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# INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



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## IPCC Fourth Assessment Report

### *Expert/Government Review of the Second-Order Draft*

## Chapter 12



# INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
12-1	A	0	0	0	0	<p>One general concern regarding this chapter relates to the overly optimistic tone due to the exclusive focus on sustainability and mitigation, in particular in section 2.2. It seems to me that the real world is clearly showing that economic development so far has been, still is and could remain detrimental to climate change mitigation and that the road to sustainability appears exceedingly long and difficult. The evidence supports this statement in many ways as is demonstrated in section 12.2.2.1. and the SRES scenarios. To keep things in this overall perspective instead of focussing straight away on potentially positive and constructive messages, I would therefore start section 12.1.1. with the present section 12.2.2.1. Also, the text suggests that the only relevant relation from climate change to economic development runs through climate change mitigation actions. Of course, climate change impacts could become an overriding constraint on traditional economic development a couple of decades from now, regardless of some potential side benefits from climate change mitigation right now, and that is the real reason to integrate mitigation and sustainable development. Signalling this urgent need to turn the tide in terms of sustainable development paths could set the tone for the remaining discussion focussing on</p>	<p>Noted; see modifications below.</p> <p>-could put some contextual text in 12.1.1 about difficulty of task</p> <p>-would be good to add some passing reference to impacts and adaptation, which of course connect directly with SD</p> <p>-agree that reference to impacts provides reasons for need of change development paths.</p>

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						sustainable development (as opposed to economic growth) and climate change mitigation (as opposed to climate change impacts) in the right perspective. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	
12-2	A	0	0	0	0	SD and CC also elaborated in chapter 2, both chapter should be harmonised (NOIM UDDIN, Macquarie University, Sydney)	Agree
12-3	A	0	0	0	0	A second major concern regarding this chapter is the feeling that the amount of experience and knowledge needed to turn the tide is awfully scarce in relation to the task at hand. This conclusion seems clear from section 12.2.1 on alternative pathways. There appears to be almost no material on the essence of alternative pathways. What exactly are alternative pathways? Alternative to what? If you don't specify your reference path, all directions are alternative. Should we not define the reference case in terms of likely runaway climate change with severe impacts on economic growth rather than in terms of continuing business as usual which is almost universally done at the moment. Are we talking of alternative rates of growth, of alternative sectoral structures, of alternative price structures, of alternative trade patterns, of alternative governance structures? The concrete examples chosen are mostly from the energy and	Agree; will define development path in glossary and in text; will drop use of 'alternative'

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						emissions field, while the problem is clearly much broader. Is Bhutan not a better example of an alternative development pathway than Brazil in this respect? Is the existing development literature on this topic adequately represented? In other words, I believe there are a host of very basic questions not addressed adequately. More awareness of these framing issues is needed in this chapter and they should at least get attention in the final section on research needs. (.)	
12-4	A	0	0	0	0	The discussion on sustainable development is not very clear and focused. It lacks a clear message that climate change is one of the major environmental, economic and social challenges of our time, and sustainable development is not possible without addressing climate change through mitigation and adaptation efforts. In other words, development without recognizing climate change related challenges (climate change impacts and the need for mitigation) cannot be sustainable. (.)	Noted
12-5	A	0	0	0	0	Please see my Commentary titled "Addressing Potential Abrupt Climate Change" which does not fit into this Excel spreadsheet box. I have accordingly asked Dave Rutu to circulate it to lead authors. It draws attention to a body of peer	Agree; but this chapter is not an appropriate place for a foot note on this topic.

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						<p>reviewed and gray literature which appears to have been overlooked in the SOD, although it was brought to attention previously in my comments on the FOD. The main point is that the rest of the literature mostly treats atmospheric CO2 as a flow pollution problem, to be addressed through a reduction in emissions. However CO2 is not a noxious gas, and therefore atmospheric CO2 is an excess stock problem with several possible answers. It is technologically much easier to extract CO2 from the atmosphere by land use improvements that increase biotic absorption and yield biomass fuels (de-fossilization) than it is do without any fuel other than hydrogen (decarbonisation). Although it obvious from the text that the authors are very well aware of it, I suggest that the need to assess GHG fluxes rather than simply focus on emissions reductions be brought to the attention of readers by a footnote on page 6. Unfortunately time constraints prevent me from providing the detailed comments on this Chapter that I had hoped for, so, beyond that footnote, the relevance of the holistic strategy discussed in my Commentary and briefly described in proposed Chapter 2 new section 2.3.4, is mentioned in proposed new material on pages 12 and 66 (Peter Read, Massey University)</p>	



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12-6	A	0	0	0	0	The Chapter generally looked Sustainable Development from a Mitigation Perspective. However, my notion is 'climate change' is only a small slice of the whole pie. Discussion over the broader 'sustainable development' issue concerning poverty, equity, population growth, urbanization, land degradation and land uses, pollution and natural hazards should be framed along with climate change. Although such topics appeared in the Chapter sporadically, the integration is missing. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject; this chapter goes well beyond past, and other, IPCC discussions of the issues called for in this comment. We cannot go much further and still be a chapter in the IPCC.
12-7	A	0	0	0	0	Overall a well-written Chapter but seems to me too much texty. The entire Chapter has only four figures and four tables. I suggest to include more figures and tables (by transforming some texts whenever possible). This will certainly enhance readers' interest to read this very important chapter. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Agree
12-8	A	0	0	0	0	I do not see any discussion on Globalization and the World Bank's PRSPs in relation to 'Sustainable Development' (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject; not directly relevant to climate change mitigation
12-9	A	0	0	0	0	Seemed rather long and without the clarity of the other chapters.	Agree

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						(Chris Mottershead, BP)	
12-10	A	0	0	0	0	>-> I suggest incorporate the copncept of public sphere (Habermas) to complement the preceding section on civil society.K24:K27 (Valentin Bartra, Instituto Andino y Amazónico de Derecho Ambiental)	Reject; too abstract for this discussion
12-11	A	0	0	0	0	In general the chapter has many repitive statements. Presentationif tightened can be more communicative to the readers. (Joyashree Roy, Jadavpur University)	Agree
12-12	A	0	0	0	0	Chapter 12 is a great contribution to the FAR, and is very relevant to current policy discussions. Table 12.3 in particular is a very important contribution to the policy debate and should be expanded if possible. (Joanna Lewis, Pew Center on Global Climate Change)	Thanks
12-13	A	0	0	0	0	There should be more coordination between chapter 2 and 12! (Expert Review Meeting Paris, IPCC)	Agree; see response to 12-2
12-14	A	0	0	0	0	The key contribution from this chapter is explaining the reasons/ co-benefits of climate change action SD. It would be helpful to have more cases. Table 12.3 is useful but needs to be flushed out more. The section on institutional discussion is key to the overall report. This is rather academical at the moment.	Agree

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						(Expert Review Meeting Paris, IPCC)	
12-15	A	0	0	0	0	Looking at MGD goals from chapter 2, surprised this is not built on in chapter 12 (Expert Review Meeting Paris, IPCC)	Reject; no MDG case studies available yet
12-16	A	0	0	0	0	Benefit for SD is that CC effects are reduced than SD benefits. Chapter 12 needs to include references on this. The benefits on SD from mitigation should be mentioned as well. Does this chapter have any concluding ideas? (Expert Review Meeting Paris, IPCC)	Unclear
12-17	A	0	0	0	0	General: The Chapter on Sustainable Development could benefit from a new structure which explains: 1) the economic, environmental and social costs and benefits of mitigating climate change in general terms, 2) the economic, environmental and social costs and benefits of mitigation in the alternative development pathways, and 3) the economic, environmental and social costs and benefits of different sectoral mitigation strategies. (Candice Stevens, OECD)	Reject; outline was agreed to by the IPCC plenary
12-18	A	0	0	0	0	There is almost no discussion on alternative development paths for poor developing countries. The chapter looks into development issues of developing countries which are already high emitters. It might be important to look at other developing countries which do not produce a lot of emissions but might become high emitters in the	Reject; chapter already contains material referring to small developing countries that might have high emissions in the future

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						future if they follow the same development path as Annex I and more developed developing countries. (Ellina Levina, OECD)	
12-19	A	0	0	0	0	The chapter mentions that countries and regions vary but does not make clear distinctions in the discussions. Institutional, legal, scientific capacities are not well addressed in demonstrating real differences among countries. (Ellina Levina, OECD)	Reject; chapter contains discussion by region
12-20	A	0	0	0	0	I think that this chapter is a perfect place to address the role of education and more specifically environmental education in changing the development alternatives. Decisions at governmental and personal levels are made based on various perceptions (on what's good, what's necessary, cost, security, etc.) - awareness of the footprints of our decisions on the environment might gradually change people's perceptions and alter traditional way of thinking and decision-making to the more environment and climate aware. Environmental education should start in schools. (Ellina Levina, OECD)	Noted; will make explicit in text
12-21	A	0	0	0	0	Congratulations on mainting to write within the page limits! (Rutu Dave, IPCC WGIII TSU)	Thanks
12-22	A	0	0	0	0	The implications of natural disasters for sustainable development is not dealt with adequately in the	Reject; disaster management is an adaptation activity, and is not directly part

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						chapter. In India's 10th five year plan, disaster management was linked to sustainable development goals and projects. A similar approach may be incorporated in the chapter. Sustainable development projects can contribute to mitigation by planning for disaster mitigation and management at the same time. Similarly incorporating disaster management into sustainable development plans has implications for mitigation. (Government of India)	of climate change mitigation
12-23	A	0	0	0	0	On Sustainable Development and Climate Change Mitigation: For the first time, sustainable development was a major focus in convention on Climate Change (UNFCCC) and again in the World Summit on sustainable development (WSSD) in Johannesburg in 2002. However, it was not until the Article 12 of the Kyoto Protocol provided an operational tool to test Sustainable development on the ground and in defining Clean development Mechanism – a project based mechanism to assist developing countries in achieving sustainable development and a fund for adaptation to climate change. Mitigation options to address climate change therefore must simultaneously assist developing countries in achieving sustainable development. (Government of India)	Noted; CDM is considered in WGIII Ch 13

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12-24	A	0	0	0	0	Fourth Assessment Report was oriented, I think, towards finding solution to climate change related problems in developing country. On the other hand, the draft report has devoted much on theories. What really is needed to bring out down to earth solutions to problem arising out of climate variability and change in the developing country. Further it is also necessary for the Fourth Assessment Report of the IPCC to look into how sustainability of different development activities are likely to be impacted if the upper end of the projected range of warming is reacted. Such analyses have not been done yet and may be necessary for developing appropriate response strategies of the developing fast growing economies. (Government of India)	Noted
12-25	A	0	0	0	0	Under the framework of ADP taken by developing countries and separate climate policy by developed countries, it means that developing countries will take more responsibility for both ADP transition and GHG mitigation, but developed countries could pay less costs. The ADP choice looks like “no regret” or win-win policy and a “volunteer” choice but it must be realized by developing countries themselves. That’s uneven. The developed countries should help developing countries to speed up the	Noted

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						transition to ADP, including additional and sustained technology and financial support. In other word, in GHG mitigation, there is a need to clarify the roles and responsibilities for developing and developed countries. (Government of China Meteorological Administration)	
12-26	A	0	0	0	0	Forest management can also cause biodiversity losses, if done purely in terms of wood production or carbon stock perspective. (Government of Finland)	Noted; taken into account in Table 12.3
12-27	A	1	0	0	0	Sustainability as a goal and a means to achieve the UNFCCC ultimate objective is both a Northern and Southern country objective. The chapter brings forward the transformation of developed countries only on page 13. There should be a mention of the broad change needed in the North also from earlier in the chapter and even in the introduction. (ANTOINE BONDUELLE, Université Lille II)	Reject; has been picked up in regional discussion
12-28	A	3	4	3	10	This paragraph describes a well-known facts. To suggest that points to conclusions and save the text. (Government of China Meteorological Administration)	Reject; this is a short paragraph to make a key point
12-29	A	3	6	3	8	Addition of "energy" among the important factors for sustainable development, would easy very much the problem because energy is one of decisive factors for climate change (more than around 50%	Reject; the term SD is the standard term both in the literature and in the language of the FCCC, COP and the IPCC.

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						<p>ef GHG come from fossil energy sources, as is well known). So, following that thinking line, I propose to substitute from this place till the final of the Chapter, the phrase "Sustainable Development", with "Sustainable Energetic", doing of course the appropriate arrangements, mainly grammatically or in the redaction if necessary. As I told in my previous comment, anyway sustainable energetic is a crucial step for attaining sustainable development, and no development would be sustainable if its energy system wouldn't be so. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)</p>	
12-30	A	3	7	3	7	<p>To add the national heritage and education among examples of social, political and cultural factors. To add poverty and hunger, social equity.... (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)</p>	Noted
12-31	A	3	13	3	15	<p>It is hard to prove from the past literature if any very longterm policy has produced the best outcome. It may be useful to say a time line say a number of years which is sufficiently substantiated. (Joyashree Roy, Jadavpur University)</p>	Comment is unclear – will check meaning with reviewer
12-32	A	3	14	3	14	<p>The immediate goal is not clear here. (Government of China Meteorological Administration)</p>	Accept; will change 'immediate' to 'priority'

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12-33	A	3	15	3	15	To add natural resources and production and consumption patterns (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Accept; will include
12-34	A	3	20	3	21	Please add a line on mainstreaming of 'adaptation'. Mainstreaming of both adaptation and mitigation will complement each other. Mitigation should not be treated independently. You can also refer to Chapter 18 of Working Group II. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Accept; will refer to WGII Ch 18 and WGIII Ch 2
12-35	A	3	20	3	20	Add 'prioritized' before 'development activities'. (Government of China Meteorological Administration)	Accept; will revise
12-36	A	3	31	3	31	An essential element is the consideration of CO2 emission in the land planning issue: the link between urbanism and energy consumption should be better underlined. One can develop models of cities very intensive in energy (i.e. US middle west cities), with widespread housing inducing high transport costs (individual cars) and individual heating devices, or alternatively more compact models (i.e. most "traditional" european cities) with developed collective transports and distribution networks. Figures can be made available to illustrate this fact (population density versus energy consumptions in	Accept; but in line 15, not 31

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						various cities in the world). (VARET jacques, French Geological Survey)	
12-37	A	3	31	3	35	However, some countries make a direct link between GHG Emission and Economic Growth. They express that emission reduction will reduce economic growth, therefore, shall have an impact on living standard. On the other hand some EU countries, China and South Korea reduced emissions without affecting their economic growth. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject; the issue is addressed and this particular example is inappropriate
12-38	A	3	33	10	0	The first part of this section reads as a summary of the second part, which is also a summary. This seems superfluous and confusing. Consider integration. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	Comment is unclear; must be a mistaken reference here since page 3 is the Executive Summary, so must be a summary of later text and can't be integrated with it.
12-39	A	3	34	3	34	The meaning of initial policy should be explained because policy is very important to maintain long time impact on GHG emissions. (Government of China Meteorological Administration)	Accept; will revise
12-40	A	3	37	5	50	The statement that initial policies must be maintained for several decades may suggest rigidity in policy design, while it is of great importance to create flexibility and adaptability when dealing with climate change. Perhaps the sentence could be	Accept; will reword and adapt text of chapter if appropriate

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						rephrased in order to stress the need for continuity and consistency in policies while at the same time maintaining flexibility and adaptability. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	
12-41	A	3	47	3	47	To add: ".....into future development pathways of developing countries, whose application will depend of particular characteristics and state of development of each country" (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject; too specific
12-42	A	3	49	3	49	To add: ".... To be addressed through specific climate change policies; vision that substract integrality in the analysis and solution of its problematics" (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Sentence unclear
12-43	A	3	0	4	0	Executive summary & Section on Governance (30-44): this topic is new for IPCC and I endorse this attempt to cover a growing social sciences literature on the global environmental governance and sustainable development. My comments here are general – highlighting a number of specific themes that I understand to be in the literature and relevant to climate change governance, yet not appearing is	Accept; will integrate into 12.2

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						<p>the current assessment draft. I also provide a list of the references that I think might be useful to strengthen the chapter should you decide to include these points.</p> <ul style="list-style-type: none"> <li>• Characterisation of state, market and civil society as separate spheres of activity and influence is misleading. There are more types of actors than this (ie. Within civil society there are different types of environmental organisations – e.g. RINGOs, ENGOs, BINGOs – not to mention development non-governmental organisations which are increasingly active in the area of climate change) (gough &amp; shackley discuss this) Within the “state” there are different scales of governmental activity – policy communities – operating largely independently yet with influence on each other on climate change issues e.g. local, regional (sub-national) and national or nation-state level. Also there is much collaboration and coalition building across the boundaries of state, market and civil society - interact in a more fluid and dynamic way. Finally the text also ignores the influential role of expert/science knowledge (or experts as actors) in the policy process and fails to really touch on the need to bring deliberative process together with expert knowledge to raise trust and understanding, and move towards consensual framings and solution</li> </ul>	

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						sets.  (Jan Corfee-Morlot, University College London (on leave from OECD))	
12-44	A	4	1	4	5	Please add some examples to make these statements stronger. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Noted; will consider
12-45	A	5	4	0	0	Add under introduction. A definition of sustainable development was first given by the World Commission on Environment and Development (popularly known as Brundtland Commission) in 1987 as a development process that “meets the needs of the present without compromising the ability of the future generation to meet their own needs”. The Brundtland Commission considered population control, food activity and energy supply as critical components of sustainability. Since the Rio Summit in June 1992 and the adoption of Agenda 21 by the global community, many nations have set sustainability as the Key goal of their development.  The concept of sustainable development is quite distinct from economic growth and recognizes the limitation of economic indicators like GNP in measuring the true well being of nation. Instead sustainable development accepts wider perspectives	Accept; we will consider this wording in the re-write

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						like poverty alleviation, health care & education and more broadly the social, economic, environmental and technological well being of the society. However, until and unless we can measure (quantify) and monitor sustainability, the concept of sustainable development remain a buzz word. Measuring sustainability is not an easy task. Therefore a concept of sustainable development indicator (SDI) has been introduced to assess measure and monitor sustainability of a development process. For measuring sustainability of a development process, a useful way is to select and organize indicator in a pressure (cause) state linking effects), impact, response (policy action) framework (Table I & II). (Government of India)	
12-46	A	5	5	5	12	I suggest to frame the concept of 'sustainable development' in the broader perspective of 'human and ecosystem well-being'. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject; There are many ways to frame and define SD, as we have indicated. Our task is not to engage in the definitional debate but to discuss linkages with CCM, as we have done.
12-47	A	5	33	5	35	AR4 WGII discussion on sustainable development and adaptation is found in Chapter 20, extending from the assessments in WGII chapters 17 and 18. (Cohen Stewart, Environment Canada)	Accept; will cross-reference
12-48	A	5	33	5	35	AR4 WGII discussion on sustainable development and adaptation is found in Chapter 20, extending	Accept

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						from the assessments in WGII chapters 17 and 18. (Cohen Stewart, Environment Canada)	
12-49	A	5	34	5	35	Please order the WGII Chapters chronologically. The title of Chapter 17 is wrongly written which should be 'Assessment of Adaptation Practices, Options, Constraints and Capacity' (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Accept
12-50	A	6	0	0	0	Surely the concept of sustainable development was first introduced at Cocoyoc, as evidenced by its Declaration. (Michael Jefferson, World Renewable Energy Network & Congresses)	Reject; The term SD is not in the Cocoyoc Declaration, though it does talk about the 'inner limits' of basic human needs and the "outer limits" of the planet's physical resources.
12-51	A	6	0	0	0	This section should carry forward the work started in chapter 2 on creating a link between Sustainable Development, Climate Change and other development/ environmental policies such as MDGs. (Rutu Dave, IPCC WGIII TSU)	Noted; will ensure that there are no inconsistencies
12-52	A	6	14	6	14	From "mitigation" hang a footnote to read "In this Chapter 'mitigation' or 'emissions reductions' should be understood as net reductions in emissions, i.e. the emissions reductions plus absorption increases that are the overall outcome on the fluxes of greenhouse gases that result from mitigating activity. (Peter Read, Massey University)	Noted; see glossary definition of mitigation
12-53	A	6	40	6	44	Comment: Provided that the analysis take into	Accept; will change to: 'Framing the

