “this is often the result of how water is allocated rather than an issue of “<br>(Government of USA)  | Done.  |
| G-7-131         | A     | 19        | 48        |         |         | (Shiklomanov, 2000) → (Shiklomanov 2000)<br>(Republic of Korea)  | Stylistic preference.  |
| G-7-132         | A     | 19        | 49        | 20      | 2       | Suggest deleting lines 1 and 2 on page 20 and replacing with “under severe drought conditions.” There are two reasons for this suggested change. First, in the situation studied by Dinar et al., the market value of water is much higher in municipal uses than in agricultural uses regardless of the existence drought conditions. That water does not go to its highest value use is an artifact of how the resource was developed decades ago and how demographics have evolved since. Second, as worded, the text implies agricultural users could deprive municipal users of water in times of severe drought unless they paid a significant premium.<br>(Government of USA) | Considered, but LA believes that the general point is valid, particularly in developing countries. |
| G-7-133         | A     | 20        | 28        | 20      | 40      | Section 7.4.2.3.2: Please add the following report on the costs of financing sanitation: Camdessus, M., Winpenny, J. (2003). Financing Water For All: Report of the World Panel on Financing Water Infrastructure, World Water Council, Marseille, France<br>(Government of Netherlands)   | Relevance to climate change impacts on sanitation not clear.                                       |
| G-7-134         | A     | 20        | 32        |         |         | (PAHO, 1998) → (PAHO 1998)<br>(WHO/Unicef, 2000) → (WHO/UNICEF 2000)<br>(Republic of Korea)  | Stylistic preference.  |
| G-7-135         | A     | 20        | 46        | 20      | 47      | The report states that less salting and gritting will be required. We argue that increasing temperatures as well may require more salting (and gritting) if temperatures more frequently fluctuate around the freezing point.<br>(Government of Sweden)  | Possible, but the point in the text is the more likely outcome.                                    |
| G-7-136         | A     | 21        | 6         |         |         | Add new sentence: "Also long term climate changes must be taken into account. Changes of temperatures and precipitation may cause that thresholds for strength properties e.g. in soil to be exceeded which will lead to landslides, flooding and  | Space constraints limit expansion.   |

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|                 |       |           |           |         |         | ground compaction and subsidence of buildings and infrastructure."<br>(Government of Sweden)   |   |
| G-7-137         | A     | 21        | 11        |         |         | Correct "Estimated to be at least ? .2m."<br>(Republic of Korea)   | Effect of electronic transmission of draft.   |
| G-7-138         | A     | 22        | 2         | 24      | 10      | Consequences for human health and ecology due to contaminated land should be described.<br>(Government of Sweden)  | Not clearly climate change related.   |
| G-7-139         | A     | 22        | 5         |         |         | "... case studies have been done, several of them very extensive."<br>→ "... case studies have been done, and several of them are very extensive."<br>(Republic of Korea)  | Done.   |
| G-7-140         | A     | 22        | 22        | 22      | 29      | Please list these studies on urban areas in a table, and divide between developed and developing countries, and provide some salient details of the studies.<br>(Government of Netherlands)  | Chapter length limitations do now allow space for an additional table, although the idea is an interesting one. |
| G-7-141         | A     | 22        | 28        |         | 29      | The underlines of 'impacts, determinants' are unnecessary.<br>(Republic of Korea)  | Done.   |
| G-7-142         | A     | 22        | 36        |         | 37      | The way the in-text references are made should be reviewed and improved.<br>(Republic of Korea)  | Checked.  |
| G-7-143         | A     | 23        | 4         |         |         | When in-text referencing, the comma between the name of the author and publication year should be removed.<br>(Republic of Korea)  | Styles are set at the WG level.   |
| G-7-144         | A     | 23        | 12        |         |         | Add new sentence: "Increased precipitation may also increase the groundwater level and pore pressure in soil slopes and subsequently the risk of landslides (Hultén et al., 2005)."<br>(Government of Sweden)                            | Done.   |
| G-7-145         | A     | 23        | 20        | 23      | 28      | Please make a cross-reference to the relevant sections of Chapter 8 on Health.<br>(Government of Netherlands)  | Done.   |
| G-7-146         | A     | 23        | 30        |         | 42      | While the UHI effect is discussed, no mention is made of any possible reduction in cold-related deaths in urban areas. Is there any data in this regard? Isn't it worth mentioning in order to balance the issue?<br>(Government of USA) | Good point but lack a reference in the scientific literature.   |
| G-7-147         | A     | 24        | 13        | 24      | 13      | The authors should review their mandate to ensure that a discussion of the impact of climate change on political processes is appropriate.<br>(Government of Australia)  | Section rewritten and point addressed.  |
| G-7-148         | A     | 24        | 17        | 24      | 20      | Please extert some caution here: whether these impacts WILL happen is not certain. Please change "will" in this paragraph to "could".<br>(Government of Netherlands)   | Paragraph deleted.  |