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						account the environmental consequences of this development, including it sustainable character. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	debate as s <b>sustainable</b> development problem, rather than <b>only</b> as an environmental one. . . .
12-54	A	6	40	6	44	Another reference stating the same is Jacob, Merle and Linnér, Björn-Ola (2005) "From Stockholm to Kyoto and Beyond: A Review of the Globalisation of Global Warming Policy and North South relation, Globalizations Dec 2005 Vol 2(3):403-415. (Government of Sweden)	Noted; will check reference and add if appropriate
12-55	A	7	7	7	13	Comment:It is necessary take into account too, the mitigation measures for not desirable climate change effects, as the sea level rise, changes in rain regimes, more appearance of natural disasters, and that aren't GHG emissions (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject; this refers to climate change impacts and adaptation
12-56	A	7	15	7	30	The figure 12.1 infcat does add value to the presentation. (Joyashree Roy, Jadavpur University)	Accept; will drop figure
12-57	A	7	29	7	0	figure 12.1. This illustration is simplified but confusing: (1) development path must have a development target or direction. But it does not have. (2) there are many paths instead of only two as shown in this figure. (3) alternative path ways are	Accept; will drop figure

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						not only determined by AC, MC, and RM, but also many other factors such as equity, welfare, other priority environmental pollution/ecological degradation considerations. Suggestion: it does not add much information and leads to misunderstanding. delete it. (Government of China Meteorological Administration)	
12-58	A	7	31	7	39	The issue of 'exposure' to climate change induced hazards is missing here. I would suggest to mention it and 'response' strategies, mechanisms, etc. are also function of exposures. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject; the exposure concept is not relevant here.
12-59	A	7	0	0	0	Figure 12.1 is not very clear (ANTOINE BONDUELLE, Université Lille II)	Accept; will drop figure
12-60	A	8	4	10	43	Comment: I suggest to eliminate points 12.1.2 and 12.1.3., because the contents are well known and don't contribute nothing. If it is necessary I only will take the first two paragraphs of 12.1.2 (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject; we were explicitly asked to discuss the evolution of the concept of SD
12-61	A	8	9	8	11	Although it is true that some solutions and development trajectories towards achieving the targets of MDGs will indirectly contribute to mitigation of climate change but it is also true that	Accept; will include this point and refer to WGIII ch 2

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						some solutions will increase contributions to climate change. The whole issue is dependent on the choice of policies and note that climate change is not a focus of the UN MDG as it is designed for a short time-scale. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	
12-62	A	8	15	8	18	discourses of sustainable development have historically focused primarily on the environmental and economic dimensions (Barnett, 2001), while overlooking the need for social, political and/or cultural change (Barnett 2001; Lehtonen 2004; Robinson 2004). This statement is not true. In WCED (1987), the definition itself contains intra- and inter-generational equity. There are a few places indicating poverty is a primary cause of pollution. The problem lies in that fact the policies and practices simply ignore the needs of the poor and the disadvantaged are not represented in decision making. suggestion: rephrase the statement. (Government of China Meteorological Administration)	Noted: will clarify
12-63	A	8	15	8	21	These lines are supposed to be arguing for integrated treatment of the dimensions of sustainable development by referring to Lehtonen 2004. However, this is not coming clear from the	Accept; will revise

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						text at the moment. To improve the text in this sense, I suggest that a sentence already included in the “Technical summary” p. 92 is added after the quotation from Lehtonen 2004: “The importance of social, political and cultural factors - for example, poverty, social equity, governance - is only now getting more recognition.” This also better explains, why these issues are considered more closely later in the Chapter 12. (Government of Finland)	
12-64	A	9	2	9	5	Please elaborate this by incorporating 'ecosystem well-being'. Without the sustenance of ecosystem, human well-being cannot be ensured. For reference, consult the Millennium Ecosystem Assessment (2005) Reports. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Accept; can add this concept and reference
12-65	A	9	4	9	8	"These include...; WCED, 1987). Ecological functions and Millennium assessment report need to be mentioned (Government of India)	Accept
12-66	A	9	10	9	19	Please elaborate these national and international frameworks are contributing to the developing countries in terms of foreign aid and development assistance. The best way to look at it will be from the development assistance policy perspectives. Whether these countries have such policies to	Accept; can add a phrase or sentence to this effect.

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						incorporate or enhance sustainable development through development assistance. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	
12-67	A	9	10	9	19	Internalisation of sustainable development principle in national laws needs to be mentioned with examples from other countries too especially developing countries. One example from India can be cited from the Approach paper to Eleventh plan of the Planning commission in India(2006) which states that to address sustainability nation should move away from ground water use to surface water, should encourage ground water recharge, water quality to be maintained by better management of flow of effluents of untreated sewage and industrial effluents, better solid waste management through recycling and segregation at source, integration of development planning and environmental concerns through implementation of economic instruments of pollution control. (Joyashree Roy, Jadavpur University)	Accept; will add developing country example.
12-68	A	9	10	9	19	"The principles of .....Clarke.2004)". Examples from developing countries need mention. India specific cases are available in Tenth Plan document and Approach Paper to 11 th Plan of The Planning Commission. (Government of India)	Accept

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12-69	A	9	21	9	23	Please cite some examples of such 'international environmental treaties'. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Accept; will cite
12-70	A	9	25	9	17	What mechanism the INECE is pursuing for making law work for environmental compliance and sustainable development. Also rephrase the sentence. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Accept. Will elaborate.
12-71	A	9	29	10	31	The measurement of progress in sustainability is well explained in this paragraph. But this should not be understood as a vain exercise at finding the exact metrics. The idea is to be able to assess policies but also to address a larger public. Thus the idea of the "ecological footprint" suggested by large NGOs such as WWF. This does not mean to substitute to academic or national indicators and measures, but can have a significant pedagogic effect. The idea that we would need "several planets" if present consumption trends continue, aired by President Chirac of France in Johannesburg (SA) has popularized such criteria. Suggestion for inclusion after p.10 p. 19 : "Other sets of metrics have less precise ambitions but aim to explain to the larger public the risks of climate change, such as the notion "ecological footprint" used by some NGOs,	Accept. Will include.

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						where the aggregate indicators are noted as a number of planets Earth needed to sustain the present way of living of some regions of the World. (ANTOINE BONDUELLE, Université Lille II)	
12-72	A	9	29	10	0	Measurement: This should mention that the UNECE/Eurostat/OECD Working Group on Statistics for Sustainable Development is developing a conceptual framework for measuring sustainable development and recommendations for indicator sets. A set of climate change mitigation input and outcome indicators should be included. (Candice Stevens, OECD)	Noted. Will check literature.
12-73	A	9	31	9	34	The 'Agenda 21' is dead now. I am not whether citation of Agenda 21 is adding any value to this topic. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject. Agenda 21 is still alive.
12-74	A	9	31	9	31	Here some reference to “the pragmatic approach to the concept of SD” taken and discussed in the Chapter 2 Section 2.5 (p.12) would be most valuable, since now the shift from principles to measurement leaves a gap between the these two levels without framing it in a way as it is done in the Chapter 2. In this section should also be some words about the indicators used in the report when the sectoral implications of mitigation are assessed focussing on three dimensions of SD (cf. Section	TIA. Will take into consideration into revision of section

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						12.3, p. 55, line 27–) (Government of Finland)	
12-75	A	10	46	17	17	Comment: I suggest to eliminate the points 12.2.1 in page 11, 12.2.1.1 in page 12 and 13(saving maybe Box 12.1), 12.2.1.2 page 14(maybe saving paragraph from line 10 to 21 for Millenium Ecosystems Assessment - MEA), 12.2.1.3 pages 14 and 15, SAVE THE TABLE 12.1 in page 16(with the amendment- in Table 12.1 maybe convenient to show moreover, the division of emissions in % of the global total in each gas, for OECD that includes EIT, and Developing countries whose sum in each horizontal is logically the 100%). AND BEGIN THE ANALYSIS BY POINTS Developed Countries, Economies in Transition(12.2.1.4), Developing Economies. IF IT IS DECIDES TO MAINTAIN I SUGGEST TO REALIZE CHANGES IN PAGES 11, 12, 13, 17 (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. No motivation provided for restructuring.
12-76	A	11	4	11	5	Please mention that these 'alternative development pathways' will not converge at the same time-scale target. There will also be spatial limitations as they cannot be implemented within a country with large geographical and socio-economic variations, for exampl, India and China.	Noted. Will be taken into account.

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						(Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	
12-77	A	11	4	14	37	"The choice of development policies can, therefore, be as consequential to future climate stabilization as the choice of climate-specific policies" (page 11, lines 4-6). This is a very important remark. But the consequences of it are rather vaguely dealt with in the next paragraph 12.2.1. Although I can understand that it is not appropriate to choose a mapped out path, more directions could be given about which way to go. In this respect I would suggest to describe, in (more) detail the four alternative scenarios of the Global Environmental Outlook (page 14, line 26) and what they mean in terms of climate change mitigation. Like was done in the first order draft. (Gert de Gans, Kerkinactie / ICCO)	Noted. There is a section on changing development paths later on (12.2.2).
12-78	A	11	18	11	18	To add: "...defined alternative development pathways might lead to such future outcomes at global, national, and local levels (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Accept.
12-79	A	11	25	12	0	Alternative Development Pathways: This should mention the institutional aspects of alternative development pathways. All countries should have National Sustainable Development Strategies	Noted. Will examine if there is literature linking national development strategies to climate change.

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						(NSDS) which include climate change mitigation approaches. These should be linked to Poverty Reduction Strategies (PRS) and also to the Millennium Development Goals (MDG). The UN and OECD are now reviewing how these strategies can be linked and made more coherent with respect to aspects such as climate change. (Candice Stevens, OECD)	
12-80	A	11	29	11	30	It is true that different socio-economic pathways improved public health at the micro-and macro level until 1990s. But since the wave of globalization, development pathways created a serious 'health divide' in both developed and developing countries through privatisation of health care system or making less resources available for public healthcare system (e.g. USA and India). I suggest to discuss this issue in this paragraph. (Monirul Mirza, Adaptation and Impacts Research Division (AIR), Environment Canada)	Accept. We also find the discussion a little confusing. To say human health has improved under different pathways seems to suggest that such improvements are independent of the pathway, i.e. that development pathways are irrelevant. The paragraph will be rewritten.
12-81	A	11	49	11	49	To add: "... Alternative development paths as well as climate policy determine quantity and quality of GHG emissions." (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. This is implicit
12-82	A	12	2	12	2	To add: "... Different sectors also have different conditions and priorities for alternative development	Accept. Will revise text.

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						choices to make.” (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	
12-83	A	12	19	12	20	While developing countries tend to follow...energy use.’ I think this statement is quite vague. What way developing countries tend to follow the developing countries? High energy uses or mis-uses? In many developed countries, energy consumption is high but it does not mean they all are used to attain economic benefit. From a single household to public offices/utilities, mis-use of energy is rampant. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Noted. Will revise by stating “While some suggest that developing countries...”
12-84	A	12	19	12	32	The paragraph is interesting but should give examples to be understood by policymakers. Suggestion : instead of after "lock-in effects." at line 26 insert "lock-in effects (e.g. building codes can be very cost-efficient if implemented early, see figure 6.4).... (ANTOINE BONDUELLE, Université Lille II)	Accept. Will refer to examples in Ch.3
12-85	A	12	32	12	32	add "The holistic strategy described in Chapter 2 Section 2.3.4 provides an example of such mainstreaming, with the viability of large scale bioenergy (i.e. a very large number of community scaled land improvement projects) depends upon	Reject. Statement on page 12, line 32 is a general statement and specific examples follow in the rest of the section.

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						both the socio-economic and the environmental sustainability of individual projects. Implementing the Strategy would see a progressive shift of investment by oil firms, 'from drilling to tilling', driven by rising biofuel obligations and sustainability constraints to deploy a wide range of bio and C-storing technologies world-wide, suited to local environmental and socio-economic conditions." (Peter Read, Massey University)	
12-86	A	12	34	12	45	Such studies really concern ex-post observations that seem to be just as much dependent on the choice of base-line than on the choice of alternative development path. Of course, developing countries will improve upon historical parameters of technological achievement and thus achieve some degree of mitigation success. But the real question is whether and how they are able to diverge from autonomous improvements through alternative pathways and how to measure such achievements. In this respect, the literature on the potential of technological leap-frogging and how to stimulate this may be of relevance. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	Accept first part.  Reject technological leapfrogging example because technology is not the issue here.
12-87	A	12	34	13	12	page 12/13, page 20, page 25, top page 52 and lines 9-11 page 61 all deal with energy security, oil price,	Noted. Will add a reference to other chapters' discussion on oil prices.

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						oil exports. In line with my comments to ch1 (line 17), and ch3 (line 94) this is a very important matter for sustainable development, in particular the opportunity to align energy security policy with climate policy (as per Ch3), and the comment on page 52 on the opportunity to reduce exposure to oil price by reducing oil imports. As per earlier comments, relevant references include IEA, ESMAP, IMF and others (references in comment to ch1) outline the 'severe' potential impacts of high oil prices on developing countries, providing a clear backdrop for supporting reduction in energy intensity and indigenous alternative energies amongst other approaches. For example, in its May 2004 'Analysis of the impact of high oil prices on the global economy', the IEA notes: "The adverse economic impact of higher oil prices on oil-importing developing countries is generally even more severe than for OECD countries. This is because their economies are more dependent on imported oil and more energy-intensive, and because energy is used less efficiently. On average, oil-importing developing countries use more than twice as much oil to produce a unit of economic output as do OECD countries. Developing countries are also less able to weather the financial turmoil wrought by higher oil-import costs." As noted in	

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						<p>Ch1 comments, the IMF, since 2004, has advocated the implementation of alternative energy and energy efficiency as a response to high oil prices, as well as enhanced oil production. The reference for this is the Communiqué of the International Monetary and Financial Committee of the Board of Governors of the International Monetary Fund, October 2004, April 16, 2005, and April 22, 2006 Communiques. In 2006 it reiterates that "The Committee emphasises the importance of further upstream and downstream investment, policies to promote energy efficiency, conservation, and alternative sources of energy."</p> <p>(Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)</p>	
12-88	A	12	35	12	39	<p>The example cited here of six developing countries avoiding 300 MtC-eq. (MtCO2-eq?) emissions is cited several times in this report, but not fully explained anywhere. Chapter 12 would seem to be the best place to for this explanation. Box 12.1 provides an explanation of Brazil's efforts, but a similar, albeit briefer, explanation of what was done in the other five countries is needed.</p> <p>(Lenny Bernstein, L. S. Bernstein &amp; Associates, L.L.C.)</p>	Accept. Will elaborate.
12-89	A	12	43	12	44	To add: "... (e.g., efficiency and conservation,	Accept.

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						education and awareness) (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	
12-90	A	12	47	12	47	Delete “politically.” Using domestic resources does increase energy security. It is not just a matter of being politically attractive. The question is what weight should energy security be given compared with other national goals. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	Noted. Will add “and/or economically” after politically.
12-91	A	13	5	13	9	Yes, by pursuing energy generation through natural gas fired thermal power stations, you can still get emission of carbon but comparatively a small fraction of that from coal or oil fired thermal stations. Please mention this. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Noted. Will reword.
12-92	A	13	35	13	50	Two issues here. First, increase in small engine vehicles can make urban traffic jam problem more acute. Example, Dhaka where increased number of small vehicles making the streets congested. Second, the choice of fuel is also important in reducing GHG emissions. For examples, in Dhaka, Bangladesh, replacement of two-stroke petrol fueled 3-wheelers have been replaced by 4 stroke-LPG fueled three wheelers. I believe in Brazil, bio-fuel	Reject. Will precise that the example treated in Box 12.1 is not about ethanol.

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						(ethanol) played a major role in reducing GHG emissions. I suggest to discuss these two issues in the Box 12.1. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	
12-93	A	13	35	14	1	Box 12.1 can be enriched by linking up with chapter 7 section 7.7 where such instances of energy efficiency measures and overall impact has been mentioned with literature references in the context of many countries. (Joyashree Roy, Jadavpur University)	Reject. We disagree for consistency reasons. Otherwise we would have to add cross-reference to other chapters in any instance we cite a sectoral measure.
12-94	A	13	35	13	0	Box 12.1 six line To add: "...In Brazil, any programs and measures....." (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. Poor language.
12-95	A	14	5	14	35	Scenarios describe different states of the world and these states of the world have indeed very different consequences in terms of energy use and GHG emissions. The driving forces between such scenarios are usually of a geopolitical nature that are not very amenable to national policy making intended to affect indicator of sustainability. To make this finding useful to policy makers, one should better delineate its consequences in terms of the necessity to make alternative development pathways (guided by conscious policy choices)	Agree. Will find appropriate language.

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						robust for the very different global environment that nations may face in the future. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	
12-96	A	14	10	14	21	I suggest to discuss very briefly (prerebly in a box) the assumptions made for four scenarios-adaptation mosaic, techno-garden, global orchestration and order from strength of the MEA. In the Scenarios Working Group Report of the MEA, GHG emissions have also been assessed. Note that these four scenarios and assumptions are also been adopted for the on-going International Assessment on Agricultural Science and Technology for Development (IAASTD). Prof. Mohan Munasinghe has made an excellent summary of these scenarios (including UNEP, USNICs) in his upcoming book on 'Sustainable Development'. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject. Section 12.2.1.2 is just here to make the points that “there are alternative development paths” and that “most scenarios do not consider climate change”. Section 12.2.1.2 is not here to review scenarios in details.
12-97	A	14	38	15	0	Section 12.2.1.3 -- points made in this section are too vague to be useful. Either relate to SD pathways or drop. (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted. Will improve section 12.2.1.3.
12-98	A	17	1	17	5	It will be worthwhile to see an analysis of mitigative capacity in terms of PPPs. There has a critical criticism of the SRES scenarios assumptions based	Reject. We do not quantify mitigative capacity.

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						on GDP growth. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	
12-99	A	17	1	17	1	To add: "The mitigation capacity of these countries varies with their ability to pay for abatement costs and availability of financial resources." (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. This would be redundant
12-100	A	17	8	0	0	should read "correlated WITH" (Danny Harvey, University of Toronto)	Accept.
12-101	A	17	16	17	16	To add: "....., simply because the opportunity cost in terms of basic development needs is too high, and its scarce resources need to be dedicated to fight against the hunger, poverty, and oil prizes." (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Noted. Will make text more explicit.
12-102	A	17	20	21	10	The chapter follows traditional division of the world into developed, developing and economies in transition countries. I wonder whether some other literature can be included that actually uses development indicators to distinguish different groups of countries. A more dynamic approach to defining country groups might be more suitable. Development indicators such as GNP per capita, energy and electricity use per capita, poverty,	Reject. Discussion on country groupings is already conducted in section 12.2.1.3.

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						governance issues, access to information, internet, health care and education - might provide a better basis for distinguishing various groups of countries. (Ellina Levina, OECD)	
12-103	A	17	35	17	38	yes, the developed countries possess comparative advantages, but unless these advantages are translated into meaningful action programs, they seem to me useless. For example, having all these advantages, many developed could not achieve the targets instead GHG emissions have increased. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Noted. Will refer to this point in the text, but there is not that much literature about it.
12-104	A	17	47	17	47	To add: "... That is to be addressed through specific climate change policies, and not of integral manner." (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. Unclear.
12-105	A	17	50	0	0	should read "suggest THAT" (Danny Harvey, University of Toronto)	Accept.
12-106	A	18	2	18	2	To add: "... This appears to be typical for the approach many developed countries take. Other countries as USA aren't part of Kyoto Protocol and don't have a clear strategy for decrease GHG emissions, only isolated actions, and not in an integral manner." (CRISTOBAL FELIX DIAZ MOREJON,	Noted.

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						MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	
12-107	A	18	4	18	11	<p>On alternative development pathways, the global concern from the beginning of climate change debate was that energy systems with very low carbon emissions alone cannot solve the problem of high emissions from the industrialized countries; these countries must change their life style from the present high consumptive pattern of life style. Until and unless the north changes its present lifestyle there is little hope for the humanity to stabilize the concentrations of the greenhouse gases in the atmosphere in future. This requires a social movement in the north and to appreciate and understand the lifestyle patterns of the south. At the same time, the industrialized countries must continue to develop environmentally sound technologies and develop a mechanism internationally acceptable for transferring such proven technologies in the north to southern countries (developing countries).</p> <p>Over and above such policies, the affluent countries must transfer adequate funds for development of low carbon emissions technologies in the south. For example, India with its large technically qualified human resources and capable institutions can be entrusted to develop such technologies for south-</p>	Reject. We can't accept the recommendations made in the comment because they are policy prescriptive. Will check if the concept of "lifestyle" gets sufficient attention in the chapter.





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						south transfer, as well as to north wherever appropriate. (Government of India)	
12-108	A	18	6	18	9	"However, a fundamental and broad discussion in society on the implications of alternative development pathways for climate change in general and climate change mitigation in particular in the industrialized countries has not seriously been initiated". Again, a very important sentence; also in relation to my first comment. The question is what the consequences are of not seriously embarking on alternatives. (Gert de Gans, Kerkinactie / ICCO)	Noted. Thanks
12-109	A	18	17	18	17	It seems that the section heading 12.2.1.4 is not appropriate because the text of this section still belongs to the previous section and the section title does not cover the actual contents. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	Accept.
12-110	A	18	28	18	28	In other areas...". What are they? (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Accept. Will provide examples.
12-111	A	18	46	0	0	change "which" to "that" (Danny Harvey, University of Toronto)	Accept.
12-112	A	19	12	19	14	Comment: Actually more than 1,1 billion people in the World don't have access to clean water. The MDG compromise is to reduce to half the people	Noted. Will check number.

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						without access to clean water by 2015. The reduction to 210 millions people is unattainable by 2015, or exists a mistake in the data. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	
12-113	A	19	14	19	14	To add: "... 7% in East Asia and the Pacific; more difficult will be the situation with access to sanitation services, because the people without at this moment more and less are 2,6 billions, and MDG is to reduce to half the people without access by 2015, and more critical is the adequate treatment of wastewaters. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. Too much detail.
12-114	A	19	15	19	17	Due to lack of equity in resource distribution, 'relative poverty' in many developing economies are on the rise. It is also true for many developed economies. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Noted.
12-115	A	19	19	19	25	While many developing countries emission will be higher than the industrialized world, I think the missing point here is the equity of emission. Per capita emission will still be lower than the industrialized world. Please mention this in order to	Accept. Will refer to relevant discussion in Ch.1.

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						make the argument clearer. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	
12-116	A	19	19	19	24	Some of these large developing countries, being on the list of top 25 emitters, still have a very low emission per capita and a high percentage of the population below the poverty line (\$1 a day). E.g. India with 1.2 tons of CO2 per capita and 35% of population below the poverty line. There is not much difference with the 'other' developing countries with emphasis on poverty alleviation. The alternative development choices are very limited. Moreover, from an equity point of view, they are not yet using their fair share of the atmosphere to absorb CO2. (Gert de Gans, Kerkinactie / ICCO)	Accept. Will refer to relevant material in Ch.1.
12-117	A	19	27	19	28	It is true but also mention that developing countries will have to bear the impacts as well as costs towards adaptation measures to mitigate the effects of climate change due to emissions caused by developed countries. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Noted. Will check the reference for costs.
12-118	A	19	27	19	35	Since COP8 and the Delhi Declaration, considerable focus has been placed to vulnerability and adaptation to climate change (V&A), and a number of international conferences, workshops,	Reject. Treated in WGII report.

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						discussions in COPs and in COP side events have highlighted, the fact that a sound development in the developing country is the surest strategy to increase the resilience and coping capacity of these countries and communities against the adverse impacts of climate change. Here again appropriate and environmentally sound technologies can play an important role in addressing both the mitigation and adaptation to climate change in developing country. (Government of India)	
12-119	A	19	28	19	28	Higher GDP and economic capacity of a country does not necessarily mean they have high adaptive capacity. It is more dependent on the planning, response and recovery planning. Example, Hurricane Katrina that occurred in the US Gulf Coast in 2005. On the other hand, Canada recovered very quickly from the ice storm 1998. Bangladesh is economically disadvantaged but its adaptive capacity is higher than many medium to high income countries. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject. Discussion on adaptive capacity is in WGII report.
12-120	A	19	34	19	35	This statement is not completely true. It depends on the type of energy. Improved access to solar, natural gas and bio-fuel contributes to less GHG emissions. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Reject. The text does not say that improved access to energy will, but that it <i>can</i> lead to increasing emissions.

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12-121	A	19	37	19	37	To add: "..... is the adoption of a comprehensive adaptation, mitigation, and vulnerability assessment....." (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. Mitigation is not a country.
12-122	A	19	40	19	45	I think it should be mentioned in this paragraph or somewhere else that in some cases sustainable development would not be possible because of climate change. For example, "Many Tuvaluans are already leaving their Pacific island homes and moving their communities to safer ground in New Zealand, thus officially becoming environmental refugees. In late 2005, over 100 villagers of the Pacific island Tegua, in Vanuatu, were relocated to higher ground to be protected from aggressive storms and waves. The move, done under the project Capacity Building for the Development of Adaptation in Pacific Island Countries, might represent the first example of formal mass displacement as a result of climate change". (from the 2006 State of the Future) Also information on this can be found on <a href="http://www.immigration.govt.nz/migrant/stream/live/pacificaccess/">http://www.immigration.govt.nz/migrant/stream/live/pacificaccess/</a> , and <a href="http://www.germanwatch.org/download/klak/fb-tuv-e.pdf">http://www.germanwatch.org/download/klak/fb-tuv-e.pdf</a>	Reject. Too detailed.

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						(Ellina Levina, OECD)	
12-123	A	20	0	20	0	transportation should be included here (Expert Review Meeting Paris, IPCC)	Noted. Consider restructuring the section.
12-124	A	20	5	20	15	Transportation sector is extremely important in many developing countries. I think it should also be mentioned in this paragraph. (Ellina Levina, OECD)	Noted. Consider restructuring the section.
12-125	A	20	35	0	0	change "which" to "that" (Danny Harvey, University of Toronto)	Accept.
12-126	A	20	36	0	0	change "which" to "that" (Danny Harvey, University of Toronto)	Accept.
12-127	A	21	1	21	7	Comment: I think that recommendation for developing countries is valid too for industrialized world in terms of more energy efficiency, sustainable production and consumption patterns and use of renewable energy. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. We say "also".
12-128	A	21	9	50	30	I suggest to eliminate points 12.2.2 and 12.2.3 completely, because the reflected aspects in its aren't of the main subjects of the Chapter. I think that written matters are elements of another Chapters or WG and not in the analysis of relationship among SD and Mitigation. (CRISTOBAL FELIX DIAZ MOREJON,	Reject. Section 12.2.2 and 12.2.3 are the main elements of our chapter.

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						MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	
12-129	A	21	25	23	2	As stated before I believe this section would be more appropriate as an introductory text indicating that the historical evidence shows the difficulties of decoupling GHG emissions from economic development in an absolute sense. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	Accepted. Section 12.2.2.1 moved up.
12-130	A	21	25	23	2	In the United Nations Framework Convention on Climate Change (UNFCCC) it was noted that per capita emissions in developing country are still relatively low and that the share of global emissions originating in developing country will grow to meet their social and development needs. Fast growing developing economies with the prevalent technologies in those countries are bound to increase their emissions in the course of their development. Another important point to bear in mind is that the Millennium Development Goals cannot be effectively addressed and fulfilled without rapid economic development in these countries. The developed countries as per the article 4.3 are required to provide financial resources including transfer of technologies. But so far not much progress has been made in this regards. There is, therefore a clear need for	Noted. But there is no suggestion in the comment.

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						compliance by the developed countries of such convention related global obligations in a time bound manner. (Government of India)	
12-131	A	21	27	21	35	This paragraph is not in the least bit clear. At the very least add "under business as usual" to the end of the first sentence (in line 27). It is subsequently unclear whether "On the one hand...." (2nd sentence, beginning line 28) and "On the other hand..." (3rd sentence, beginning line 30) are the same thing as "Both factors" in the fourth sentence (beginning line 32). If they are, then it is hard to see how "only the former factor results in a reduction of emissions" applies, since it has already been stated that an expanding economy (the first factor?) pushes emissions upwards. (Pat Finnegan, Grian)	Accept. Paragraph to be rewritten.
12-132	A	22	39	22	43	I conclude from the previous paragraphs, that in fact there IS pretty good evidence that emissions rise in line with GDP percapita, if appropriate corrections are made eg for offshore embedded emissions in imports to wealthy countries (Andrew Dlugolecki, University of East Anglia)	Reject. Literature does not support point made in comment. Will clarify text.
12-133	A	22	46	22	50	I cannot remember where, but I am sure I saw recently that the miraculous performance of China's emssions has been faulted, as being due to a change in the way the energy sector was managed or	Noted. Will provide qualifying statement and add references.

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						regulated, or statistics were compiled. (Andrew Dlugolecki, University of East Anglia)	
12-134	A	23	33	25	37	Access to energy, Energy efficiency, energy security contribute to sustainable development. In the SAR & TAR considerable theories have been discussed. In the Fourth Assessment Report which is more focused to developing country the attempt must be to discuss down to earth solutions, costs of such solutions, and who provide such costs to the developing country. (Government of India)	Noted. Will elaborate on affordability of measures discussed in 12.2.2
12-135	A	23	35	25	37	Reading the sections on energy one gets the impression that the impact of socio-economic policies on GHG emissions is mostly ambiguous. Most socio-economic policies are however directed at increasing economic growth in one way or another and as has been shown in the previous paragraph growth is bound to increase GHG emissions in most instances. By focussing on the direct impacts in a few case studies, one loses sight of the main impact through effecting growth rates. (.)	Noted. Will clarify whether policies impact on emissions intensity of GDP or on emissions.
12-136	A	24	0	24	0	The section of energy security is on page 24, with its conclusion being divided over the chapter. The liberalisation section on page 24 could look at energy policies discussion rather than just energy subsidies.	Reject first part of comment. Unclear  Accept second part of comment. Will try and find literature on measures other than energy subsidies.

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						In the markets section can be condensed down to 2 paragraphs. (Expert Review Meeting Paris, IPCC)	Reject third part of comment. Unclear.
12-137	A	24	23	24	49	The paragraph on liberalization is well balanced and gives a fair view to the issue. This was not obvious for such a charged issue. Congratulations. (ANTOINE BONDUELLE, Université Lille II)	Thank you.
12-138	A	24	28	24	48	The discussion on liberalisation focusses exclusively on the impacts of reducing subsidies in fossil fueled countries. In general however liberalisation aims to improve sector efficiency which is supposed to have the overall effect of reducing energy prices relative to a non-liberalised sector and thus raising energy demand. In addition, liberalisation improves the efficient functioning of markets in general, thus making it possible to create effective markets for CO2 credits such as the European cap-and-trade regime. (.)	Accept. See 12-136.
12-139	A	24	28	24	48	discussion on liberalization seems to intertwine discussion of market liberalization measures and subsidy removal - yet these might be quite separate actions. For example, in principal we have liberalized energy and agriculture markets (compared to previous decades) but we still have quite high levels of subsidies in some regions and nations. I know this is the case in the OECD and	Accept. See 12-136.

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						am guessing it is also the case elsewhere. OECD work might be relevant -- see: <a href="http://www.oecd.org/document/1/0,2340,en_2649_37425_36566913_1_1_1_37425,00.html#TOC">http://www.oecd.org/document/1/0,2340,en_2649_37425_36566913_1_1_1_37425,00.html#TOC</a> ; or contact <a href="mailto:candice.stevens@oecd.org">candice.stevens@oecd.org</a> (Jan Corfee-Morlot, University College London (on leave from OECD))	
12-140	A	25	1	25	37	LNG use in Indian transport sector through policy intervention deserves mention. (Government of India)	Noted. Will try and find reference and see if it fits.
12-141	A	26	1	26	20	Box 12.2, France is special due to heavily dependence on nuclear energy. (Junichi Fujino, NIES)	Agreed. This is the point of the box.
12-142	A	26	10	27	0	Figures 12.2 and 12.3 should be combined and will make more easily comparable (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Agreed.
12-143	A	26	0	0	0	Box 12.2 is useful to understand national variations under the same sets of constraints. But the explanation is not factual in the case of France, because variations in the hydrocarbon consumption happened both in the electrical sector and in housing. The latter happened because of building codes enacted in 1975 and well documented in the literature (for example IEA surveys). The sentence should be : "They show that France moved aggressively to develop domestic supply of nuclear	Noted. Will check, and if appropriate, include.

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						energy and more stringent building codes; that Japan..." (ANTOINE BONDUELLE, Université Lille II)	
12-144	A	28	31	28	48	Top down planning process has failed to find solutions for rural development in developing country whose majority of population lives in rural areas. The Fourth Assessment Report need to discuss and address bottom up process e.g. asking rural people what they need for their life and livelihoods and integrating these requirements through policies in a bottom up process to enable an optimum utilization of scarce resources. (Government of India)	Noted. It is a research question whether participatory approaches have different implications on emissions than top-down approaches.
12-145	A	28	31	28	48	rural development covers wider areas than agriculture. The discussion is mainly made on agriculture and forestry sectors. Housing, access to electricity, physical infrastructure and education/health are more pertinent rural development issues. Suggestion: change the sub-section heading to agriculture. (Government of China Meteorological Administration)	Noted. Will try and expand section, or will change title.
12-146	A	29	3	0	0	change "like" to "such as" (Danny Harvey, University of Toronto)	Accept.
12-147	A	30	1	30	2	"Empirical analysis, however, do not confirm the "race to the bottom" hypothesis (Wheeler, 2001)". Needs mention that there does not exist enough	Reject. Additional references to be provided.

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						literature that correctly tests pollution heaven hypothesis. Otherwise it contradicts with chapter 7 where it is said that energy intensive industries whose share in emissions is the highest are currently located in developing countries. (Government of India)	
12-148	A	30	6	30	46	I find the title of this paragraph somewhat misleading in the sense that the observations are valuable, but not directly related to the sectoral discussions. From the sectoral discussions I would indeed conclude that it is possible to have win-win situations, but that they appear to arise by coincidence rather on purpose. Moreover, the most important general observation would be that most socio-economic policies appear to receive a higher priority than climate change policies. This means that alternative development pathways would undoubtedly involve changing priorities between socio-economic and environmental goals rather than looking for scarce and costly win-win solutions. Also, with respect to attaining production frontiers this would directly effect overall growth rate and thereby induce higher growth which would at least partially offset any climate change gains. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	Noted. Will expand discussion on production frontier and incorporate above.  Rest of points made in the comment were the intention of the section.
12-	A	30	11	30	11	surely this should read "not close"- if the sector is	Accept.

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149						far from the production frontier? (Andrew Dlugolecki, University of East Anglia)	
12-150	A	30	0	44	0	<p>More specifically:</p> <ul style="list-style-type: none"> <li>As the text implies actors and actor coalitions are important. But there is increasing evidence of multi-level patterns of governance and transnational networks of influence on climate change and other global environmental issues. These networks join actors across organisational boundaries – ie. Business representatives and environmental non-governmental organisation activists, may join shareholders, government policy communities and scientists to promote (or stall) action (Biermann and Dingwerth 2004; Fairhead and Leach 2003; Haas 1990; Haas 2004; Levy and Newell 2005; Newell 2000; Paterson, Humphreys and Pettiford 2003). Also local and regional governments are increasingly active and may provide invaluable testing ground and experience with mitigation policy in key areas such as transportation (Betsill and Bulkeley 2004; Bulkeley and Betsill 2005; Lindseth 2004). This suggests that policymakers could do a number of things differently to promote understanding of climate change and agreement on policy responses to climate change: <ul style="list-style-type: none"> <li>o Create “policy spaces” for non-state actors, scientists and experts to interact with government</li> </ul> </li> </ul>	Accept. This is an extremely interesting comment, with lots of good references. Thank you very much.

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						<p>actors; actively facilitate interactions between experts and other stakeholders to build trust, understanding and support for action across a wide range of actors (Ostrom 1990; Ostrom 2000a; Ostrom et al. 2002; Stern 2000; Stern and Fineberg 1996). Such activity will provide benefits if built both from the bottom-up (ie. Building on experience and viewpoints from an increasingly active municipal &amp; community level set of response) and from the top-down (ie. Working across elites in government or in scientific/expert and other NGO circles ).</p> <ul style="list-style-type: none"> <li>o Institutionalise opportunities for public debate and wide interactions within the public sphere on environmental issues (Bulkeley and Mol 2003; De Marchi 2003; Liberatore and Funtowicz 2003; Renn 2001). By creating the means for dialogue and collaboration to construct understanding about global environmental change participants have the opportunity to formulate views – talk leads to value formation – which can ultimately generate public support for political action (Dietz 2003b; Dietz and Stern 1995).</li> <li>o Encourage and facilitate local action and experimentation – where local communities have the potential to work more closely with affected stakeholders and tailor response strategies to the</li> </ul>	

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						<p>values &amp; norms of the community(Cash and Moser 2000). Local action on climate change interacts with governance and action taken at different scales (e.g. at national and international level)(Bulkeley and Betsill 2005).</p> <ul style="list-style-type: none"> <li>• Domestic policy processes influence international policy opportunities and constraints on climate change (Fisher 2004). Any domestic policy process will necessarily be working to develop a position with input across the range of actors – e.g. market, state, civil society and science/expert communities (Fisher 2004; Hajer 1995; Social Learning Group 2001). How this plays out will to some extent be influenced by different cultural and social biases in governance at the domestic level (e.g. whether science and business have a privileged role in the policy process; the access and influence of environmental organisations; how coalitions of actors across these groups interact with the policy process).</li> <li>• On issues of global environmental change, scientists and other experts necessarily play a privileged role to advise governments (Beck 1992a; Giddens 1991; Jasanoff 1990; Jasanoff and Wynne 1998; Yearley 1994), forming what Haas has referred to as transnational epistemic communities or networks of influence (Haas 1990;</li> </ul>	

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						<p>Haas 2004). (this brings us back to the importance of epistemic communities – those experts/scientists that have converging causal beliefs about climate change - its members share a common interpretive framework, or “consensual knowledge,” from which they convert such facts, or observations, to the policy-relevant conclusions. (Haas, 1990: 55).</p> <ul style="list-style-type: none"> <li>• Thus agreeing on scientific fact differs from bringing meaning to such facts in a political context – where political process mediates amongst different perspectives and interpretations to converge on a particular framing of a contested issue – that supports decision-making at any one point in time (Herrick 2004; Kingdon 1984; Schon and Rein 1994). Given large uncertainties, global environmental change science argues for policy process that gives a central role to public deliberation about the issues – to facilitate common framings about the problem and eventual agreement on responses (Funtowicz and Ravetz 1993; Hajer and Wagenaar 2003; Stern and Fineberg 1996).</li> <li>• When discussing the market influences – the role of business or business views – it would be helpful to distinguish between multinationals and smaller, entrepreneurial enterprises. A recent UK report identifies a difference in perspectives and approaches to global climate change in these two</li> </ul>	

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						<p>groups of businesses, with multinationals taking a long-term view, positioning for the future based on broad policy directions (Hamilton and Kenber 2006). By contrast smaller businesses, entrepreneurs or venture capitalists are going to be much more sensitive to the details of immediate or shorter term policy reforms. Similarly there may be a difference even within multinational sector amongst the energy suppliers (e.g. electricity producers/distributors, oil companies, or even coal companies) compared to energy intensive industries (e.g. chemical or aluminium companies), with the former taking a longer term, market development or pro-active view and the later a more re-active view (e.g. (BIAC/OECD/IEA 1999a; BIAC/OECD/IEA 1999b)). Finally there are firms that are likely to be “winners” with any effort to advance sustainable development through clean energy policies (e.g. insulation industry, window manufacturers, energy service companies) and those likely to be “losers” (e.g. RFF work). In summary it is difficult to speak about what the “market” sector preferences are because there are different types of businesses with significantly different perspectives in different places.</p> <ul style="list-style-type: none"> <li>• Also in the “market” discussion, it might be valuable to mention institutional investors, and the</li> </ul>	



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						<p>growing concern in some business circles about liability due to inaction on climate change. This has led to a growing number of stakeholder initiatives to have publicly owned companies become pro-active on climate change, and a growing number of initiatives to monitor and manage ghg emissions even in the absence of domestic legislation and mandatory requirements (see (Cogan 2006; Innovest 2005)).</p> <p>References            Beck, Ulrich. 1992a. Risk Society: Towards a New Modernity. London: Sage.            Betsill, Michele M, and Harriet Bulkeley. 2004. "Transnational Networks and Global Environmental Governance: The Cities for Climate Protection Program." International Studies Quarterly 48:471-493.            BIAC/OECD/IEA. 1999a. "Workshop on Climate Change: Industry View on the Climate Change Challenge with Special Emphasis on the Kyoto Mechanisms - Industry Sector Reports." Pp. 54. Paris: OECD/IEA.            —. 1999b. "Workshop on Climate Change: Industry View on the Climate Change Challenge with Special Emphasis on the Kyoto Mechanisms - Workshop Summary." Pp. 54. Paris: OECD/IEA.</p>	