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| G-7-149         | A     | 24        | 20        | 24      | 23      | "Recent examples ...", these are indeed only examples and not evidence of the former statements. Please delete this sentence or make very clear that this is merely anecdotal information of current impacts.<br>(Government of Netherlands)                       | Paragraph deleted.   |
| G-7-150         | A     | 24        | 23        |         |         | (Chapter 14, Kershow...) → (Chapter 14; Kershow...)<br>(Klinenberg 2002, Cannon 2002, Box 7.4) → (Klinenberg 2002; Cannon 2002; Box 7.4)<br>(Republic of Korea)  | Paragraph deleted.   |
| G-7-151         | A     | 24        | 25        | 24      | 26      | "Second or third order ...", it is not clear to me what are second or third order impacts. Please define. Or replace by "indirect impacts".<br>(Government of Netherlands)   | Sentence deleted.  |
| G-7-152         | A     | 24        | 26        | 24      | 31      | Do these examples have any relationship with the second or third order impacts mentioned above? If so, please explain which impact is which order.<br>(Government of Netherlands)  | Paragraph rewritten.   |
| G-7-153         | A     | 24        | 28        | 24      | 31      | This sentence is unclear and is made up of a lot of information that is not explained. Please rewrite.<br>(Government of Netherlands)  | Same as above.   |
| G-7-154         | A     | 24        | 29        | 24      | 29      | What is meant by "family budgets of climate mitigation measures"? Please explain.<br>(Government of Netherlands)   | Sentence deleted.  |
| G-7-155         | A     | 24        | 29        | 24      | 29      | What is meant by "effects on city life"? Please explain.<br>(Government of Netherlands)  | Sentence deleted.  |
| G-7-156         | A     | 24        | 29        | 24      | 29      | "in some areas". Please be more specific.<br>(Government of Netherlands)   | Sentence deleted.  |
| G-7-157         | A     | 24        | 30        | 24      | 30      | What is meant by "family budgets of climate mitigation measures"? Please explain.<br>(Government of Netherlands)   | Sentence deleted.  |
| G-7-158         | A     | 24        | 36        | 24      | 36      | "... will increase and so will the likelihood ...". In view of the information in Box 7.3 and my previous comment, please don't be so certain that this will happen.<br>(Government of Netherlands)  | Paragraph rewritten and material included in Box 7.3.        |
| G-7-159         | A     | 24        | 40        | 24      | 41      | Please add indigenous people.<br>(Government of Netherlands)   | Done.  |
| G-7-160         | A     | 24        | 42        |         | 43      | There has been no discussion prior to this of climate change impacts being differentiated by gender. One citation given - Box 7.4 – contains nothing on this either. Provide some discussion of what the gender effects might be is needed.<br>(Government of USA) | Done.  |
| G-7-161         | A     | 24        | 43        | 24      |         | Gender differentiated impacts (mentioned on page 24, line 43), may also be mentioned in the section on Key Adaptation Issues (7.6.6., Page 40).<br>(Government of India)   | Considered. Thank you. 7.6.6 has been substantially revised. |

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| G-7-162         | A     | 24        | 45        | 25      | 9       | social resilience – not an inclusive thesis – not everyone’s experience<br>(Government of Canada)  | Edited.   |
| G-7-163         | A     | 24        | 49        | 24      | 50      | The authors should provide examples of where "climate-related stresses are associated with social tensions".<br>(Government of Australia)  | Sentence rewritten and reference added.                               |
| G-7-164         | A     | 24        |           | 24      |         | "large numbers of displaced people are a likely consequence". This is in contradiction to what is written in Box 7.3, although this box is supposed to support this statement. Box 7.3 explains that it is very difficult to find a relationship between extreme weather and migration, let alone climate change. Migration mainly happens for other reasons. Please rewrite.<br>(Government of Netherlands) | Paragraph rewritten, integrated into Box 7.3.                         |
| G-7-165         | A     | 25        | 7         |         | 10      | Suggest deleting these two statements. They are much more popular press and sheer speculation than should appear in a synthesis of scientific research should contain. The point being made is not affected by deleting them.<br>(Government of USA)   | Sentence rewritten and references provided to support this paragraph. |
| G-7-166         | A     | 25        | 31        |         | 31      | Suggest deleting “change”. This change makes the statement true now and in the future – no matter what the impacts of climate change are.<br>(Government of USA)   | Done.   |
| G-7-167         | A     | 25        | 33        |         |         | (Klinenberg 2002, Wolmer...) → (Klinenberg 2002; Wolmer...)<br>(OECD 2004, Romero...) → (OECD 2004; Romero...)<br>(Republic of Korea)  | Stylistic preference.   |
| G-7-168         | A     | 25        | 41        |         | 41      | The phrase “self-built ramshackle houses” is too “popular press” for this assessment. Suggest a more objective phrase like “poorly constructed structures”.<br>(Government of USA)   | Done.   |
| G-7-169         | A     | 25        | 44        |         | 46      | It is unclear what the authors mean by a “disaster”. Some clarifying text should be added to make clear what is being counted as a disaster and how often they occur.<br>(Government of USA)   | See glossary.   |
| G-7-170         | A     | 25        | 46        | 25      | 46      | An explanation of the term "low-development index" would be helpful.<br>(Government of Australia)  | Sentences rewritten.  |
| G-7-171         | A     | 26        | 1         | 26      | 30      | The entire Box 7.3 on environmental migration should be deleted . The migration from Bangladesh to India is more because of differential rates of economic growth than environmental degradation and, therefore, it is not an appropriate example of environmental migration.<br>(Government of India)   | Lack support in the scientific literature to support this statement.  |
| G-7-172         | A     | 26        | 1         |         | 28      | The box covers some important points. However, the text is presently not clearly written. The text needs to reflect the importance of the issue, current examples and references, and what steps are needed to better understand these linkages and  | Addressed.  |

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|                 |       |           |           |         |         | impacts.<br>(Government of USA)  |  |
| G-7-173         | A     | 26        | 27        |         |         | Correct "resources ? oil..."<br>(Fairhead, 2004) → (Fairhead 2004)<br>(Republic of Korea)  | Result of electronic transmission of draft.              |
| G-7-174         | A     | 27        | 29        |         |         | "climate change response policies, which..." → "climate change on policies, which ..."<br>(Republic of Korea)  | No, not the point here.                                  |
| G-7-175         | A     | 27        | 31        |         | 31      | Change "climate change" to "climate change impacts".<br>(Government of USA)  | Changed.   |
| G-7-176         | A     | 28        | 6         | 28      | 42      | Could this box be merged with Box 7.2? Also, please add some more information on impacts of storms in developing countries, that are far worse hit.<br>(Government of Netherlands)   | Linked to the WG II cross-cutting mega-delta case study. |
| G-7-177         | A     | 28        | 13        | 28      | 13      | Replace "expected to become" by "possibly becoming"<br>(Government of France)  | Such changes were projected by TAR.                      |
| G-7-178         | A     | 28        | 24        |         |         | Replace a question mark in the sentence with a comma.<br>(Republic of Korea)   | Artifact of electronic transmission of draft.            |
| G-7-179         | A     | 28        | 36        |         |         | (Hartwig, 2006) → (Hartwig 2006)<br>(Republic of Korea)  | Stylistic preference.                                    |
| G-7-180         | A     | 29        | 1         | 30      | 3       | It is unclear whether the information in Table 7.4 on projected future impacts and affected groups is based on literature, or whether it is an expert judgement/guess. Please provide references to chapter sections that give a more extensive discussion or literature references. Also, this table is not comprehensive in terms of covering all changes in extremes. There are many perils that are not listed here that are relevant. Please compare to Table 8.1 in IPCC TAR WG2. Also compare to the information on historic extremes in WG1 Section 3.8, and future extremes in WG1 Section 10.3.<br>(Government of Netherlands) | References added.  |
| G-7-181         | A     | 29        | 1         |         |         | Table 7.4: This table does not mention the threats to settlements and infrastructure in some regions from thawing permafrost soils. This should become a separate category under "(b) Changes in means / Temperature".<br>(European Union)   | Addressed.   |
| G-7-182         | A     | 29        | 1         |         | 2       | The first letter of all the words in the title of the Figure 7.4 should be capital except prepositions.<br>(Republic of Korea)   | Table redone.  |
| G-7-183         | A     | 29        | 2         | 29      | 2       | in the chart infrastructures other than water are not listed in impacts – tourism - roads and bridges and buildings to visit and places for tourists to stay, socio  | Same as above.   |