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						<p>Biermann, Frank, and Klaus Dingwerth. 2004. "Global Environmental Change and the Nation State." <i>Global Environmental Politics</i> 4:1-22.</p> <p>Bulkeley, H., and A.P.J. Mol. 2003. "Participation and Environmental Governance: Consensus, Ambivalence and Debate." <i>Environmental Values</i> 12:143-154.</p> <p>Bulkeley, Harriet, and Michele M Betsill. 2005. "Rethinking Sustainable Cities: Multilevel Governance and the 'Urban' Politics of Climate Change." <i>Environmental Politics</i> 14:42 - 63.</p> <p>Cash, David W., and Susanne C. Moser. 2000. "Linking global and local scales: designing dynamic assessment and management processes." <i>Global Environmental Change</i> 10:109-120.</p> <p>Cogan, Douglas. 2006. "Corporate Governance and Climate Change: Making the Connection." Pp. 300. Boston, MA: CERES.</p> <p>De Marchi, B. 2003. "Public participation and risk governance." <i>Science and Public Policy</i> 30:171-176.</p> <p>Dietz, Thomas. 2003b. "The Darwinian Trope in the Drama of the Commons: Variations on Some Themes by the Ostroms." Paper prepared for the Academic Conference in Honor of the Work of Elinor and Vincent Ostrom, George Mason University, Arlington, Virginia.</p>	

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						<p>Dietz, Thomas, and Paul C. Stern. 1995. "Toward a theory of choice: Socially embedded preference construction." 24:261-279.</p> <p>Fairhead, James, and Melissa Leach. 2003. <i>Science, Society and Power: Environmental Knowledge and Policy in West Africa and the Caribbean</i>. Cambridge: Cambridge University Press.</p> <p>Fisher, D.R. 2004. <i>National Governance and the Global Climate Change Regime</i>. Lanham MD: Rowman and Littlefield Publishers, Inc.</p> <p>Funtowicz, S., and J. Ravetz. 1993. "Science for a Post-Normal Age." <i>Futures</i> 25:739-755.</p> <p>Giddens, Anthony. 1991. <i>Modernity and Self-Identity: Self and Society in the Late Modern Age</i>. Stanford: Stanford University Press.</p> <p>Haas, P. 1990. <i>Saving the Mediterranean: the Politics of International Environmental Cooperation</i>. New York City: Columbia University Press.</p> <p>Haas, Peter M. 2004. "When does power listen to truth? A constructivist approach to the policy process." <i>Journal of European Public Policy</i> 11:569-592.</p> <p>Hajer, Maarten A., and Hendrik Wagenaar (Eds.). 2003. <i>Deliberative Policy Analysis: Understanding Governance in the Network Society</i>. Cambridge: Cambridge University Press.</p>	

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						<p>Hajer, Martin. 1995. The Politics of Environmental Discourse. Oxford: Oxford University Press.</p> <p>Hamilton, Kirsty, and Mark Kenber. 2006. "Business Views on International Climate and Energy." Pp. 56: Business Council on Sustainable Energy, UK</p> <p>The Climate Group.</p> <p>Herrick, Charles N. 2004. "Objectivity versus narrative coherence: science, environmental policy, and the U.S. Data Quality Act." Environmental Science &amp; Policy 7:419-433.</p> <p>Innovest. 2005. "Carbon Disclosure Project 2005." Pp. 154. London: Carbon Disclosure Project.</p> <p>Jasanoff, Sheila. 1990. The fifth branch: science advisers as policymakers. Cambridge, Mass: Harvard University Press.</p> <p>Jasanoff, Sheila, and Brian Wynne. 1998. "Science and decisionmaking." Pp. 1-87 in Human Choice and Climate Change, edited by S. Rayner and E. L. Malone. Columbus, OH: Batelle Press.</p> <p>Kingdon, J.W. 1984. Agendas, Alternatives, and Public Policies. Boston, MA: Little-Brown.</p> <p>Levy, David L., and Peter J. Newell (Eds.). 2005. The Business of Global Environmental Governance. Cambridge, MA and London: MIT Press.</p> <p>Liberatore, A., and S. Funtowicz. 2003. "'Democratising' expertise, 'expertising' democracy:</p>	

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						<p>what does this mean, and why bother?" Science and Public Policy 30:146-155.</p> <p>Lindseth, Gard. 2004. "The cities for climate protection campaign (CCPC) and the framing of local climate policy." Local Environment 9:325-336.</p> <p>Newell, Peter. 2000. Climate for Change: Non-state Actors and the Global Politics of the Greenhouse. Cambridge: Cambridge University Press.</p> <p>Ostrom, E. 1990. Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press.</p> <p>Ostrom, Elinor. 2000a. "Collective Actions and the Evolution of Norms." Journal of Economic Perspectives 14:137-158.</p> <p>Ostrom, Elinor, Thomas Dietz, Nives Dolsak, Paul C Stern, Susan Stonich, and Elke Weber (Eds.). 2002. The Drama of the Commons. Washington, D.C.: National Academy Press.</p> <p>Paterson, Matthew, David Humphreys, and Lloyd Pettiford. 2003. "Conceptualizing Global Environmental Governance: From Interstate Regimes to Counter-Hegemonic Struggles." Global Environmental Politics 3:1-10.</p> <p>Renn, O. 2001. "The role of social science in environmental policy making: experiences and outlook." Science and Public Policy 28:427-437.</p>	

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						<p>Schon, D., and M. Rein. 1994. <i>Frame Reflection: Toward the Resolution of Intractable Policy Controversies</i>. New York, NY: Basic Books.</p> <p>Social Learning Group, [SLG] (Ed.). 2001. <i>Learning to Manage Global Environmental Risks: A Comparative History of Climate Change, Ozone Depletion and Acid Precipitation</i>. Cambridge, MA: MIT Press.</p> <p>Stern, Paul C. 2000. "Toward a Coherent Theory of Environmentally Significant Behavior." <i>Journal of Social Issues</i> 56:407-424.</p> <p>Stern, Paul C., and Harvey V. Fineberg (Eds.). 1996. <i>Understanding Risk: Informing Decisions in a Democratic Society</i>. Washington D.C.: National Academies Press.</p> <p>Yearley, S. 1994. "Social movements and environmental change." Pp. 150-168 in <i>Social Theory and the Global Environment</i>, edited by Michael Redclift and Ted Benton. London and New York: Routledge.</p> <p>(,)</p>	
12-151	A	31	21	33	0	<p>Governance: This should explain that devising effective climate change mitigation strategies is dependent on good governance practices, which is the essence of sustainable development: whole-of-government decision-making; policy synergies among economic, environmental and social aspects;</p>	Noted. Add short sentence to this effect.

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						coalition-building; political leadership; integrated approaches; and policy coherence. (Candice Stevens, OECD)	
12-152	A	31	29	0	29	suggest to add to end of sentence "among which global environmental risks figure prominently". (Jan Corfee-Morlot, University College London (on leave from OECD))	Accept.
12-153	A	31	30	0	39	I do not think this view -- that governments have a diminished role -- on global environmental change issues is widely supported in the literature. I also do not think that this is a fair conclusion to be drawn from the discussion of from government to governance (see for example Ostrom's work on institutions and governance of the commons; or Liverman's comment that governments need for international cooperation grew with liberalising trade and globalised economies). Perhaps these citations deal more with the role of governments more generally in guiding social and economic development? On environmental issues, a strong case has been made on the need for government policy to ensure delivery of environmental protection as a public good. op.cit -- see also OECD 2001 on the government/policy role or Haas, Keohane and Levy 1993 for a neo-institutional perspective. In any case governments create the rules, the norms and the organisations that are	Accept. Will balance writing on role of governments.

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						<p>normally referred to a guiding the behaviour of actors with respect to the global environment. The refs cited here emphasise the role of governments to create policy spaces &amp; institutions that build trust and social capital to facilitate collective decision making about the global environment. OECD. 2001c. Sustainable Development: Critical Issues. Paris: OECD.</p> <p>Haas, P., Robert O. Keohane, and Marc A. Levy (Eds.). 1993. Institutions for the Earth. Cambridge, MA: The MIT Press.</p> <p>Liverman, Diana M. 1999. "Geography and the Global Environment." Annals of the Association of American Geographers 89:107-120. Ostrom, Elinor, Thomas Dietz, Nives Dolsak, Paul C Stern, Susan Stonich, and Elke Weber (Eds.). 2002. The Drama of the Commons. Washington, D.C.: National Academy Press.</p> <p>(Jan Corfee-Morlot, University College London (on leave from OECD))</p>	
12-154	A	31	45	0	50	<p>Still others would argue that states have increased their power because they are decision-makers at a global level.</p> <p>(Elizabeth Malone, Joint Global Change Research Institute)</p>	Noted. See 12-153
12-	A	31	0	50	0	I find these pages well-written and crucial in the	Accept. Points to be addressed in

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155						sense that they signal the immense importance of good governance for sustainable development purposes in general and explain the different roles that various actors can play in the process. Good governance is a truly win-win option for sustainable development and climate change mitigation. However, I find this part of the chapter somewhat longish in relation to the treatment of other topics. I would recommend shortening the text somewhat particularly where the relation with climate change mitigation is less immediate. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	rewriting Ch.12 and TS.
12-156	A	32	22	32	22	I cannot believe anyone believes that competition and the market by itself will be satisfactory- it is a combination of market and regulation (Andrew Dlugolecki, University of East Anglia)	Noted.
12-157	A	32	37	0	0	Hajer and Wagenaar 2003 (see general comments) also make this point -- reviewing a broader literature. (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted.
12-158	A	32	49	33	1	You might want to cite North who makes a persuasive argument that economic development is closely intertwined with institutional capacity and development: North, Douglass C. 2005. Understanding the Process of Economic Change.	Reject. This is a different point.

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						Princeton, NJ: Princeton University Press.  (Jan Corfee-Morlot, University College London (on leave from OECD))	
12-159	A	32	0	34	0	see general comments above on governance, networks of actors, multi-level governance for the global environment -- missing transnational dimension, central role of government (policy communities) and science/expert actors (Jan Corfee-Morlot, University College London (on leave from OECD))	Accept.
12-160	A	34	2	36	10	This is an important topic -- the diversity of national styles or cultures -- and is equally important in a discussion of policy implementation in various sectors. (Elizabeth Malone, Joint Global Change Research Institute)	Thank you.
12-161	A	35	1	37	41	the cases and references are all rather old (Andrew Dlugolecki, University of East Anglia)	Accept. Will try and find more recent literature when appropriate.
12-162	A	35	15	35	15	Increasingly the EU is taking the lead, rather than national governments (Andrew Dlugolecki, University of East Anglia)	Noted. Will drop 'national' in sentence.
12-163	A	35	20	35	22	is it really that case that people think that local governments SHOULD be the agent of change, or that they have just given up on the federal government because it has persistently failed to take a leadership role? Clearly, there are many policies	Reject. There is a literature showing that people expect local governments to be an agent of change. Will add more recent reference.

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						that are better implemented by national rather than local governments (such as automobile fuel efficiency and equipment standards, or implementation of economic tools such as a carbon tax). (Danny Harvey, University of Toronto)	
12-164	A	35	30	0	50	last paragraph: you might want to cite Fisher here - she has made the case that national negotiating positions and international policy outcomes are dependent to some extent on domestic policy processes which vary quite significantly from one place to another. (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted. Will check reference.
12-165	A	36	3	37	22	most of this page could be dropped - it is a long section with little or no literature cited. It is also overlapping with Ch 13 (Jan Corfee-Morlot, University College London (on leave from OECD))	Accept.
12-166	A	36	16	36	17	Change “frequently greeted” to “initially greeted.” While there was considerable suspicion that emission trading systems were “licenses to pollute” when they were first discussed in the 1980s, the success of this approach has converted thinking among most environmental organizations. Mott (1990) was correct for its time, but if this sentence is to be retained in its current form, it needs to be	Noted. Will reword.

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						supported with a much more recent reference, and an explanation provided for the widespread support for these programs. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	
12-167	A	37	18	37	20	should be more balanced language (Expert Review Meeting Paris, IPCC)	TIA. Section will be shortened and sentence deleted.
12-168	A	37	20	37	22	Delete this sentence. It may have been applicable two years ago, but it is not longer true. Controversy over CDM and JI remains, but it is in terms of how to make these programs more efficient to more quickly and equitably provide the benefits that they are intended to provide. The explosive growth of CDM since the beginning of 2005 could not have been accomplished without active support from both industrialized and less-industrialized countries. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	See 12-168.
12-169	A	37	24	0	0	lead sentence on paragraph might better serve as lead sentence for the sub-section - it is lost in the middle here (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted. Section has been dropped.
12-170	A	37	43	42	21	This section needs tightened up. I think the CSR points could be condensed into a couple of paragraphs - this is not a primary investment driver in developing countries, although finessed in	Noted. Section will be tightened up.

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						<p>western markets, and in reporting. Risk and return, and existence of sizeable demand, compliance and enforcement regimes, amongst other factors, are likely to have a far stronger impact on investment, in most countries. Government policy, market regulation and the 'enabling' environment (including the role of Export Credit Agencies in reducing risk) is very important. But it would be a mistake to see this only as a 'western' business issue, given that Suzlon for example is a world class Indian wind turbine manufacturer, planning on turbine manufacture in China for example (see Renewables Global Status Report, 2006 Update, REN21 <a href="http://www.ren21.org">www.ren21.org</a>); and Chinese companies are now key players in the global PV business. If one is looking at business activities in the policy environment, the role trade associations play (not always as positive as the public communications of individual company members), is another factor - including at the international negotiations. [reference for example: Hamilton, K. et.al., 2003. Module 2: Corporate engagement in US, Canada, the EU and Japan and the influence on domestic and international policy. In Grubb, M et. al. The Kyoto-Marrakech System: A Strategic Assessment'. [online report]. Available from URL <a href="http://www.iccept.ic.ac.uk/a5-1.html">http://www.iccept.ic.ac.uk/a5-1.html</a>].</p>	

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						(Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)	
12-171	A	37	45	42	21	This whole section is too general. It needs to come down to climate change within CSR issues. The writers should really refer to the Carbon Disclosure Project, fourth report to be released in New York on September 18th, with Al Gore on the podium, and also see the recent report by Insight "CLIMATE CHANGE DISCLOSURE STANDARDS AND INITIATIVES: HAVE THEY ADDED VALUE FOR INVESTORS? September 2006 (Andrew Dlugolecki, University of East Anglia)	Noted. Will consider in revising section.
12-172	A	37	45	38	11	See general comments above - references and points on stratification amongst business/market actors and their different perspectives concerning market opportunities or risks related to climate change are relevant. A number of new references from the business community might be cited - see above - documenting emerging corporate strategies. (Jan Corfee-Morlot, University College London (on leave from OECD))	Accept.
12-173	A	38	2	38	11	I think this analysis is POOR. Image is important (peer pressure, NGO campaigns, information disclosure in league tables), but also companies are finding they can make money from becoming more efficient and less polluting. I do not have the literature on tap, but I regularly read on the fringes	Noted. Will rewrite and include more recent literature if appropriate.

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						eg in the journal Environmental Finance, to know that what I say is correct. In fact this is covered on page 39 lines 33-43, and should be brought forward, because the current impression is misleading. (Andrew Dlugolecki, University of East Anglia)	
12-174	A	38	5	38	11	Particularly in light of the examples presented in the next few pages, it would appear that Lyon’s suggestion that “it is the opportunity to influence regulation that makes corporate environmentalism profitable” is not supported by the facts. Chapter 7 provides additional examples. BP management reported that the actions it took to lower company CO2 emissions by 10% increased shareholder value by \$650 million. (Chapter 7, Pg. 42, lines 7-9). Petroleum refiners have been able to achieve substantial reductions in energy use, in some case dating back to 1973 (Chapter 7, Pg. 28, lines 5-11). The primary driver for these improvements was cost reduction, not the ability to influence environmental regulation. Companies, even the largest, have limited managerial, technical, and financial resources. They cannot focus a high level of attention on all aspects of their business simultaneously. Whenever there is a high level of attention to environmental issues, companies find profitable ways to reduce their environmental impact. Lyon’s statement on line 10 should be	Reject. The text already recognizes that there are various drivers to corporate actions towards the environment.

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						deleted, or characterized as only one, and in most cases not the dominant, factor influencing company behavior. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	
12-175	A	39	3	39	31	It is not clear how the companies in Box 12.4 were chosen. I believe that actions by multinationals such as Toyota and GE have significantly strong background regarding sustainability issues and are also very influential to industry as a whole. These companies should be presented here rather than the three currently described in the Box. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	Reject. One example is as good as another. Will say in the introduction of the box that there are numerous examples of corporations that has embraced sustainability.
12-176	A	40	1	40	10	I agree with Schaefer and Crane, consumers are selfish and myopic, and it is misleading to suggest that opinions are evenly balanced- evidence supports Schaefer and Crane, not Senge and Carsted (Andrew Dlugolecki, University of East Anglia)	Noted.
12-177	A	40	22	40	33	see references above on carbon disclosure project and CERES initiatives (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted. See 12-171.
12-178	A	41	8	41	0	The term corporate social responsibility (CSR) is a new concept if implemented in good spirit, to improve social and economic well beings of the people in developing country. So far, CSR is	Noted.

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						being used by the corporate sectors for improving their image and increasing their profit. The champions of the industries must reverse this process to ensure that the industry truly implement their social responsibilities – not merely by improving the lot of their employees but the community /people around their industrial activities in the country. (Government of India)	
12-179	A	42	5	42	14	Again - it is not a question whether global environmental problems can be solved without government involvement - there is a lively debate about the effectiveness of voluntary corporate initiatives and this chapter needs to be careful to be grounded in the literature. I would say the weight of the literature raises questions about the effectiveness on voluntary action to do with climate change. (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted. Will refer to extensive discussion of this issue in Ch.13.
12-180	A	42	6	0	0	change "which" to "that" (Danny Harvey, University of Toronto)	Accept.
12-181	A	42	34	42	44	Seems abstract here - why not cite some of O'Riordan's good work which is directly related to global change issues? (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted.

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12-182	A	42	44	0	45	This question is not targeted to global environmental issues -- a more relevant question would be "does a strong civic community lead to stronger, more effective governance of global environmental change?" (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted. Will make clear in the roadmap why the question on p.42, l.44-45 is relevant. Will look for relevant literature on the impact of civil society on environmental issues.
12-183	A	43	12	0	16	Missing citations in this paragraph -- the numbers need to be substantiated. (Jan Corfee-Morlot, University College London (on leave from OECD))	TIA. Will take into account in the rewriting
12-184	A	43	17	44	11	These days the number of NGOs participating in the COP as a member of government representative is growing. Interesting statistical figures on this matter is provided in Kanie, Norichika "NGO Participation in Global Climate Policy Decision-making: A Key for Tackling with Stumbling Blocks" (paper presented at Berlin Conference on Human Dimensions of Global Environmental Change, 2-3 December 2005, Berlin) (Norichika Kanie, Tokyo Institute of Technology)	TIA. Will take into account in the rewriting
12-185	A	43	17	44	11	Close interaction between NGOs and government officials at domestic policy-making process can also facilitate international negotiation on climate change. In the process leading up to COP3, the Netherlands' government, as the EU Presidency, interacted with Dutch NGOs based on their	TIA. Will take into account in the rewriting

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						established network at domestic policy-making process. The information about the negotiation process coming from such a network was delivered effectively thogh the network of NGOs to the NGO community, and even helped providing a support of NGOs to the EU proposal. This case effectively show that the impact of NGO-Government network sometimes changes the dynamics of international negotiation on climate change, given internationalised nature of NGOs' network. See for example, Kanie, Norichika "Leadership and Domestic Policy in Multilateral Diplomacy: The Case of The Netherlands' Kyoto Protocol Negotiation", International Negotiation Vol8.No.2. (2003), pp.339-365 (Norichika Kanie, Tokyo Institute of Technology)	
12-186	A	43	18	43	36	The questions raised here about the self-appointed role of NGOs as civil society, and the degree to which they represent civil society are important ones. Another factor should be added. Some influential NGOs, e.g. Pew Center, are not even membership organizations, but are funded by charitable trusts. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	Reject. Too specific.
12-187	A	43	18	43	36	These lines are rather suggestive. The Economist is not a very good source for making the point that	Reject. The fact that Oxfam sometimes criticizes the British Govt is no argument

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						Oxfam is not independent because they partly rely on the UK-government for funds. Oxfam takes a firm stand in criticizing British government policy with regard to climate change. The non-accountability of many NGOs can also be questioned. My suggestion is reformulate this part. (Gert de Gans, Kerkinactie / ICCO)	to change the wording.
12-188	A	43	29	43	29	BINGO stands for Business and Industry NGO, not business initiated NGO. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	Accept.
12-189	A	43	34	0	36	Seems a bold claim - can you substantiate it? ENGOS in most cases are supported through financial contributions from individuals as well as from foundation funding. They are also governed through Boards that in principle represent their constituency. If you leave this, you need to provide a citation. (Jan Corfee-Morlot, University College London (on leave from OECD))	Noted. Will look for references.
12-190	A	43	38	43	46	There are questions about effectiveness of the environmental social movement - see for example Yearley 1994 or Hall and Taplin forthcoming -- Yearley, S. 1994. "Social movements and environmental change." Pp. 150-168 in Social Theory and the Global Environment, edited by Michael Redclift and Ted Benton. London and	Noted. Will take into account in rewriting.