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|                 |       |           |           |         |         | economics- social structure all about human settlement<br>(Government of Canada)  |   |
| G-7-184         | A     | 30        | 13        | 30      | 13      | Historical experience may be of value for two reasons: 1) historic information on losses from weather extremes can show how important climate and non-climate factors are in determining costs from changes in extreme weather events; 2) since non-climate factors play such an important role, they may give a good handle on shaping adaption, i.e. by disaster risk management. Most natural disasters are in fact man-made, see e.g. the book by Ken Hewitt 1997 "Regions of Risk: A Geographical Introduction to Disasters" Longman.<br>(Government of Netherlands)       | We recognize that history is of value, but we think the statement is still valid. |
| G-7-185         | A     | 30        | 15        |         |         | Replace the question mark in the sentence with a correct mark.<br>(Republic of Korea)   | A problem with electronic transmission of the draft.                              |
| G-7-186         | A     | 30        | 18        | 30      | 18      | "... This is only one kind of possible impact". What are the other kinds like?<br>(Government of Netherlands)   | Edited.   |
| G-7-187         | A     | 30        | 24        | 30      | 3       | This statement is wrong as written. It is not supported by the information in Chapter 16 of the ACIA and should be revised to better reflect the local nature of damages where they exist. See ACIA Chapter 16.2.2.7, in particular page 915. In the ACIA, the authors expect that climate change will cause permafrost to degrade which MAY exceed the capabilities of existing infrastructure, leading to costs associated with replacing or upgrading infrastructure. But the ACIA authors do not attribute any existing damage to climate change.<br>(Government of Canada) | Changed.  |
| G-7-188         | A     | 30        | 24        | 30      | 24      | "... could be considerable". I would say, "are considerable".<br>(Government of Netherlands)  | We think that caution is advisable.   |
| G-7-189         | A     | 31        | 15        | 31      | 15      | Please refer more specifically to Section 1.3.8.<br>(Government of Netherlands)   | Considered.   |
| G-7-190         | A     | 31        | 20        |         | 21      | Correct "small country□".<br>(El Ni? in Central America) → (El Nino in Central America)<br>(Republic of Korea)  | See G-7-185.  |
| G-7-191         | A     | 31        | 26        |         | 27      | Another reference to Environmental Migration. The term has not been clearly defined.<br>(Government of USA)   | This mention deleted. Explanation referenced in Box 7.3.                          |
| G-7-192         | A     | 31        | 47        | 31      | 47      | The title of Figure 7.3 should read "Economic impact of Hurricane Mitch and the 1998-99 Drought on Honduras".<br>(Government of Australia)  | OK.   |
| G-7-193         | A     | 32        | 5         |         | 5       | Change "has seems" to "seems".<br>(Government of USA)   | OK.   |

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| G-7-194         | A     | 32        | 19        |         | 19      | What is the basis for the 10% figure? If it is simply the author's guess, it is totally meaningless and should be deleted. If it is based on some research or analysis, that work should be cited.<br>(Government of USA)   | Deleted.  |
| G-7-195         | A     | 32        | 30        | 32      | 33      | Abrupt climate change is a very general term. Please state more specific what changes you mean here. For which abrupt changes is a research base available? I can't believe there is none. For which not?<br>(Government of Netherlands)  | See the cited reference.  |
| G-7-196         | A     | 32        | 32        |         | 32      | Clarify what is meant by "research base"<br>(Government of USA)   | Term changed.   |
| G-7-197         | A     | 32        | 41        | 32      | 41      | The authors should provide information on which economic sectors in which smaller locations could exceed 25% of the GDP in a given year.<br>(Government of Australia)   | Depends on the location.  |
| G-7-198         | A     | 33        | 23        |         |         | (Adger, et al. 2005) → (Adger et al., 2005)<br>(Republic of Korea)  | Stylistic preference.   |
| G-7-199         | A     | 34        | 7         |         |         | When in-text referencing, a semicolon should be placed between each of the author and the publication year when several references are cited at the same time.<br>(Republic of Korea)   | Same as above.  |
| G-7-200         | A     | 34        | 18        |         |         | (Hertin et al, 2003) → (Hertin et al., 2003)<br>(Republic of Korea)   | Same as above.  |
| G-7-201         | A     | 34        | 41        | 34      | 43      | Replace these three lines by "This sector could have the potential to be a leader in industrial adaptation initiatives; however this would require extra financial resources as many energy sector strategies involve already high capital costs, and social acceptance of significantly higher energy prices may be limited"<br>(Government of France) | We do not understand why this wordier alternative would be preferable.  |
| G-7-202         | A     | 34        | 49        |         | 49      | Change "also" to "to".<br>(Government of USA)   | Changed.  |
| G-7-203         | A     | 35        | 10        |         | 11      | Change "from" to "to".<br>(Government of USA)   | Changed.  |
| G-7-204         | A     | 35        | 18        | 35      | 33      | tourism – does not explore opportunities/advantages for the tourism industry – longer seasons, more places to travel, opportunities to teach about adaptation (eco tourism)<br>(Government of Canada)   | Regarding opportunities for and shifts in choices of destinations, see 7.4.2.   |
| G-7-205         | A     | 36        | 8         |         | 10      | The discussion of "ex ante" vs. "ex-post" funding mechanisms for risk financing is not at all clear. If ex-post mechanisms include public bailouts, how can ex-ante mechanisms be more beneficial to the affected community? – since community losses are compensated but no premiums are paid.   | Ex post cannot be relied upon. In terms of this discussion, only ex ante can be combined with incentives to pursue risk reduction activities.<br>The surety of ex ante funding is now |

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|                 |       |           |           |         |         | (Government of USA)   | mentioned in the text.  |
| G-7-206         | A     | 36        | 20        | 36      | 28      | The financial options for developing countries are broader than just micro-insurance. See the papers by Hoff et al. 2005 in Vierteljahrshefte zur Wirtschaftsforschung, 74(2), 196-207, and Bouwer and Aerts 2006 in Disasters 30(1), 49-63.<br>(Government of Netherlands) | Reference added.  |
| G-7-207         | A     | 36        | 42        | 36      | 42      | "... in particular related to flood risk". I would add storms, as some insurers have withdrawn from this risk as well.<br>(Government of Netherlands)   | Modified.   |
| G-7-208         | A     | 37        | 17        |         |         | Add new sentence: "Adaptation, for existing and in planning of new infrastructure, should be made within the time horizon of the expected life time of the systems, no less than 100 years."<br>(Government of Sweden)  | Lack research literature to support such a statement.                           |
| G-7-209         | A     | 38        | 1         |         |         | Add new sentence: "Adaptation, for existing and in planning of new buildings and land use, should be made within the time horizon of the expected life time of the systems, no less than 100 years."<br>(Government of Sweden)  | Makes sense, but same as above.   |
| G-7-210         | A     | 38        | 1         |         |         | Remove the comma after the author from '(Orien and Leichenko, 2000)'.<br>(Republic of Korea)  | Stylistic preference.   |
| G-7-211         | A     | 38        | 3         | 38      | 8       | Urban and land use planning should be made within the principles of Integrated Coastal Zone Management.<br>(Government of Sweden)   | Considered, but we prefer not to endorse any single specific planning approach. |
| G-7-212         | A     | 38        | 11        |         | 11      | Suggest replacing "issue GHG" with "issue with respect to GHG".<br>(Government of USA)  | Done.   |
| G-7-213         | A     | 39        | 32        | 39      | 32      | Delete the sentence beginning "Equity is an important...". This sentence is value-laden and policy prescriptive.<br>(Government of Australia)   | Done.   |
| G-7-214         | A     | 39        | 32        |         | 33      | (... Adger, Huq, and Mace, 2005) → (Adger, Huq & Mace 2005)<br>(Republic of Korea)  | Stylistic preference.   |
| G-7-215         | A     | 40        | 7         | 40      | 10      | – also consider the roles of various levels of government, who is responsible<br>(Government of Canada)   | Paragraph rewritten.  |
| G-7-216         | A     | 40        | 12        |         |         | Remove the underline from "any major challenge..."<br>(Republic of Korea)   | Paragraph rewritten.  |
| G-7-217         | A     | 40        | 24        |         |         | The question marks in "act ? through individual... policies ? to reduce" should be either removed or replaced with another mark.<br>(Republic of Korea)   | They are dashes rather than question marks.                                     |
| G-7-            | A     | 41        | 22        |         | 23      | (Londdale et al. 2005); Poumadere et al. 2005; and Olsthoorn 2005)  | Thank you.  |