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						<p>New York: Routledge. Hall, Nina Lansbury, and Ros Taplin. 2005 forthcoming. "Confronting Climate Change: A review of theoretical perspectives on environmental NGOs and their campaign effectiveness." Griffith Journal of the Environment. I would drop or restate lead sentence. 2nd &amp; 3rd sentence seems superfluous and redundant with what comes later. Banuri and Najam paper seems most relevant to the argument here. (Jan Corfee-Morlot, University College London (on leave from OECD))</p>	
12-191	A	44	28	44	28	<p>".....writing local and national climate change plans (add reference).....".One good reference is India's National communication (Government of India)</p>	Noted. Will check reference.
12-192	A	44	42	50	31	<p>In this section of "Interactions" are discussed some perspectives offered by social sciences in the questions concerning new forms of 'governance'. These discussions are most valuable, but should be supplemented also by some perspectives on possible legal institutions and frameworks under which these innovations may be implemented nationally and internationally. Such an analysis of the legal frameworks, that are recognised as vital for influencing to the development paths for instance in Technical Summary (e.g. p.11), would give more</p>	Noted. Will consider in rewriting and in section 12.4.

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						robustness for discussion about the new forms of governance, since the problem of enforcement and compliance are crucial for governance of common (public good) resources as recognised also in the report. This should at least be identified as one crucial need for future research in section 12.4. (Government of Finland)	
12-193	A	44	43	0	0	I suggest incorporate the concept of public sphere (Habermas) to complement the preceding section on civil society.K24:K27 12.2.3.5 Public Sphere The importance and value of public opinion and the space where it gets shaped can be clearly understood under the concept of public sphere (Habermas, 1962). This space serves as "a network for communicating information and points of view" which eventually transforms them into a public opinion should be considered in the shaping of views related to climate change issues. (Valentin Bartra, Instituto Andino y Amazónico de Derecho Ambiental)	Reject. See 12-10.
12-194	A	44	43	44	43	12.2.3.5 Public Sphere The importance and value of public opinion and the space where it gets shaped can be clearly understood under the concept of public sphere (Habermas, 1962).	Reject. See 12-10.

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						<p>This space serves as "a network for communicating information and points of view" which eventually transforms them into a public opinion should be considered in the shaping of views related to climate change issues.</p> <p>(Valentin Bartra, Instituto Andino y Amazónico de Derecho Ambiental)</p>	
12-195	A	45	0	0	0	<p>This page seems to be missing two lists. (Elizabeth Malone, Joint Global Change Research Institute)</p>	Accept. Will reinstate list.
12-196	A	45	13	45	13	<p>Is "Deliberative Democracy" an academic term for public participation? Perhaps that would be better to a lay audience. (Joanna Lewis, Pew Center on Global Climate Change)</p>	Reject. Deliberative democracy is broader than public participation. Will clarify the relationships between two concepts.
12-197	A	46	15	0	0	<p>I would add "ignorance." (Elizabeth Malone, Joint Global Change Research Institute)</p>	Accept.
12-198	A	48	25	48	25	<p>One example specific to climate change that is worth mentioning is The Climate Group- a coalition of business, cities, and states ( but not sovereign nations) (Andrew Dlugolecki, University of East Anglia)</p>	Reject. Too specific. Citations already refer to range of partnerships.
12-199	A	48	35	0	42	<p>Could also cite Schon &amp; Rein and Kindon's work on framing contested policy issues. Schon, D., and M. Rein. 1994. Frame Reflection: Toward the</p>	Accept. Will consider references.

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						Resolution of Intractable Policy Controversies. New York, NY: Basic Books. Kingdon, J.W. 1984. Agendas, Alternatives, and Public Policies. Boston, MA: Little-Brown.  (Jan Corfee-Morlot, University College London (on leave from OECD))	
12-200	A	48	39	49	8	Clumsy institutions - sounds interesting but what does it imply for policy practices? How do governments - or other stakeholders - use this idea promote closure on a contested issue? (Jan Corfee-Morlot, University College London (on leave from OECD))	Accept. Will take into account in revisions.
12-201	A	50	0	54	0	The pages on mainstreaming seem somewhat disjointed. Perhaps they could be integrated with the pages on changing development pathways as they more or less concern the same basic questions. The paragraph on operationalisation of mainstreaming is not needed and refers to the OECD set of studies on adaptation, not mitigation while the study of Sathaye's EPA study recommends a general set of actions that should be treated at an earlier stage. The paragraphs on the Baltic and Dutch studies is out of place. They do not offer concrete ideas on mainstreaming and could perhaps be added to the earlier section on Civil Society (illustrating stakeholder attitudes and preferences)	Noted. Will revise 12.2.2.4 and whole structure of 12.2.

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						(Bruggink Jos J.C., Energy research Centre of the Netherlands)	
12-202	A	50	0	0	0	Paragraph 12.2.4 on mainstreaming is well written and useful (ANTOINE BONDUELLE, Université Lille II)	Thank you
12-203	A	52	1	52	4	The first part of this bullet point is very important. However its not clear in the subsequent statement on 'Electricity deregulation and privatisation' what is being suggested. Energy policy would need to be designed to deliver the energy efficiency, renewable energy, decentralised energy, and so on - even in the UK additional legally binding policy has had to be implemented to ensure implementation of renewable energy and energy efficiency. (Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)	Accept. Will clarify.
12-204	A	52	3	52	3	To add: "...Electricity deregulation or privatization can be practiced as a measure between others in any country..." (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Noted. Sentence will be revised. See 12-203.
12-205	A	52	5	52	5	Delete this figure. It is too subject to misinterpretation. The explanation in this chapter is sufficiently detailed to explain the meaning of the figure, but even in the TS and SPM, that detail disappears. For example, the SPM refers to policy	Accept. Figure dropped.

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						areas, not sectors, implying that the correct choice of policies could eliminate the emissions. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	
12-206	A	52	30	52	42	This is also a very important section. Add a sentence that lending institutions can examine their own portfolio exposure to climate change (ref line 34): the World Bank's recent report 'Managing Climate Risk' August, 2006, states that as a 'rough estimate' about a quarter of the World Bank Group's portfolio is subject to a 'significant degree' of climate risk." (p5). Bank projects which may be at risk from climate change 'are estimated at about 40 percent of the total portfolio.' The report goes on: "The impacts on investments, through increased costs or significant redirection, are estimated at 1 to 2 percent of the investment portfolio, or about \$200 million to \$400 million per year within the World Bank Group, and at least \$1 billion for all official development assistance and concessional lending." (page 27). In addition the EBRD (European Bank of Reconstruction and Development) are now applying Energy Efficiency Auditing process to their industrial lending programme, as a way of influencing the energy use of new infrastructure ( 'EBRD Information, Improving Industrial Energy Efficiency' . [online information], Available from	Rejected. This deals with impact of climate change on the portfolio of the lending institutions.

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						URL <a href="http://www.ebrd.com/industrialenergyefficiency">http://www.ebrd.com/industrialenergyefficiency</a> ) (Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)	
12-207	A	52	30	52	41	The paragraph on multilateral institutions and the figure 12.4 are excellent to bring forward where policy could have an impact. The "negative" description of the present bad lending patterns and the note that things are changing are useful, but the paragraph should note in addition line 41 that "There is still no quantified objective of decarbonisation set for any multilateral institutions, with the exception of limited funds and institutions created in the UNFCCC framework." (ANTOINE BONDUELLE, Université Lille II)	Reject. This is implicitly policy prescriptive.
12-208	A	52	30	52	41	1. An example of mainstreaming relating to adaptation is the new report by World Bank/GEF "Managing Climate Risk" 2, Another sector that is very influential is private sector project finance banking. Most large banks have now adopted the Equator Principles, based on the IFC's sustainability framework. This must be mentioned surely. (Andrew Dlugolecki, University of East Anglia)	Reject 1. This is adaptation.  Accept 2. Will consider mentioning commercial banks and other finance institutions if literature available.
12-209	A	52	42	53	4	This is very misleading. It is true that many insurers ( but not a majority) recognise that climate change impacts will affect their profitability adversely. Only	Accept. Will qualify our statements.

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						<p>a tiny number extends this to mitigation in association with their underwriting activities.I strongly insist on " a few insurers are beginning to.." not " insurers are increasingly.." The problem is that insurers must underwrite a client on the risk it poses TODAY, not the potential benefit in 30 years that will, be diffused across all clients and non-clients, thanks to reduced emissions.Mills has just released a further report on this theme in association with CERES ("From Risk to Opportunity"), and I insists that my point stands- only a tiny number of insurers are actively considering this, and there are strong prudential reasons that they cannot simply give green discounts.It has to be remembered thtat Mills is employed by an energy efficiency institution and CERES actively campaigns on mitigation- what they say is true, but the examples are NOT typical practice.In fact , in some cases, a climate-friendly technology may be rated much higher eg hybrid cars, or offshore windfarms, due to the higher costs of repair and recovery.It is well-known that renewable energy technologies find it HARD to obtain insurance because the risks they pose are not familiar (UNEPFI,2004). Thios should be cited to balance the picture!!</p> <p>(Andrew Dlugolecki, University of East Anglia)</p>	

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12-210	A	53	0	53	10	figure 12.4. Meaning not clear. These policies leading to more emissions or reductions of emissions? Suggestion: clarify and validate the numbers as these polices may have dual impacts. (Government of China Meteorological Administration)	Accept. Figure to be converted into table.
12-211	A	53	5	53	15	Comment: Figure 12.4 isn't clear, need more work, so in the utilized sectors as in the vertical and its dimensions (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Accept. Figure to be converted into table.
12-212	A	53	7	0	0	Figure 12.4 Very unclear what data has been used to make these bars, and what this chart is trying to show. I believe the source literature used included extensive footnotes and explanations of assumptions used, and what each column actually means. This needs to be somehow clarified. If this can be done, this can be a very effective figure. (Joanna Lewis, Pew Center on Global Climate Change)	Accept. Figure to be converted into table.
12-213	A	53	16	53	26	A discussion could be included in this section, supplementing the discussion of best practices for implementation of clean energy programs, on best practices facilitating clean energy tech transfer and dissemination, particularly in developing countries. Literature that may be useful includes Joanna I.	Noted. Will check references.

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						<p>Lewis &amp; Ryan H. Wiser. "Fostering a renewable energy technology industry: An international comparison of wind industry policy support mechanisms." Energy Policy (in press); Joanna I. Lewis. "Leading the Renewable Energy Revolution." Georgetown Journal of International Affairs, Issue 7.2: Summer/Fall 2006. (on China); Perkins, R. 2003. "Environmental Leapfrogging in Developing Countries: A Critical Assessment and Reconstruction." Natural Resources Forum. Oxford: Blackwell Publishing. Liu, Xielin and Steven White. 2001. "Comparing Innovation Systems: A Framework and Application to China's Transitional Context." Research Policy 30: 1091-1114. Goldemberg, Jose. 1998. "Leapfrog Energy Technologies." Energy Policy "Viewpoint," Vol. 26, no. 10, p. 729-741. Gallagher, Kelly Sims. 2004. "Limits to leapfrogging in energy technologies? Evidence from the Chinese automobile industry." Energy Policy (in press). Kamp, Linda M., Ruud E.H.M. Smits, Cornelis D. Andriess. 2004. "Notions on Learning Applied to Wind Turbine Development in the Netherlands and Denmark." Energy Policy, Volume 32, Issue 14, September, Pages 1625-1637. (Joanna Lewis, Pew Center on Global Climate Change)</p>	

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12-214	A	53	26	0	0	<p>After '...development', suggest to include the following: Health and environmental co-benefits of CO<sub>2</sub> mitigation projects are examples of quantifiable indicators of sustainability. For China, for instance, it has been estimated that 30 - 160 premature deaths can be avoided per million ton CO<sub>2</sub> reduced within the energy sector. Calculated for the full energy-related CDM potential in the country, this amounts to 3,000 to 40,000 saved lives (Vennemo et al., 2006).</p> <p>Vennemo, Haakon, Kristin Aunan, Jinghua Fang, Pernille Holtedahl, Tao Hu and Hans Martin Seip, 2005. Domestic environmental benefits of China's energy related CDM potential. Climatic Change 75, 215-239. (DOI: 10.1007/s10584-006-1834-0).</p> <p>(Kristin Aunan, Center for International Climate and Environmental Research - Oslo (CICERO))</p>	Noted. Will consider reference in 12.3
12-215	A	54	28	65	28	<p>In the section 12.3 "Implications of Mitigation Choices for Sustainable Development Goals", in addition to energy, forestry, agriculture and waste management, one more sub-section on the water sector may be necessary. This is in view of the growing evidence on emissions of greenhouse gases from dam reservoirs. The World Commission On Dams presented its Final Report titled Dams and Development: A New Framework for Decision-</p>	<p>Noted. Will check with Ch.4 whether discussed there. The release of GHGs from water reservoirs has been reported in several studies, this is not a non-climate SD issue, which is the subject of this section.</p> <p><b>We include an estimate of the GHG emissions associated with improving the efficiency of water supply in Section 12.2.4.</b></p>

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						making to the Framework Convention on Climate Change a few years ago. The report found that ""All large dams and natural lakes in the boreal and tropical regions that have been measured emit greenhouse gases". In view of increasing water crises, and the pressure to carry out various projects in the water sector, the chapter on sustainable development ought to look into implications of mitigation choices for water related development goals. (Government of India)	
12-216	A	54	29	65	30	The content of 12.3 has not been well-organized. To be reading friendly, a clear and uniform structure reflecting three dimensions of SD (i.e. Social, Environmental and Economic) would be helpful to organize the contents regarding implication of each mitigation choices on sustainable development. (Government of China Meteorological Administration)	Noted, will check that all three dimensions are mentioned in each section.
12-217	A	54	30	54	40	This consideration is very important both for developed and developing countries. It should be given more prominence. (ANTOINE BONDUELLE, Université Lille II)	Reject. No countries are mentioned in this paragraph. It is an introductory paragraph with global implications.
12-218	A	54	30	54	31	To say that we can stabilize climatic change without specifying at what level amounts to not saying anything at all. As well, it is in fact quite likely that climatic change will not be stabilized until well	Accepted, rephrase to "stabilize GHG concentrations of GHGs".

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						after GHG concentrations have been stabilized, due to the lag introduced by the thermal inertia of the oceans. I suspect that what the TAR asserts is that we have technologies available to stabilize atmospheric CO2 at levels as low as 450 or 550 ppmv, which is quite different from stabilizing climate. (Danny Harvey, University of Toronto)	
12-219	A	55	16	55	17	The text states "Nuclear and large hydro energy supply reduce carbon emissions but can have other environmental and social impacts that are not beneficial." However, Figure 4.4.5 in Chapter 4 of this second draft shows the externalities associated with nuclear energy are amongst the lowest of all generation sources. In Section 12.3.1.2 no examples are given of negative environmental impacts from nuclear generation. No mention is made of other positive impacts, such as reduction of SOx and NOx emissions. It is a truism that all energy technologies will have some negative impacts, but without quantification of the positive and negative impacts of a broad range of generation sources no individual technologies should be singled out. As all energy technologies have some negative environmental and social impacts we suggest deletion of the sentence or modification to read "All forms of energy production have some environmental and social	Noted. Deleted sentence.



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						impacts that are not beneficial." (Jonathan Cobb, World Nuclear Association)	
12-220	A	56	0	65	0	In Table 12.3 and in sections 12.3.1–12.3.4 are the implications of mitigation choices for SD goals discussed. Here some implications seem to be missing and some are rather peculiar: Fuel switching and other options in the transport sector and Bio-energy production Why are biofuels discussed here at all? They are considered shortly in the section 12.3.2 (p. 62, lines 32–37), but also there the possible synergies (new jobs in forestry and agriculture sectors) could be mentioned besides the referred trade-offs (biodiversity losses, deforestation). Why are these trade-offs not mentioned in the Table 12.3 in “Bio-energy production”? (Government of Finland)	Rejct. Biofuels are discussed in context of their use in transportation, and to illustrate a set of key issues associated with the use of ethanol. Same is also done in Chapter 5.  Tradeoffs are mentioned in the table. The bioenergy section notes that tradeoffs are the same as those for forestation and agricultural activities
12-221	A	56	10	0	0	Table 12.3 Excellent table, great contribution. Some tradeoffs could be further detailed, with references to research integrated in the table (what studies were used to develop this table?) (Joanna Lewis, Pew Center on Global Climate Change)	Accepted. Will consider adding references, although many are in text already.
12-222	A	56	10	58	0	The topic of carbon dioxide capture and sequestration is totally missing from this discussion; indeed, it does not fit any of the categories. (Elizabeth Malone, Joint Global Change Research	Accepted. Material added to Section 12.3.1.2 on switching to LCI fuels.

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						Institute)	
12-223	A	56	10	58	0	Table 12.3: I think that in the part of Waste Management to add: RECYCLING AND REUSE - in part of Potential SD Trade-offs: Largely unquantified indirect benefits for reducing GHG emissions from waste. IN BIOLOGICAL TREATMENT - in Potential SD synergies... improve in the following manner: By - products can be a potential source of fertilizer(compost), in the part of Potential SD Trade - offs to include: Reduces GHG emissions. Energy recovery potential. LANDFILLING - in Potential SD synergies... include Energy recovery potential, in the part of Potential SD Trade - offs to include: When disposal is uncontrolled(open dumping and burning) produce considerable quantities of emissions. To include as a new item: THERMAL PROCESS INCLUDING INCINERATION - to write in Potential SD synergies... Requires emission control. Reduces GHG emissions, in the part of Potential SD Trade - offs to write: Energy recovery potential. Replaces fossil fuels for process heat or electrical generation. To include as a new item: WASTEWATER CONTROL AND TREATMENT - to write in Potential SD synergies...High potential for reducing uncontrolled GHG emissions. Sludge result of anaerobic digestion maybe utilized as	Taken into account, except for statements on reducing GHG emissions. This table considers the implications of mitigation options on non-climate aspects of SD. Noted. Will consider other suggestions.

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						fertilizer. CH4 from anaerobic processes replace fossil fuels for process heat or electrical generation, in the part of Potential SD Trade - offs to write: Energy recovery potential from anaerobic processes. Wide range of available technologies to collect, treat, recycle, and reuse wastewaters. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	
12-224	A	56	10	58	5	Table 12.3: This table only covers some of the sectors discussed in chapter 4-10. The issue of transportation and buildings is completely missing in the table. In order to be able to pull the whole sustainable development concept into a whole and comprehensive section, all sectors mentioned in the report need to be covered properly (Rutu Dave, IPCC WGIII TSU)	Reject. The applicability of mitigation options to transportation and building' sectors is already noted in the table.
12-225	A	56	0	58	0	Comments regarding Table 12.3. Under potential trade-offs there is often a reference that options should be distributional beneficial and gender neutral. In my opinion this sounds to much like lip-service. Either give examples of cases where there is clearly a trade-off between distributional/gender goals and climate change goals or leave out empty exhortations.  In fact, under energy efficiency it is first stated that	Accepted.  Noted. See rewording. Mitigation can be either gender neutral or result in gender

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						<p>options should be gender neutral and than indoor air pollution is mentioned, which is clearly not a gender neutral option (primarily affecting women). The sentence on indoor air pollution is formulated ambiguously and may to be reformulated.</p> <p>Moreover, I see no reason why this option should not be pursued relentlessly even if gender-biased.</p> <p>Under fuel switching, don't mention hybrid cars which are 30% more efficient and thus also climate friendly.</p> <p>Under replacing imported fossil fuels, mention energy security which is generally considered a higher priority than climate change.</p> <p>Under bio-energy mention biodiversity loss, water resource competition, increased used of fertilizer and pesticides.</p> <p>I find the example of the scavenger trade-off far-fetched and misplaced.</p> <p>Health impacts are not exactly a major concern if the alternative is starvation and the creation of</p>	<p>neutrality.</p> <p>Accept. See reformulation.</p> <p>Rejected. Hybrid cars are not mentioned in “fuel switching”. See chapter 5 for more detailed explanation.</p> <p>Noted. This is already mentioned in the tradeoff section.</p> <p>Noted. Will add “may have negative environmental consequences if practiced unsustainably”.</p> <p>Noted. Will rephrase but keep idea that local communities may derive income from landfill.</p> <p>Accepted. Health impacts only if practiced unsustainably.</p>

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						<p>wastes for employment purposes is obviously not part of sustainable development pathways.</p> <p>Biomass combustion is not a source of GHG emissions if produced sustainably with annual rotation crops (form the major part of human consumption wastes) or garden refuse.</p> <p>Finally, landfilling is not a mitigation option and does not belong in this table. Using landfills for methane recovery is. (Bruggink Jos J.C., Energy research Centre of the Netherlands)</p>	<p>Accepted. Will rephrase</p> <p>Noted. Will clarify that we are talking about landfill gas capture here.</p>
12-226	A	57	1	0	0	<p>In the rows on forestation and bio-energy production, a potential SD trade-off could be, "Food costs rise, further burdening the poor." (Elizabeth Malone, Joint Global Change Research Institute)</p>	<p>Accept. Will include reference to this point.</p>
12-227	A	57	1	0	0	<p>In the row on avoided deforestation, leakage should be addressed (Elizabeth Malone, Joint Global Change Research Institute)</p>	<p>Accept. Will include.</p>
12-228	A	57	1	0	0	<p>Table 12.3 Box "avoided deforestation" and "forest management" should be placed one after the other.</p> <p>In the box "avoided deforestation" it is overlooked that deforestation and forest degradation are related:</p>	<p>Not necessarily. Logging companies may go in deforest without prior degradation.</p>

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						<p>often the former comes after a considerable time of the latter. Forest degradation, especially in the tropic is often the result of short intensive, or long term extensive poor forest management. Hence, good (or sustainable) forest management is potentially a powerful strategy to curb both forest degradation and deforestation.</p> <p>So, the statement "If suitably managed, it can bring revenue from ecotourism" is not complete: if suitably managed forest can sustain revenues from timber in the long-term" as well as "and/or bring revenue from ecotourism". "Successful implementation may be achieved by INVOLVING LOCAL DEFORESTERS IN LAND MANAGEMENT AND/OR provide alternative livelihood to local deforesters, enforcing laws to prevent migrants from encroaching on forest land, and joint forest management". Do not forget that "governed deforestation" can be due to all sorts of drivers/deforesters, including poor land-use planning, lower tiers of government, agricultural companies (large and medium size farmers) and logging companies. (Eveline Trines, Treeness Consult)</p>	<p>Accept. Will add reference to higher revenues from sustained timber sales.</p> <p>Noted. But this phrase will be added.</p>
12-229	A	58	1	58	17	This paragraph really concerns the monitoring of CSR in the environmental domain as treated on	Agreed. Not relevant here.