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| 218             |       |           |           |         |         | → (Londdale et al., 2005; Poumadere et al., 2005; Olsthoorn 2005)<br>(Republic of Korea)  |  |
| G-7-219         | A     | 41        | 37        |         |         | “Because climate change, its drivers, its impacts, and its policy responses...”<br>→ “Because its drivers, its impacts and its policy responses...”<br>(Republic of Korea)  | Stylistic preference.  |
| G-7-220         | A     | 41        | 47        | 41      | 50      | Indeed, impacts are still hard to attribute to climate change. However, it is already accepted and well-known that weather related disasters threaten sustainability. See for instance the multi-agency paper of 2003 "Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation" by UNDP, UNEP, World Bank, ADB, AfDB, GTZ, DFID, OECD, and EC. It has therefore been proposed already that adaptation, even in the absence of present impacts, should be linked with disaster risk management, see e.g. Sperling and Szekely 2005 "Disaster risk management in a changing climate". Please mention this.<br>(Government of Netherlands) | Point added. Thank you.  |
| G-7-221         | A     | 41        |           |         |         | Add new sentence: "Adaptation, for existing and in planning of new infrastructure and building, should be made within the time horizon of the expected life time of the systems, no less than 100 years."<br>(Government of Sweden)   | We do not understand this point, at least as a major conclusion of the chapter.  |
| G-7-222         | A     | 42        | 3         |         | 4       | “The most serious sustainable development issues... climate change impacts...”<br>→ The most serious issues of sustainable development... the impacts of climate change...<br>(Republic of Korea)   | Changed.   |
| G-7-223         | A     | 42        | 9         |         | 10      | The reason 'flooding' is taken as an example is not clear in “..... (e.g., flooding)”.<br>(Republic of Korea)   | An example seems useful, and this is a salient case of the preceding two points. |
| G-7-224         | A     | 42        | 11        |         | 13      | The conclusions section is not the place to bring up new terms and concepts. The chapter contained no discussion of “brittle” industrialized economies with “rigid and frail” foundations. Either delete this part of the sentence, put it terms that have been covered in the text, or clarify what you mean and identify a couple of countries as examples.<br>(Government of USA)  | Edited.  |
| G-7-225         | A     | 42        | 27        |         | 28      | "climate change impacts..." → "the impacts of climate change..."<br>(Republic of Korea)   | We prefer this usage.  |
| G-7-226         | A     | 43        | 15        |         |         | Remove 'even for a relatively developed countries from "... too rapid and disruptive even for a relatively developed country to..."', since the phrase 'developed countries' is previously mentioned in the sentence.<br>(Republic of Korea)  | Disagree. We think this usage is important here.                                 |
| G-7-            | A     | 43        | 17        |         |         | “with climate change impacts...” → "with the impacts of climate change..."  | Stylistic preference.  |

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| 227                 |       |              |              |         |         | (Republic of Korea) |                           |