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						page 41 on business strategies. Perhaps it should be moved to that part of the chapter. (Bruggink Jos J.C., Energy research Centre of the Netherlands)	
12-230	A	58	1	58	0	Table 12.3 section on "Waste Management". Would appreciate opportunity to propose modest revisions to text in NZ in consultation with other Chapter 10 LA's. If feasible, please advise. (Jean Bogner, Landfills +, Inc)	Noted. Will consult with Ch.10.
12-231	A	58	1	0	0	In the row on cropland management, a trade-off could be, "Competition for water leaves some without." (Elizabeth Malone, Joint Global Change Research Institute)	Reject. Cropland management need not leave people without of water.
12-232	A	58	1	0	0	In the row on biomass combustion, the trade-off column should be expanded to read, "Is itself a source of CO2 emissions, although these are largely negated by carbon sequestration in the growing plants." (Elizabeth Malone, Joint Global Change Research Institute)	Accept. Will rephrase.
12-233	A	58	5	65	30	Carrying on from Table 12.3 why are only a few of the sectors picked out and discussed in greater depth? It would make sense to discuss all sectors in equal details (Rutu Dave, IPCC WGIII TSU)	Accept. Will review all Ch.4-10 SD sections for relevant material.
12-	A	58	22	0	0	I would add "and siting" after "designs."	Accept.

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234						(Elizabeth Malone, Joint Global Change Research Institute)	
12-235	A	58	0	58	0	To add: "Biological treatment - By - product can be a potential source of fertilizer (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Accept.
12-236	A	59	26	0	0	I would add, "as well as strategies to facilitate walking, biking, and using mass transport" to the end of the sentence. (Elizabeth Malone, Joint Global Change Research Institute)	Accept
12-237	A	59	34	59	35	Bicycle development and public transport can be self reinforcing, as recently in Paris where motorized traffic decreased 23% from 1996 to 2005, public transport increased by 26% and the bicycled jumped by 66%. See <a href="http://www.paris.fr/portail/deplacements/Portal.lut?page_id=14&amp;document_type_id=2&amp;document_id=20728&amp;portlet_id=14252">http://www.paris.fr/portail/deplacements/Portal.lut?page_id=14&amp;document_type_id=2&amp;document_id=20728&amp;portlet_id=14252</a> (ANTOINE BONDUELLE, Université Lille II)	Reject. Too detailed for Ch.12.
12-238	A	59	34	59	35	Bicycles have also evident poverty alleviation benefits both in developed and developing countries, and limits the spending on infrastructure and thus improve public finance. See for example Hook W, Wright L. 2002. "Reducing Greenhouse Gas Emissions by Shifting Passenger Trips to Less	Reject. Too detailed for Ch.12. But will ask for feedback of sectoral chapters on the addition on non-technological options.

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Polluting Modes: A Background Paper for the Brainstorming Session on Non-Technology Options for Engineering Modal Shifts in City Transport Systems". Institute for Transportation and Development Policy. <a href="http://www.itdp.org/read/GEFbackground_nairobi2002.pdf">http://www.itdp.org/read/GEFbackground_nairobi2002.pdf</a> (ANTOINE BONDUELLE, Université Lille II)	
12-239	A	59	34	59	35	NMT is not a very useful acronym for policymakers. It should be replaced by "bicycling and walking." (ANTOINE BONDUELLE, Université Lille II)	Accept. Will rephrase « ... bicycling, walking and other non-motorized modes of transportation ... ».
12-240	A	60	14	60	15	To add: "..... To increase competitiveness at the cost of new and existing jobs, but creating more problems with the access of poor people" (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. But will check with section 4.5.4
12-241	A	60	19	61	47	Whether or not CCS can be regarded as sustainable development is a matter of discussion. CCS is not mentioned in this chapter, but could briefly be attributed in this section. (Government of Belgium)	Noted. With check with recent IPCC CCS report for linkages between CCS and SD.
12-242	A	63	41	63	42	To add. ".... the goal of sustainable development, and it is very important when is forecasted in the next 20 years, scarcity of water in many countries of the World"	Reject. Not relevant for discussion.

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						(CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	
12-243	A	63	49	63	49	Unclear sentence: Forever increasing ... (Government of Sweden)	Accepted.
12-244	A	64	0	65	0	In Table 12.3 there is mentioned as a possible SD synergy of landfilling: "Can lead to creation of public places for recreation and other purposes." What does this mean? At least it does not come out in the (Government of Finland)	Accepted.
12-245	A	64	5	64	5	To add: ".....on environmental and economic goals. In the future will be necessary to reuse the treated and non - treated wastewaters in the irrigation of crops, in order to maske up for scarcity of freshwater" (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. Not relevant for discussion.
12-246	A	64	29	64	29	Suggest that title of section be "Waste (and wastewater) management sector" (Jean Bogner, Landfills +, Inc)	Accepted.
12-247	A	64	36	64	36	To add: ".....the reduction by 50% of the number of people living without accesss to safe sanitation by 2015" (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND	Accepted, will check number.

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						THE ENVIRONMENT)	
12-248	A	64	45	64	48	Suggest that this paragraph make a clear distinction between engineered sanitary landfills and unmanaged dumpsites where open dumping and burning are practiced. Possible rewording: With respect to landfilling, one must distinguish between engineered sanitary landfills with controlled waste placement and use of cover materials vs. uncontrolled dumpsites where open dumping and burning are practiced. The former can provide cost-effective, environmentally acceptable waste management while the latter promote poor public health, unsafe working conditions, and environmental degradation. (Jean Bogner, Landfills +, Inc)	Accept. Will reword.
12-249	A	65	0	66	0	In discussing future research needs it would be most valuable to identify also, as mentioned, the need to analyse the role of legal institutions and frameworks as a part of the capacity/action link. (Government of Finland)	Accept.
12-250	A	65	9	0	15	This paragraph is dismissive of local knowledge and culture -- reword. (Elizabeth Malone, Joint Global Change Research Institute)	Accept. Will reword
12-251	A	65	24	65	24	To add: "...management such as septic tanks, low cost sewerage systems, biogas energy recovery, off-site wastewater treatment systems as constructed	Noted. Will consider.

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						wetlands, lagoons and others, and recycling of grey waters...." (.)	
12-252	A	65	30	66	12	In section 12.4 "Future research needs", perhaps we can suggest the need for life cycle analysis comparing alternate technologies and development pathways. In addition the need for micro level studies to understand various issues may also be stressed. (Government of India)	Noted. Will take into account into rewriting.  Second part of comment is unclear.
12-253	A	65	36	65	36	To add: "...Phenomena such as decisor - makers decisions, risk perception, science/policy interactions...." (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. Adds nothing to argument.
12-254	A	65	45	65	45	To add: "... For the developing countries than for the industrialized countries, main aspect if we take into account that these countries have the necessary resources for carry out this matter. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. The purpose of this paragraph is to identify research objectives, not to discuss resources.
12-255	A	65	45	65	45	After the paragraph add one paragraph: different regions may take different approaches and priority in mainstreaming climate policies into sustainable development for choice of development paths.	Accept.

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						Empirical assessment of the experiences and lessons learned in mainstreaming would be high desirable. (Government of China Meteorological Administration)	
12-256	A	65	47	65	47	Suggesting to add "when and to what extent" between how and countries. Reasons: timing and potentials are important factors as well. (Government of China Meteorological Administration)	Accept.
12-257	A	66	2	66	0	Answering these questions in the context of the mainstreamed sustainable development involved in a holistic response to potential abrupt climate change mentioned in Section 12.2.1.1 implies a research program on a scale as great or greater than that which has been focused on emissions reductions over the last decade or so, with a focus on earth science, agronomy and forestry, as well as on bio-energy and terrestrial carbon storage and on the socio-economic and developmental dimensions of these topics. (Peter Read, Massey University)	TIA. Spirit of comment to be taken into account in the revision of section 12.4.
12-258	A	66	9	66	12	If it is eliminated the point 12.1.3 as I suggest is necessary to eliminate this paragraph. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Reject. Because we do not want to delete 12.1.3.
12-	A	67	4	84	0	Comment: The References are almost all in english	Noted.

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259						language, only two in french language, and none in other languages. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	
12-260	A	77	1	0	0	Too much self citation of references. (Monirul Mirza, Adaptation and Impacts Research Division (AIRD), Environment Canada)	Noted. Will try and references from other as well.

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12-1	B	0	0	0		Section 12.3 describes some practical policies for making climate mitigation compatible with SD, but the focus is on sectors rather than country level SD Planning and implementation policies. Table 12.3 is a useful summary for sectors. Further elaboration of the six countries' experience would be useful. U.S. Government (Government of U.S. Department of State)	Accept; will elaborate on the six countries study
12-2	B	0	0	0		Section 12.2 is difficult to read.. It seems to aim to review the literature in exquisite detail to understand all aspects of the relationship and antagonism between SD and climate mitigation. It goes on without any useful results being highlighted. Most of Section 12.2 should be relegated to an appendix for SD scholars, and a focused summary of no more than 5 pages should be written in its place focusing on practical lessons learned and issues that confront climate mitigation. Streamlining section 12.2 (by possibly moving to an appendix) would improve readability. U.S. Government (Government of U.S. Department of State)	Accept; will make section more concise, but is not an appendix
12-3	B	0	0	0		Positive Aspects of Chapter 12: Chapter 12 did an excellent job of examining the underlying tension between sustainable development and economic development. It was clear from the discussion that great effort was undertaken to provide a balanced presentation between these concepts. Additionally, the recommendations were clearly scientific and technical in nature rather than policy prescriptive. U.S. Government (Government of U.S. Department of State)	Thanks
12-4	B	0	0	0		Organization and Clarity: The text of Chapter 12 raised several concerns related to organization. The general consensus that emerged from the subcommittee was that the organization of Chapter 12 was generally inadequate. Specifically, the text lacked consistency and clarity. There were several places within the text where the internal organization of chapters was inconsistent. One subcommittee member observed that the "Synergisms between	Accept; will clarify and strengthen organization

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						sustainable development and climate change mitigation was not fully understood because of the deficits in organization.” As for the clarity of the text, there were several places within the text of the Chapter where the presentation of the material was so unclear and vague to such a degree that it obscured the underlying point. U.S. Government (Government of U.S. Department of State)	
12-5	B	0	0	0		General - This chapter addresses a profoundly significant topic, and it benefits from the contributions of a notably distinguished author team. The strengths of the chapter are many, but – as one would expect – there are some issues regarding balance in the length of different sections, consistency in style and tone, and clarity of messages. The most general weaknesses are that (a) the profusion of details tends to obscure the chapter’s main messages to the point that messages do not come through clearly, and (b) section 12.2.3 is far too long and self-indulgent to fit with the rest of the chapter. In addition, although the chapter tries to explain this (with only limited success), devoting nearly 40 pages to how sustainable development affects climate change mitigation but only about 12 pages to how climate change mitigation affects sustainable development seems to indicate a lack of balance in the interests of the chapter authors. See comment 1640. U.S. Government (Government of U.S. Department of State)	Accept; will make text more concise but balance is okay because implications of mitigation for sustainable development are also in sectoral chapters
12-6	B	0	0	0		Future Research: The discussion regarding future research was not adequately developed. The subcommittee viewed this lack of detail in this area as a missed opportunity. U.S. Government (Government of U.S. Department of State)	Accept; will re-write and expand
12-7	B	0	0	0		Documentation and the Creation of Tables: In general, the members of the subcommittee noted that Chapter 12 was very well document and cited. However, one important exception was found in the tables. Fairly consistently throughout Chapter 12,	Noted; will add references

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						many of the tables were inadequate. In fact, many of the tables and charts were insufficient to support the points that were being raised. One notable example of this appeared in a discussion regarding the lessons learned from six developing countries related to alternate development pathways. The authors made several important claims about climate mitigation activities in these countries without adequate documentation. U.S. Government (Government of U.S. Department of State)	
12-8	B	0	0	0		Climate Change and International Negotiation Frameworks. A climate change mitigation strategy focused exclusively on reducing or avoiding greenhouse gas emissions will inevitably fall short, because such narrow approaches fail to acknowledge explicitly and accommodate broader policy concerns of all national governments. In the United States' dealings with other countries in this issue, we have found that the most effective way to meet the climate change challenge is to focus on a multifaceted agenda that promotes economic growth, provides energy security, reduces air and water pollution, and mitigates greenhouse gas emissions. It is in this spirit that the Asia Pacific Partnership was launched and is currently being developed and implemented, with significant potential to affect positive outcomes in the developing world for decades to come. In the literature, and number of distinguished contributors have articulated this approach [See recent works of Thomas Schelling, David Victor, David Montgomery, Lee Lane, and Robert Reinstein]. Lane, Lee. "The Political Economy of US Greenhouse Gas Controls", a chapter in Punctuated Equilibrium and the Dynamics of US Environmental Policy, edited by James Gustave Speth and Robert Repetto. Yale University Press, 2006. Montgomery, W. David and Anne Smith. "Price, Quantity, & Technology Strategies for Climate Change Policy" (Charles River Associates, 2005)	We accept the spirit, but this material is a matter for WGIII Chapter 13

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						<p>Montgomery, W. David and Sugandha D. Tuladhar. "The Asia Pacific Partnership: Its Role in Promoting a Positive Climate for Investment, Economic Growth and Greenhouse Gas Reductions." CRA International, June 2006.</p> <p>Reinstein, Robert A. "A Possible Way Forward on Climate Change". Mitigation and Adaptation Strategies for Global Change, Vol. 9, No. 3, July 2004.</p> <p>Schelling, Thomas C. "What Makes Greenhouse Sense? Time to Rethink the Kyoto Protocol." Foreign Affairs (May/June 2002), Volume 81, Number 3.</p> <p>Victor, David. "Climate Change: Debating America's Policy Options". Council on Foreign Relations Press, June 2004, ISBN 0-87609-343-8. (Government of U.S. Department of State)</p>	
12-9	B	0	0	0		<p>The notion "making development more sustainable (introduced in ch 2) is totally missing from ch 12. Important to add that to section 12.1 (Bert Metz, IPCC)</p>	Accept; will make this more visible
12-10	B	0	0	0		<p>Literature references to be updated; all IPCC references to follow standard format (IPCC (year), title, editors, publisher) (Bert Metz, IPCC)</p>	Accept
12-11	B	0	0	0		<p>literature references are not following standard format: in case of three or more authors, use XXXXX et.al; not XXXX, YYYYY, et. Al. (Bert Metz, IPCC)</p>	Accept
12-12	B	3	0	4		<p>Executive Summary - As a single statement of what the chapter has to say, this does not speak clearly, especially to non-academic readers. It does not define sustainable development; paragraph 4 is confusing; and paragraph 5 can be said more simply. Paragraph 3 is very important, but it is unclear whether this is being reported as a conclusion of TAR or as a point that is strengthened by AR 4. Compare the draft of this section, for example, with Section E of</p>	Accept; will improve executive summary

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						the draft SPM, which is a much better big-picture perspective on the subject matter of this chapter. U.S. Government (Government of U.S. Department of State)	
12-13	B	3	12	3		Insert after the period at the end of line 12, the following: “Several strategies and measures that would advance sustainable development would also enhance adaptive and mitigative capacities. They include measures that would (a) reduce the urgent climate-sensitive problems that are hurdles to sustainable development (e.g., hunger, malaria, water shortage) and could be exacerbated by climate change, thereby helping meet sustainable development goals (including the Millennium Development Goals), or (b) establish or enhance institutions that would foster sustainable development and its contributory factors (such as technological change and sustainable economic growth). Other advantages of such development-based approaches are that they would reduce vulnerability to current climate, current climate variability, and climate change, and benefits would begin to accrue in the very near term, whereas the benefits of mitigation would commence accruing after a few decades have elapsed because of the inertia of both the climate system and the energy infrastructure. Accordingly, it might be most efficient and economic in the short-to-medium term to focus on reducing vulnerability to urgent climate-sensitive hazards, enhancing sustainable development, and implementing ‘no-regret’ actions while, for the longer term, expanding the universe of no-regret options and bringing overall mitigation costs down through R&D, and obtaining better information on the science and impacts of both climate change and any response policies which could also allow mid-course corrections. Such a policy would help solve current urgent problems facing humanity while preparing it to face future problems that might be caused by climate change. Equally important, under such an approach, climate change is automatically ‘mainstreamed’ into development activities and	Reject; this is much too detailed for an executive summary

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						there should not be a dichotomy between the two ” For detailed rationale, see Goklany (2005a, 2006a). References: (1) Goklany, IM. 2005a. A Climate Policy for the Short and Medium Term: Stabilization or Adaptation? Energy & Environment 16: 667-680. (2) Goklany, IM. 2006a. Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development. Mitigation and Adaptation Response Strategies for Global Change, forthcoming. U.S. Government (Government of U.S. Department of State)	
12-14	B	3	16	3		Insert after “emissions”, the following: “mitigative and adaptive capacities.” U.S. Government (Government of U.S. Department of State)	Reject; is implicit in preceding statements; will be re-written
12-15	B	3	32	3	33	“Reword for clarity and emphasis: ‘GHG emissions are influenced by, but not rigidly linked to economic growth. Policy choices can make a difference in the extent to which this linkage holds true.’” U.S. Government (Government of U.S. Department of State)	Reject; message is already present
12-16	B	5	1	10	43	Section 12.1 has been shortened considerably. That is good. However, it is still unclear why the remaining elements of 12.1 are so needed here. Most of the material seems to cover the same issues as in ch 2. Further reduction is therefore needed, so that the focus of ch 12 is on where its strength lies: the assessment of the interactions between CC and SD; a reference to figure 2.1 would be useful (Bert Metz, IPCC)	Noted; will consider during re-write and may reference figure 2.2
12-17	B	5	37	5	50	This paragraph gives overview of ch 12 structure two times. Condense. (Bert Metz, IPCC)	Noted; will shorten text
12-18	B	6	2	0		use of >< in section title to be avoided (Bert Metz, IPCC)	Accept
12-19	B	6	9	6		Add to the beginning of the sentence starting with “Much of this	Reject; changes the