**This part contains LATE GOVT comments for chapter 7**

**CHAPTER 7**

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|-----------------|-------|-----------|-----------|---------|---------|---|---|
| 7-1             | LATE  | 0         |           |         |         | With small temperature rises during hot spells, buildings in temperate climates which were not designed for hot conditions will start to suffer from overheating, leading to increased use of air-conditioning, especially in light-weight construction. This is well documented in Southern Europe (Santamouris and Asimkopoulis, 1996) but is now starting to impact in Northern Europe and predictions show a doubling of cooling power 2000-2020 (Adnot, 2000). Measures to reduce heating demand and it's resulting environmental impacts in winter, may increase overheating in summer as well insulated light-weight construction results in higher indoor summer temperatures.<br>(Government of Argentina) | Point made in the chapter, subject to chapter length constraints (which limit the energy discussion to a total of one page) |
| 7-2             | LATE  | 0         |           |         |         | The quality of the sectoral chapters (3 to 8) looks quite diverse. However, practically all of them show the same two shortcomings.<br>1.- the lack of strong appeal to decision makers regarding the assumption of their country □s responsibility to implement fully their commitments in respect to the performance of geophysical and biological observations and compile the necessary social, economic and related human health information to understand better the implications of climate change in their different trades.<br>2.- The necessity to improve cross referencing among them and with the regional chapters<br>(Government of Argentina)   | For Chapter 7, see section 7.8. Cross-referencing increased.  |
| 7-3             | LATE  | 0         |           |         |         | The above mentioned issues have a deep regional flavor, hence cross-reference with the Regional Chapters is necessary as it is the needed improvement of the references with sectoral chapters, particularly Chapter 3, when this is also upgraded. References to Chapter 8 also need improvement.<br>(Government of Argentina)   | For Chapter 7, cross-referencing increased.   |
| 7-4             | LATE  | 0         |           |         |         | Temperature rises not only increase the energy demand for cooling buildings (where refrigeration is used) but also reduce the COP, Coefficient of Performance of refrigeration equipment, requiring proportionally more energy (Santamouris and Asimkopoulis, 1996).<br>(Government of Argentina)   | Space constraints limit the ability to add detail to the discussion.  |

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| 7-5             | LATE  | 0         |           |         |         | Section 7 of the report provides an excellent coverage of the potential impacts. The impact of extreme events is well covered, however there is less emphasis on the general impact of increased temperatures on the population and the built environment.<br>(Government of Argentina)   | Thank you. The discussion is limited by available research literature. See, however, the discussion of UHI in the settlements section, which is an example of this point. |
| 7-6             | LATE  | 0         |           |         |         | Regarding events leading to floods and hazards to industrial and urban activities, the report only considers extreme conditions in coastal and riparian areas. It misses the reference to flash flood, tornados, GLOFs, landward winds and squall-lines which are recognized as intensity and frequency increasing weather events under the Earth's warming.<br>(Government of Argentina)   | The chapter emphasizes vulnerabilities associated with extreme weather events.  |
| 7-7             | LATE  | 0         |           |         |         | References<br>Adnot, J., (2000) Air conditioning equipment in use in Europe: Present situation and forecast. White paper, Centre Energetique et Procedes, Ecole de Mines, Paris.<br>de Schiller, S. and Evans, J. M. (2000), Urban climate and compact cities in developing countries, pp 117-124 en Jenks, M. and Burgess, R. (2000), Eds., Compact cities. Sustainable Urban forms for Developing Countries, Spon Press, London.<br>Santamouris, M. and Asimkopoulis, D., Eds, (1996) Passive Cooling of Buildings, James and James, London<br>Tanides, C., Dutt, G. S., Gonzalez, E. D., Evans, J. M., de Schiller, S. and Furfaro, H. I. (2006), Análisis del potencial de reducción de emisiones de gases de efecto invernadero en el sector eléctrico y del gas natural de la República Argentina, Fundación Vida Silvestre Argentina, Buenos Aires.<br>(Government of Argentina) | Considered, thank you. But space constraints did not permit a comprehensive coverage of issues not directly related to climate change per se.                             |
| 7-8             | LATE  | 0         |           |         |         | It is well written chapter and includes practically all the elements which, in a way or another, affect the element components of its commitment - Industry, Settlement and Society. However, it misses some important questions concerning the dangers climate change, with the associated exacerbation of extreme events, would bring to these components.<br>(Government of Argentina)   | Not clear what revisions are being suggested. See response to a preceding comment.  |
| 7-9             | LATE  | 0         |           |         |         | In hot climates and hot seasons in temperate climates, increased temperatures above comfort level, of about 30° C, will start to affect human comfort, productivity and work efficiency, as well as health.<br>(Government of Argentina)  | Attention to these issues added to the chapter.   |
| 7-10            | LATE  | 0         |           |         |         | In connection with the security, sanitary and public health conditions in areas affected by extreme events, decision making shall be informed on the necessity to   | See editorial changes in the adaptation section. Also see Chapter 8.  |

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|                 |       |           |           |         |         | better estimate the probable maximum storm which could fall on a given locality, so to develop appropriate urban hydrology installations and services, as well as to adopt the actions being recommended by The International Strategy for Disaster Reduction (ISDR), the Urban Management Programme (UN-HABITAT and UNDP), and the ECW III- Third International Conference on Early Alert (Bonn, March 2006), regarding hazard-warning systems and early alert advisories, to protect dwellings, factories and the associated societal goods.<br>(Government of Argentina)  |   |
| 7-11            | LATE  | 0         |           |         |         | Further, warming is severely affecting the structures developed on permafrost regions, with increasing risks to human settlements and other facilities and services.<br>(Government of Argentina)  | Added to chapter.   |
| 7-12            | LATE  | 0         |           |         |         | Cities and other human settlements and industries located in continental, hilly and mountain regions, in middle latitudes are becoming increasingly affected by such events. As shown in recent landslides and mudflows in UK, California, Brazil, etc, communities far away from coastal areas would also suffer heavy human and economic losses. In association with the extreme events enhancement, the chapter have also missed the opportunity to guide decision making with recommendations to monitor and watch the development of these processes and to promote urban hydrology studies, so to cope with the effects of heavy precipitations events, exacerbated by the large amount of heat energy in the oceans, due to the increasing concentration of greenhouse gases in the atmosphere. Logically, these weather and climate change processes also impact the society, directly and through the difficulties to be faced by people and its activities. The poor cross-reference links with sectoral and with regional chapters needs improvement, so to obviate unnecessary repetitions. Reference should be also made to the increasing interest shown by governments and private groups, regarding the activities of the ISDR and its regional appendices as well as the recommendations emanating from ECW III (Bonn, March 2006)<br>(Government of Argentina) | We agree with these points, but we found very little peer-reviewed research to cite. Cross-referencing increased. |
| 7-13            | LATE  | 0         |           |         |         | Another aspect of the impact of climate change in human settlements, especially temperature increases, is the unequal social impact, as office workers and more privileged sections of the community often have access to air conditioning, while workers in the industrial, construction and agricultural sectors do not have this benefit, suffering more from the direct impacts.<br>(Government of Argentina)  | Point added to the chapter, thank you.  |
| 7-14            | LATE  | 6         | 48        |         |         | .. clearly higher temperatures increase costs of cooling reduce costs of heating.<br>should read .. clearly higher temperatures increase costs of cooling while reducing   | Point added to the chapter.   |

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|                 |       |           |           |         |         | costs of heating<br>Comment: this assertion is related to concepts from the developed world where there are cooling systems which have running costs, while most of the world population, especially those in hot and developing regions do not have these installations. Costs of rising temperatures are indirect, such as: discomfort, impact on health and lower productivity due to interrupted sleep as well as inability to maintain constant activity levels at high temperatures.<br>Data: For example, present saturation of the domestic air-conditioner market in Argentina, one of the more developed countries of Latin America, is estimated at only 16 % of all homes and may rise to 35 % in 2020 (Tanides et al, 2006), though actual levels of use are significantly lower. However, the regional values would be much lower, even when the warmer climates of Brazil are considered.<br>(Government of Argentina) |  |
| 7-15            | LATE  | 38        | 10        |         | 19      | General comment: while mitigation at the urban scale can help to reduce impacts significantly, the time scale of urban design decisions which effectively determine building form and layout over a long life time does not respond to the predicted speed of climate change. Existing city development cannot be altered significantly without great costs (de Schiller and Evans, 2000). On a different scale, the difficulties of improving the thermal performance of existing buildings with a long useful life is also emphasised in Tanides (2006).<br>(Government of Argentina)   | Section on adaptation by settlements modified accordingly. |
| 7-16            | LATE  | 38        | 11        |         |         | .. is an issue GHG mitigation. should read .. is an issue for GHG mitigation.<br>(Government of Argentina)  | Edited.  |
| 7-17            | LATE  | 38        | 12        |         |         | .. many German locales .. may/should read many German localities (?)...<br>(Government of Argentina)  | Edited.  |
| 7-18            | LATE  | 38        | 13        |         |         | ... mitigation strategies through the use zoning and building code revisions.. should read ....mitigation strategies through zoning and building code revisions.. or `..... through land use zoning and ....'<br>(Government of Argentina)  | Edited.  |
| 7-19            | LATE  | 38        | 14        |         |         | ... several cities in the Arizona, USA Region... should read several cities in the Arizona, USA, region or better: several cities in Arizona, USA,<br>(Government of Argentina)   | Edited.  |
| 7-20            | LATE  | 38        | 37        |         |         | .. related mainly to current obvious problems, when climate change is viewed .. could be better expressed ..mainly related to pressing economic and social problems, as climate change is often viewed..<br>(Government of Argentina)   | Edited.  |

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