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						<p>literature”, the following: “ALTHOUGH THERE IS SOME LITERATURE INDICATING HOW SUSTAINABLE DEVELOPMENT CONTRIBUTES TO BOTH ADAPTIVE AND MITIGATIVE CAPACITY, THAT IS, THE ABILITY TO ADAPT OR MITIGATE (GOKLANY 1995, 2000a, 2006a), much of this literature....” [Note: Inserts are shown in UPPER CASE; deletions are not shown.].</p> <p>Citations: (1) Goklany, IM. 1995. Strategies to Enhance Adaptability: Technological Change, Economic Growth and Free Trade. Climatic Change 30: 427-449. (2) Goklany, IM. 2000a. Potential Consequences of Increasing Atmospheric CO2 Concentration Compared to Other Environmental Problems. Technology 7S: 189-213. (3) Goklany, IM. 2006a. Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development. Mitigation and Adaptation Response Strategies for Global Change, forthcoming. U.S. Government (Government of U.S. Department of State)</p>	meaning of the sentence away from what is intended
12-20	B	6	35	6	36	<p>It is not correct to claim that the material in 12.2 is nowhere else in the report, because in chapters 3-11 some attention is given. Argument should be: nowhere is a comprehensive overview and nowhere else is the material presented in a way that is accessible to a non- climate readership. (Bert Metz, IPCC)</p>	Noted; will revise text to make this clearer
12-21	B	6	38	6	40	<p>Replace the first sentence of the paragraph with the following: “Several strategies and measures that would advance sustainable development would also enhance adaptive and mitigative capacities (Goklany 1995, 2000a, 2006a). They include measures that would (a) reduce the urgent climate-sensitive problems that are hurdles to sustainable development (e.g., hunger, malaria, water shortage) and could be exacerbated by climate change, thereby helping meet sustainable development goals (including the Millennium Development Goals), or (b) establish or enhance</p>	Noted; will revise

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						<p>institutions that would foster sustainable development and its contributory factors (such as technological change and sustainable economic growth) (Goklany 2005a). Other advantages of such development-based approaches is that they would reduce vulnerability to current climate, current climate variability, and climate change, and benefits would begin to accrue in the very near term, whereas the benefits of mitigation would commence accruing after a few decades have elapsed because of the inertia of both the climate system and the energy infrastructure. (Goklany 2003).”</p> <p>Citations: (1) Goklany, IM. 1995. Strategies to Enhance Adaptability: Technological Change, Economic Growth and Free Trade. Climatic Change 30: 427-449. (2) Goklany, IM. 2000a. Potential Consequences of Increasing Atmospheric CO2 Concentration Compared to Other Environmental Problems. Technology 7S: 189-213. (3) Goklany, IM. 2003. Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation. Energy &amp; Environment 14: 797-822. (4) Goklany, IM. 2005a. A Climate Policy for the Short and Medium Term: Stabilization or Adaptation? Energy &amp; Environment 16: 667-680. (6) Goklany, IM. 2006a. Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development. Mitigation and Adaptation Response Strategies for Global Change, forthcoming. U.S. Government (Government of U.S. Department of State)</p>	
12-22	B	7	28	7		Figure 12.1 Communicates nothing that is not self-evident: Recommend deleting. U.S. Government (Government of U.S. Department of State)	Accept; will remove figure
12-23	B	9	4	9		Insert “could” prior to “help”. U.S. Government (Government of U.S. Department of State)	Accept
12-24	B	9	13	9	19	It would be extremely useful have a similar example from a non-	Accept; will add text on

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Annex I country. India enshrines sustainable development as a basis for its five year plans. There may be other examples. A suitable example/reference should be found. U.S. Government (Government of U.S. Department of State)	developing country
12-25	B	11	43	0		"unforeseen over-determination of complex systems" what does this mean? (Bert Metz, IPCC)	Noted. Will revise.
12-26	B	11	49	12	2	lay-out: bullets disappeared (Bert Metz, IPCC)	Accept.
12-27	B	12	19	12	32	this section has no literature refs; add (Bert Metz, IPCC)	Accept. Will add references and refer to Ch.2 and 3.
12-28	B	12	26	12	26	“Reword for clarity: ‘...the fewer opportunities there will be to change the development pathway, because of lock-in effects.’” U.S. Government (Government of U.S. Department of State)	Accept
12-29	B	12	35	12	39	The example cited here of six developing countries avoiding 300 MtC-eq. (MtCO <sub>2</sub> -eq?) emissions is cited several times in this report, but not fully explained anywhere. Chapter 12 would seem to be the best place to for this explanation. Box 12.1 provides an explanation of Brazil’s efforts, but a similar, albeit briefer, explanation of what was done in the other five countries is needed. A table could be included to quantify, track origin and/or explain. U.S. Government (Government of U.S. Department of State)	Accept. Will elaborate.
12-30	B	13	4	13	8	“The wording ‘Still, there are a few exceptions’ implies examples that contradict the previous sentence ‘abating local air pollution generally is also beneficial from a global perspective’. But the examples given are in fact still beneficial, if not perfectly so. Fuel switching from coal to natural gas is better for the local environment and for climate change, even if it is not as beneficial as alternatives such as renewable technologies. Suggest	Accept. Will clarify

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						rewording: ‘Still, there are examples where the global benefits are relatively minor compared to the local benefits, so a careful assessment is warranted.’” U.S. Government (Government of U.S. Department of State)	
12-31	B	13	14	13	19	This short paragraph addresses an important issue: how development choices affect GHG emissions in developed countries. The discussion is very shallow. Much more can be said I presume (based on literature ) about energy security, industrial competitiveness, air quality, employment, etc policies that are dominant and can have major implications on GHG emissions. (Bert Metz, IPCC)	Noted. Will revise text and refer to relevant other part of WGIII report.
12-32	B	14	3	14	36	This section duplicates with ch 3 and fails to draw conclusions on how much difference it makes what socio-economic development paths are chosen; it remains mainly descriptive. So try to streamline/ shorten and focus on main issue, with appropriate reference to ch 3 (when looking at chapter 3,section 3.1.5, very different literature is quoted; if this section in ch 12 is meant to supplement that material in ch 3 it would be good to start with summarizing what ch 3.1.5 says) (Bert Metz, IPCC)	Noted. Section 12.2.1.2 will reword.
12-33	B	14	35	14	36	is suggestion that the studies referred to are indeed demonstrating that global climate is likely to be influenced more by development paths than climate policies, indeed true? It seems to be contradicted by lines 31-33. (Bert Metz, IPCC)	TIA in the rewording of section 12.2.1.2
12-34	B	14	38	17	16	This section chooses a rather climate centric picture of regional differences, while this part of ch 12 should take it from the development perspective. For instance the paragraph on capacity only talks about mitigative capacity and ability to pay. Try to modify by focussing more on development characteristics (e.g institutions as discussed at length in section 12.2.3) that determine the ability to decouple development from emissions.	Noted. Will modify and add explanatory text to Table 12.1

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						(Bert Metz, IPCC)	
12-35	B	17	28	17	30	Eliminate the sentence starting with “For instance”. First, it’s unclear how this sentence follows from the previous sentence, which it purports to illustrate. Second, it does not make sense to compare fuel efficiency of the existing fleet in the US with the new standards in China. Third, China is still a developing country, not as implied by the material preceding this sentence, a developed country. U.S. Government (Government of U.S. Department of State)	Accept first part of comment. Will change order of phrases and clarify.  Accept second part of comment. Will compare standards.  Reject third part of the comment. It is not implied in the text that China is a developing country.
12-36	B	17	36	0		"which have different implications for mitigative capacity": very unclear (Bert Metz, IPCC)	Noted. Will consider rewording.
12-37	B	18	8	18	13	“Suggest adding statement regarding GHG increases due to developing economies economic growth is major anticipated new and increasing source of GHG. Large opportunity to address two-way relationship through how carbon technologies that will support sustainable development.” U.S. Government (Government of U.S. Department of State)	Reject. This is a section on developing economies.
12-38	B	18	17	0		this should not be a separate section; turn into bolded heading, just as "developed economies" and "developing economies" (Bert Metz, IPCC)	Accept.
12-39	B	18	19	18	36	This whole section is not focused on the key issue, namely what difference development (or in this case economic restructuring) choices make for emission levels; what is also missing is something about mitigative capacity, political priorities, institutions and alternative futures	Accept. Will try to modify.

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						(Bert Metz, IPCC)	
12-40	B	18	23	18	24	Rural energy development will not have a direct influence on GHG emissions, but it may have an indirect effect by changing how a large percentage of the population that does not use a lot of energy now, but may in the future, thinks about energy choices. U.S. Government (Government of U.S. Department of State)	Noted. Mistaken line reference but will revise relevant text in Chapter.
12-41	B	19	8	19	10	Replace the first sentence of this paragraph with the following: “Given the fact that energy consumption and emission per capita are low in the developing world, THERE IS ONLY SO MUCH REDUCTION THAT CAN BE REALIZED FROM EXISTING EMISSIONS, EXCEPT POSSIBLY IN THE LARGEST DEVELOPING COUNTRIES. MORE IMPORTANTLY, BECAUSE OF THE OPPORTUNITY COSTS IN TERMS OF BOTH FISCAL AND HUMAN CAPITAL, FOCUSING ON MITIGATION MAY BE COUNTERPRODUCTIVE IN TERMS OF meeting sustainable development goals (GOKLANY 2000b).” [Note: Inserts are shown in UPPER CASE; deletions are not shown.]. Citation: Goklany, I.M. 2000b. Applying the Precautionary Principle to Global Warming. Center for the Study of American Business, Washington University, St. Louis, Mo., USA. Policy Study 158. November 2000. U.S. Government (Government of U.S. Department of State)	Noted. Will acknowledge that the literature exists in Ch.12.
12-42	B	19	29	19		Insert after the period on line 29, the following: “Moreover, reducing vulnerability to climate-sensitive risks that are hurdles to sustainable development (e.g., poor agricultural productivity, hunger, malaria and other climate-sensitive diseases, poverty) would not only advance sustainable development but also their capacities to adapt to or mitigate climate change (Goklany 1995, 2006a). In addition, the risks of climate change will be on top of other risks due to non-climate-change-related (NCCR) factors	Noted. See response to comment 12-42.

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						<p>(including current climate and climate variability). Based on analyses of the global impacts of both climate change and non-climate-change-related (NCCR) factors on the climate-sensitive hazards of malaria, hunger, coastal flooding and water shortage through the 2080s (Arnell et al. 2002, Parry and Livermore 1999), Goklany 2005a) indicates that, at least for the next few decades, overall risks and/or threats associated with these hazards would be lowered much more effectively and economically by reducing current and future vulnerability to those hazards rather than through any mitigation scheme, including stabilization at 550 or 750 ppm and ‘no climate change’. A key to this result is that the technologies, human and social capital needed to reduce the NCCR risks in the short term would be useful, if not essential, to reducing climate-change-caused risks in the longer term. Such vulnerability reduction can be effected by (a) focusing on measures designed to reduce risks due to the individual climate-sensitive hazards or threats that might be exacerbated by climate change, particularly if they also pose hurdles to sustainable development in the developing world, or (b) more broadly through generally enhancing sustainable development through, for instance, meeting the Millennium Development Goals or bolstering the institutions that underlie such development (see, also, Goklany 2006a).”</p> <p>Citations: (1) Arnell, N.W., Cannell, M.G.R. Hulme, M., Kovats, R.S., Mitchell, J.F.B., Nicholls, R.J., Parry, M.L., Livermore, M.T.J., White, A., 2002. The consequences of CO2 stabilization for the impacts of climate change. <i>Climatic Change</i> 53, 413-446. (2) Parry, M.L., Livermore, M., 1999. <i>Global Environmental Change. Special Issue 9.</i> (3) Goklany, I.M., 1995. Strategies to enhance adaptability: technological change, economic growth and free trade. <i>Climatic Change</i> 30, 427-449. (4) Goklany, I.M. 2005a. “A Climate Policy for the Short and Medium Term: Stabilization or Adaptation?” <i>Energy &amp; Environment</i> 16: 667-680.</p>	

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						(5) Goklany, I.M. 2006a. Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development. Mitigation and Adaptation Strategies for Global Change, forthcoming. U.S. Government (Government of U.S. Department of State)	
12-43	B	19	44	19	48	Very interesting; what were the findings of these studies for the question of how to achieve different development paths and the conditions/ circumstances that this requires? (Bert Metz, IPCC)	Noted. Will elaborate.
12-44	B	20	5	20	45	Does not make sense to have sectoral discussion here and then again later in 12.2.2. Restructure to bring all sectoral material together in 12.2.2 except for general issues that than can be moved to the earlier sections of 12.2.1, (Bert Metz, IPCC)	Noted. Will try and restructure Section 12.2
12-45	B	20	40	20	43	It should be noted that the potential effect of biofuels/fuel farms on the cost of food, land clearance, and biological diversity could be negative. U.S. Government (Government of U.S. Department of State)	Reject. Not relevant for the statement the text wants to make.
12-46	B	21	11	21	16	the logic as presented for section 12.2.2 does not work. The sequence now is that first the relationship between economic growth and emissions is explored, followed by a sectoral discussion of that relationship, followed by lessons learned; then a (very lengthy) discussion on institutional issues and changing development paths and then a mainstreaming section that is not exclusively about future developments (by the way there is already considerable scenario material in 12.2.1). So readers like me get lost; a better logic is needed, such as: first explore the relationship between a few important factors for development with GHG emissions (economic growth and institutions) do this for past experience and future; then elaborate at sectoral level; conclude with lessons learned; this would be easier to follow (if institutional section is drastically shortened)	Accept. Section revised along lines suggested in comment.

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						(Bert Metz, IPCC)	
12-47	B	21	18	21	23	belongs not here but in section 12.2.2.1; should conclusion not at the end of that section, rather than at the beginning? (Bert Metz, IPCC)	Reject.
12-48	B	22	11	0		"higher than the highest per capita GDP in the sample considered": strange; because how can you then conclude there is a decline in emissions?? (Bert Metz, IPCC)	Accept. Will clarify.
12-49	B	22	31	0		"inclusion of trade": very unclear; do you mean inclusion of embedded emissions"? Then say so (and explain what that means) (Bert Metz, IPCC)	Accept. Will clarify.
12-50	B	23	4	23		Authors should consider competing hypotheses to the extent validated by the literature, including that presented by the following comment. The commentor's extensive text and sometimes judgmental terminology seems inconsistent with the tone of this report. Insert the following text at line 4: "An alternative to the EKC hypothesis is the 'Environmental Transition Hypothesis' (ETH), which attempts to explain trends in environmental indicators as a function not just of GDP per capita (or affluence) but time, which by happenstance over the past two centuries, combines both economic growth and technological development (Goklany 2002b). The ETH holds that society is on a continual quest to improve its quality of life (QoL) which is determined by numerous, often competing, social, economic, and environmental factors. The weight given each determinant is constantly changing with society's precise circumstances and perceptions. In the early stages of economic and technological development, which co-evolve, society places higher priority upon increasing affluence than on environmental impacts (EI) because that provides the means for obtaining basic needs and amenities (e.g., food, shelter, water, education and electricity) and reducing more significant	Noted. Will include reference.



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						<p>risks to public health and safety (e.g., malnutrition, infectious and parasitic diseases, mortality and other risks whose mitigation increases life expectancy). Also, in these early stages, society may be unaware of the risk posed by specific EIs. But as society becomes wealthier, tackles these more significant problems, and possibly, gains more knowledge, reducing EI automatically rises higher on its priority list. That is, environmental quality is perceived to be a more important determinant of the overall quality of life. This period corresponds to the ‘period of perception’ or p(P).</p> <p>“Prior to p(P) one should not expect society to require, or private parties to volunteer, to reduce EI, although reductions may occur due to secular improvements in technology or other fortuitous reasons. From p(P) onward, a democratic society, in particular, will often translate its desire for a cleaner environment into laws, either because clean up is not voluntary or rapid enough, or because of sheer symbolism. Increasing affluence enables society to afford not only the R&amp;D needed to improve or develop cleaner technologies but also their purchase and use, especially if their up-front costs are higher. In addition, the secular march of technology enables society to better and more cheaply improve its environmental quality. Moreover, the wealthier the society, the more affordable – and more demanding – its laws. Through the combination of these factors, with increasing affluence and technological change, EI undergoes a period of transition (i.e., the “Environmental Transition” or ET) during which its deterioration is slowed down and finally reversed, after which, EI should ultimately decline. Hence the inverted-U shape in a curve of EI versus time.</p> <p>Goklany (1999a) has shown that a set of single-country environment transition curves (i.e., EI vs. time curves) do not necessarily result in an inverted-U shaped curve when cross-country data on environmental impact is plotted against affluence,</p>	

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						<p>as suggested by an EKC. The cross-country curves could be N- or even U-shaped.</p> <p>Although greater wealth and improved technology are conducive to a cleaner environment, they do not guarantee that. For an ET to occur there needs to be a mechanism that reliably converts society’s desire for improving its quality of life by cleaning up the environment into voluntary – or, failing that, mandatory – action. This is more likely to occur if society is democratic, if people are rich enough, technology is available and affordable, and if overall socio-economic costs are deemed to be worth it. Thus, the precise timing of the environmental transition, and its width and height as measured on a EI-versus-time curve will depend on a variety of factors, including governance, natural resource endowment, outstanding societal problems, and so forth. Thus, for instance, countries with little coal reserves are more likely to see an earlier and/or faster transition to lower CO2 emissions. Similarly, the level of affluence at which the EI curve peaks will also depend on whether the country is an early- or late-developer – because late-developers can not only learn from environmental lessons learnt by the former but also be able to take advantage of technologies created by the former. Thus one should not expect that EI will peak at the same level of affluence for each country, nor that its width or height would be the same. Hence, the notion that there is a magic GDP per capita at which countries go through a peak is unrealistic, to put it mildly.</p> <p>Just as it has been argued for the EKC, it might be similarly argued that while ETs might be consistent with local pollution problems, they have not been shown to be valid for “pollutants involving long-term and more dispersed costs (such as CO2)” (Arrow et al. 1995). However, the ozone depletion problem offers a good example where, despite the fact that it is due to pollutants with global impacts and dispersed costs, there is an apparently successful global effort underway to address that problem. More</p>	

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						<p>importantly, the problem with CO2 is not just that it is globally dispersed per se, rather that the global costs of controlling it, even minimally (per the Kyoto protocol, for instance), are very large and, for actions that go substantially beyond no-regrets, they may outweigh its global benefits.</p> <p>In response to arguments that although single-country plots of CO2 emissions per capita or GDP vs. time may show a peak (that is, an environmental transition), total CO2 emissions either do not show a peak (i.e., they lack a transition) or, if they do, they would occur too late to do much good, proponents of the ETH argue that, first, for the general public the period of perception for CO2 did not really commence until at least the 1990s or, possibly, the early 2000s – with the publication of the IPCC SAR and TAR. It is, therefore, unreasonable to expect to see transitions for CO2 so soon after that, especially given the cost and time it takes to replace the existing energy infrastructure. Second, not enough time has gone by to gauge measurable effects on CO2 emissions from the increased R&amp;D on and incentives for using no- or low-carbon fuels that have only been put in place in the last few years..Third, there has never been any showing that global warming by itself is as immediate or important as the numerous other social, economic, and environmental problems facing humanity and the globe, including, for instance, indoor air pollution due to burning of solid fuels inside the home or sulfates outdoors, loss of habitat for agricultural needs, and water-related deaths and diseases. In the few studies this question has been explicitly examined, the answer to this question seems to be in the negative, at least for the foreseeable future (50 to 100 years from now) (Goklany 2003, 2005a, 2005c). Thus, lacking a compelling rationale for placing a higher priority on global warming than on these other more urgent environmental problems, the absence of an ET for CO2 emissions is unsurprising. Fourth, turnover of energy systems, although inherently slow, has been further</p>	

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						retarded by the lack of enthusiasm for a number of non-combustion alternatives to fossil fuels (such as nuclear or hydro) even among some supporters of greenhouse gas controls. This suggests that even among supporters of strong mitigation action, other social and environmental problems take precedence. Citations: (1) Goklany, IM. 1999b. Clearing the Air (Washington, DC: Cato Institute). (2) Goklany, IM. 2003. Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation. Energy & Environment 14: 797-822. (3) Goklany, I.M. 2005a. "A Climate Policy for the Short and Medium Term: Stabilization or Adaptation?" Energy & Environment 16: 667-680. (4) Goklany, IM. 2005c. Is a Richer-but-warmer World Better than Poorer-but-cooler Worlds? 25th Annual North American Conference of the US Association for Energy Economics/International Association of Energy Economics, September 21-23, 2005. U.S. Government  (Government of U.S. Department of State)	
12-51	B	23	5	0		move the section on institutions (12.2.3) here and shorten (Bert Metz, IPCC)	Accept. Section 12.2.3 moved up.
12-52	B	23	7	0		suggest to change "socio-economic" into "sector", because this is the section where sectoral policies are discussed. (Bert Metz, IPCC)	Accept.
12-53	B	23	9	23	13	if this would be broadened to both retrospective and future sectoral studies (discussed in section 12.2.4 ), all sectoral material can be integrated here , helping a more simple structure of 12.2.2 as suggested above (Bert Metz, IPCC)	Accept. All sectoral material assembled.
12-54	B	23	33	23	36	To remain consistent with the sector breakdown in the rest of the report, limit here to "Energy supply". This implies that the section on energy efficiency/ demand side should be moved to the end use	Reject.

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						sectors (buildings, transportation, industry, agriculture/ forestry, waste management) and that these sectors should be included here (Bert Metz, IPCC)	
12-55	B	23	38	24	15	When bringing the material from section 12.2.4 on sectoral issues together the point can be made here that total emissions increase by providing rural people with access to electricity is small; that is an important point (Bert Metz, IPCC)	Accept. The link between discussion in 12.2.4 and 12.2.2 has to be made.
12-56	B	24	1	24	11	This discussion omits consideration of a very important public health factor, namely, indoor air pollution. According to the WHO's World Health Report 2002, over 1.6 million deaths were attributable to indoor air pollution mainly due to cooking and heating indoors from solid fuels (including coal and dung) in the developing world. This ought to be noted. Moreover, this exceeds by an order of magnitude what has been attributed to climate change (in the same WHO report). Any discussion and/or evaluation of options for using commercial fuels/gas/electricity must consider these factors. U.S. Government (Government of U.S. Department of State)	Accept first part of comment. Will include reference on indoor air pollution.  Reject second part of comment. Discussion of climate-related deaths is a WGII issue.
12-57	B	25	1	25	17	split this paragraph in energy supply efficiency (a way to increase access and energy security) and end use efficiency (discuss that under the respective end use sectors as suggested above) (Bert Metz, IPCC)	Reject. Not enough added value.
12-58	B	28	5	28	10	but what does that mean for energy use and GHG emissions? (Bert Metz, IPCC)	Accept. Will qualify implications for energy or emissions
12-59	B	28	45	28	48	These are important issues (food security by providing market access; enhanced deforestation through transport infrastructure; deserves a better treatment than just referring to one study (Bert Metz, IPCC)	Accept. Will expand.
12-60	B	29	3	30	2	discussion of agricultural protection policies missing (Bert Metz, IPCC)	Noted. Will look at literature on biofuel and

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							trade issues.
12-61	B	29	10	0		"on structural" should be "of structural" (Bert Metz, IPCC)	Accept
12-62	B	29	25	29	26	" (Bert Metz, IPCC)	Unclear
12-63	B	30	5	30	46	merge this section with 12.2.4 (in as far as it covers lessons learned); rest of 12.2.4 (as suggested above) can be merged with sector section 12.2.2.2 (Bert Metz, IPCC)	Accept. Section on sectors merged with section 12.2.4;
12-64	B	30	10	0		"sectors that are farther away from the production frontier " : this has not been discussed in those terms in the previous sections; rephrase in terms that have been discussed (Bert Metz, IPCC)	Accept. Will include discussion of production frontier in 12.2.2.2
12-65	B	30	20	0		same comment as on line 10 (Bert Metz, IPCC)	Accept. See comment 12-64
12-66	B	30	22	30	25	it is not clear why; explain better (Bert Metz, IPCC)	Noted. Will review.
12-67	B	30	31	30	34	this sentence clearly shows why the institutional section 12.2.3 needs to come before the sectoral discussion and the lessons learned. (Bert Metz, IPCC)	Noted.
12-68	B	30	49	50	30	move up (to new number 12.2.2.2) and drastically shorten (it is now 20 pages!!); the problem with this section in its current form is that the reader will wonder why they have to know all this; it reads as a long overview of the social science literature as such; the connection to the central question of this chapter section is what the relevant points are for changing development paths; the message (if there is any) gets completely lost; Since much of what is said in this section is very relevant for the discussion of policies and measures (and barriers) in ch 13, it would make sense to move some of the material there and focus here on the issues that affect the possibilities to change (rather than possibilities to implement	Accept. Section 12.2 to be restructured and section 12.2.3 to be shortened.

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						climate policies that is the focus of some of this text) (Bert Metz, IPCC)	
12-69	B	33	17	0		change "captive for grid power" into "stand-alone for public grid power" or something like that to clarify what is meant (Bert Metz, IPCC)	Accept. Will clarify.
12-70	B	34	1	34		Box 12.3: It should be noted within the box – probably in the last paragraph -- that to the extent electricity use displaces indoor fuel use that would also provide a benefit to public health. See previous comment on the estimated toll of indoor air pollution. U.S. Government (Government of U.S. Department of State)	Accept.
12-71	B	36	16	36	17	Change “frequently greeted” to “initially greeted.” While there was considerable suspicion that emission trading systems were “licenses to pollute” when they were first discussed in the 1980s, the success of this approach has converted thinking among most environmental organizations. Mott (1990) was correct for its time, but if this sentence is to be retained in its current form, it needs to be supported with a much more recent reference, and an explanation provided for the widespread support for these programs. U.S. Government (Government of U.S. Department of State)	See 12-166 in Batch A
12-72	B	37	2	0		replace 'sequestration" by "management", because this is not only on CO2 fixation by trees (what we call sequestration) but also about avoiding emissions from forest destruction (Bert Metz, IPCC)	Accept.
12-73	B	37	18	37	28	this is very climate centric and would better fit into chapter 13; delete here (Bert Metz, IPCC)	Accept. Will be deleted.
12-74	B	37	18	37	20	Remove the words “Joint Implementation.” Not accurate. U.S. Government (Government of U.S. Department of State)	Accept. Will be deleted.
12-75	B	37	31	37		Provide as references here: Goklany (1995) and Goklany (2006a)	Noted. Will check

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						<p>which explicitly address the links between the ability to adapt, the ability to mitigate, and sustainable development, and provide integrated strategies and measures to accomplish these diverse goals simultaneously.</p> <p>Citations: (1) Goklany, I.M., 1995. Strategies to enhance adaptability: technological change, economic growth and free trade. Climatic Change 30, 427-449. (2) Goklany, I.M. 2006a. Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development. Mitigation and Adaptation Strategies for Global Change, forthcoming. U.S. Government (Government of U.S. Department of State)</p>	references.
12-76	B	40	46	40		<p>Replace “Even” with “Some”. U.S. Government (Government of U.S. Department of State)</p>	Accept.
12-77	B	43	29	43	29	<p>BINGO stands for Business and Industry NGO, not business initiated NGO. U.S. Government (Government of U.S. Department of State)</p>	Accept.
12-78	B	43	34	43	35	<p>1. Replace “voters” with “citizenry”, since not all countries are necessarily democratic. It should also be noted that even where democratic traditions are weak, governments are concerned about the welfare about their citizens, if for no reason other than they desire acceptability and legitimacy. Even Chinese Emperors of the past were concerned about losing “the Mandate of Heaven”, which meant, among other things, having to work at reducing the impact of floods, droughts, and other extreme events, as well as maintaining law and order. 2. Replace “shareholders” with “shareholders and, perhaps to a lesser extent, customers” U.S. Government (Government of U.S. Department of State)</p>	<p>Accept point 1.</p> <p>Reject point 2. Businesses are not accountable to customers the same way as they are to shareholders</p>
12-79	B	43	35	43		<p>Add the following sentences at the end of this paragraph: “Equally importantly, governments are accountable to much broader and diversified groups than either businesses or NGOs. The</p>	Reject. Too detailed.



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						shareholder and customer base of many businesses may be wider than that for most NGOs, although that may not be true for privately-held businesses serving niche markets. The latter, i.e., privately-owned businesses serving niche markets, and foundation-funded NGOs may be the groups accountable to the narrowest and/or least representative set of interests.” U.S. Government (Government of U.S. Department of State)	
12-80	B	44	36	44	36	“Replace ‘Environmental’ with ‘Ecosystem’” U.S. Government (Government of U.S. Department of State)	Accept.
12-81	B	45	1	45	3	"new institutionalism" and "institutional thickness" are not discussed at all; delete, because apparently not relevant for the reader (Bert Metz, IPCC)	Accept.
12-82	B	45	38	45	38	The three principles mentioned do not follow in the text. Add them to the text. U.S. Government (Government of U.S. Department of State)	Accept.
12-83	B	48	3	48	5	it is not clear at all why local involvement would resolve global stand-off (Bert Metz, IPCC)	Noted. Will check reference.
12-84	B	49	11	49	14	this is very unclear; why does the reader need to know this? (Bert Metz, IPCC)	Noted. Will consider moving section and derive.
12-85	B	50	20	0		"extant" ??? (Bert Metz, IPCC)	Accept. Will delete.
12-86	B	50	32	54	26	This section is very relevant and interesting, but should follow from the sectoral discussion in section 12.2.2.2 (merge as suggested above); title to be changed, because this section is really about prioritizing or quantifying the potential effects of development policies for GHG emissions. (Bert Metz, IPCC)	Accept. Will reorder section 12.2
12-87	B	50	44	50		Replace “and the underlying development path.” With the	Reject. Discussed

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						following: “the underlying development path, AND THE OPPORTUNITY COSTS OF DIVERTING RESOURCES TOWARD MITIGATION AS OPPOSED TO DEALING WITH CURRENT PROBLEMS.” U.S. Government (Government of U.S. Department of State)	elsewhere.
12-88	B	50	47	50		<p>Insert a new bullet on line 47 to read as follows: “Increasing the productivity of the food and agricultural sector so that more usable food is produced per unit of land and water diverted to agricultural uses would, in addition to helping increase food supplies and reducing hunger, either reduce conversion of forests to cropland or allow cropland to revert to forests, in essence adding to carbon sink capacity. It would also limit habitat loss and fragmentation (which are the major threats to terrestrial biodiversity) and diversion of water from in-stream uses (the major threat to freshwater biodiversity). Thus, increasing land and water productivity would lower barriers to "natural" adaptation (via migration and dispersion) of species if climate changes. Notably, Article II of the Framework Convention on Climate Change refers to allowing ecosystems to adapt naturally to climate change. Finally, increased agricultural productivity would lower the demand for cropland which would reduce land prices, thereby decreasing the socioeconomic costs of purchasing or reserving land for conservation, carbon sequestration, or both (Goklany 2000a, 2003).”</p> <p>Citations: (1) Goklany, IM. 2000a. Potential Consequences of Increasing Atmospheric CO2 Concentration Compared to Other Environmental Problems. Technology 7S: 189-213. (2) Goklany, IM. 2003. Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation. Energy &amp; Environment 14: 797-822. U.S. Government (Government of U.S. Department of State)</p>	Reject. The issue of intensification is discussed in section 12.2.2.2. Also, the comment relates directly to adaptation, and only indirectly to mitigation.
12-89	B	51	27	53	4	This is in fact an explanation of the numbers in fig 12.4; change	Accept.

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						the lay-out to make that much clearer (e.g use headings as in chart) (Bert Metz, IPCC)	
12-90	B	52	14	52		Add at the end of this paragraph the following: “On the other hand, heavy use of biomass for fuels may compete with other societal goals such as food security, reduction of hunger, and conservation of biodiversity.” U.S. Government (Government of U.S. Department of State)	Accept. Will include sentence on biomass.
12-91	B	53	5	53	5	As currently presented, the figure is problematic. Authors should elaborate the detailed source of this information. It is too subject to misinterpretation. The explanation in this chapter is sufficiently detailed in pages 51-52 to explain the meaning of the figure, but even in the TS and SPM, that detail disappears (could add figure caption from SPM.6 to Figure 12.4 too). For example, the SPM refers to policy areas, not sectors, implying that the correct choice of policies could eliminate the emissions. Comments are needed for this in figure in SPM.6 U.S. Government (Government of U.S. Department of State)	Noted. Figure will be change to Table.
12-92	B	53	16	54	26	these are examples of country studies on the issue of mainstreaming climate change (and not only the emissions part) into development policies; belongs in an introductory part of 12.2, not here at the end. (Bert Metz, IPCC)	Noted. Will consider in restructuring.
12-93	B	54	21	54	22	On line 19, presumably the “90%” refers to the Dutch population. That should be clarified. U.S. Government (Government of U.S. Department of State)	Accept. Will clarify.
12-94	B	54	28	65		Implications of Mitigation Choices for SD Goals - This section generally lacks flow, coherence, and clarity – maybe because it is trying to summarize material from a lot of other chapters, maybe because it is not the main interest of the author team – although the sectoral summaries contain some very good material. The most obvious weakness is that the section fails to deal with the	Accept.  Reject. The impact of different stabilization

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						dominant question about CC mitigation strategy impacts on SD goals, impacts of different stabilization targets for SD goals, which should be a central issue in this part of the IPCC WG III report. Also, the section lacks a summary of key points, which would be helpful. Table 12.3 is very useful, but it seems to need indications of where these points come from: e.g., citations of sources in other chapters? Recommend authors revisit text to improve readability. U.S. Government (Government of U.S. Department of State)	targets on SD is beyond the scope of Ch.12, and is considered in Ch.3.  Accept. Will provide indications on sources.
12-95	B	54	30	54	36	The first sentence is incorrect, but also irrelevant. The relevant question in this section is not whether or not available technologies are sufficient to stabilise climate change, but how mitigation technologies and policies as discussed in chapters 4-11, relate to sustainable development. It is not necessary to repeat the main mitigation options, a reference to the respective chapters will do. This section can be deleted and 12.3 can start at line 36. (Bert Metz, IPCC)	Accept. Will reformulate.
12-96	B	54	30	54	31	This statement is essentially meaningless since it does not say at what level, when and at what social and economic cost would stabilization occur using “commercially available technologies and practices” (presumably authors are talking of “commercially available” today). Either remove this statement or provide more details. U.S. Government (Government of U.S. Department of State)	Noted. Will reformulate in relationship with findings of Ch.3.
12-97	B	54	42	55	2	This paragraph discussed the question of SD paths and therefore belongs in 12.2, not here. (Bert Metz, IPCC)	Noted. Paragraph reformulated to discuss the implications of mitigation components of development paths on local SD.
12-98	B	55	16	55	17	The last sentence in this paragraph should be balanced in a manner consistent with the fact that all energy technologies have	Noted. Will reformulate. See 12-219.

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						relative advantages and disadvantages. The sentence could be reworded: “Nuclear and large hydro energy supply, for example, reduces carbon emissions but can have other positive and negative environmental and social impacts that should be considered.” U.S. Government (Government of U.S. Department of State)	
12-99	B	55	27	55	34	Make clear this is about economic sustainability. Clarify that there is a difference between expenditures (for mitigation) and welfare. Spending money on mitigation can create jobs. It is the possible welfare loss that matters in terms of trade offs with economic welfare (the welfare losses described in chapter 11 are small for most mitigation strategies). (Bert Metz, IPCC)	Noted. Will clarify.
12-100	B	55	37	55	40	These two sentences seem to address the impacts of development paths on GHG emissions. That belongs in 12.2. (Bert Metz, IPCC)	Reject. Development paths include the use of mitigation options.
12-101	B	55	49	61	47	This section uses a sector breakdown that differs from the sector breakdown in this report. That is very confusing. Limit 12.3.1 to energy supply (including efficiency of supply and fuel switching) and add sections for transport , buildings, industry (energy demand issues). Some material now in 12.3.1 can then be moved to those end use sector: transport material on page 59, lines 23-40; buildings material on page 58, line 21 to page 59, line 7; industry: page 59, line 42- 50; cross-sectoral material on page 60, lines 2-9 and page 61, lines 13-31 (Bert Metz, IPCC)	Accept. Will make sure that headings of sectoral chapters are recognizable.
12-102	B	56	10	56		Table 12.3: In the last column, in the row for “Fuel switching...” add the following: Switching from solid fuels to commercial fuels for cooking and heating indoors should improve indoor air pollution.” U.S. Government (Government of U.S. Department of State)	Noted. Will note that “switching from solid to non-solid fuels reduces indoor air pollution.”
12-	B	56	10	56		Table 12.3: In the last column, in the row for “Energy	Accept. Will add this

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103						efficiency...” replace the last sentence dealing with indoor air pollution with the following; “On one hand, increasing the efficiency of fuel burning appliances in the home and commercial establishments would reduce indoor air pollution, while measures to reduce air exchange with the outdoors would exacerbate it.” U.S. Government (Government of U.S. Department of State)	issue..
12-104	B	56	0	0		Table 12.3:add transportation, buildings industry sector; are all arguments listed in this table covered in the literature references in 12.3? If not, then add literature references to the table; move table to page 54/55 where the table is first introduced (Bert Metz, IPCC)	Noted. Material is either from chapters or it is referenced in the accompanying text.
12-105	B	59	25	59	26	this does not look to be very relevant in this context because the measures listed are not known as mitigation measures; however, public transport is and that would deserve more discussion because public transport is contributing to energy efficiency, reduced air pollution and the social benefits of public transport are obvious (Bert Metz, IPCC)	Noted. Public transport is noted as mass transport which is implemented in coordination with other infrastructure improvements to be most effective.
12-106	B	59	35	59	37	“...measures in the transport sector...proved to provide little ancillary climate benefits for instance.’ E.g. New Delhi’s switch to CNG. The air quality improvement is obvious and the efficiency of CNG was considerably better than diesel and resulted in substantial GHG emissions reductions as well. U.S. Government (Government of U.S. Department of State)	Noted. But no reference to cite about Delhi GHG emissions. See Chapter 5 for Chile counter example.
12-107	B	60	2	60	9	This paragraph is in fact a general issue for the demand sectors; move it to an appropriate place.  Discuss literature on "poverty tariffs" as an example of favouring the disadvantaged.	Rejected. Paragraph is in appropriate place.  Rejected. Poverty tariffs are discussed elsewhere,

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						Add examples for gender neutrality (is that really an issue when discussing pricing policies?) (Bert Metz, IPCC)	but not in relation to energy efficiency.  Noted. Will consider dropping.
12-108	B	60	11	60	17	First sentence is ok, but rest of paragraph discusses privitisation, which should be in 12.2 (because it is a non-climate policy). Does not belong here. (Bert Metz, IPCC)	Accept.
12-109	B	60	30	60	40	the term LCI fuels does not work for hydro. Suggest to talk about less carbon intensive energy sources. Clarify what falls under this. Make sure the discussion applies to all sources (hydro, biomass, wind, solar, natural gas). (Bert Metz, IPCC)	Accept. Will clarify.
12-110	B	61	40	61	47	What does this tell us about the choice of mitigation options and policy? (Bert Metz, IPCC)	Accept. Will drop, revise or move paragraph.
12-111	B	62	3	0		"unlikely to be cost-effective" is a vague term; should it say "likely to be expensive"? (Bert Metz, IPCC)	Reject. Proposed formulation is weaker than formulation in text.
12-112	B	62	31	62		Insert: "Policies that avoid deforestation have significant biodiversity, soil and water conservation benefits at the risk of loss of economic welfare." This statement does not seem to give credit to the significant economic benefits that can be obtained from biodiversity whose conservation can be greatly assisted by decreasing deforestation activities, including the following economic benefits: pharmaceutical opportunities, water purification, pest control, pollination, soil protection, recreation and ecotourism, etc. See reference "Environmental services of biodiversity" by Norman Myers, PNAS 93, 2764-2769, 1996. Also, conserving biological	Noted. Will reformulate text in Ch.12 and in SPM based on discussion w/Ch.9.

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						diversity and its sustainable use have a fundamental role in the daily lives of humans and is critical for human health. A source of reference is a book resulting from a 1995 conference sponsored by NIH, NSF, the Smithsonian Institution, NAPE, PAHO that discussed issues linking human health to biodiversity. Book: Biodiversity and Human Health. Grifo F and J Rosenthal (editors). 1997. Island Press, Washington, DC, ISBN 1-55963-501-0. U.S. Government (Government of U.S. Department of State)	
12-113	B	63	28	63	32	Paragraph very unclear; reformulate. What is the point? (Bert Metz, IPCC)	Accept. Will sharpen.
12-114	B	63	41	64	27	These paragraphs do not read well and have many grammatical mistakes; improve the English; sentence on page 64, lines 5-7 is totally unclear (Bert Metz, IPCC)	Accept. Will reformulate
12-115	B	64	39	0		add "to reduce GHG emissions" after "waste management" (this section looks at relation of mitigation measures with SD) (Bert Metz, IPCC)	Accept.
12-116	B	65	17	0		add "mitigation" before "technologies" (mitigation perspective in 12.3) (Bert Metz, IPCC)	Accept.
12-117	B	65	30	66		Future Research Needs - Given the enormous uncertainties regarding the range of issues addressed by the chapter, this section seems entirely inadequate – implying that research needs are relatively few, rather vague, and not very urgent. This section needs substantial further thought. U.S. Government (Government of U.S. Department of State)	Accept. Will rephrase.

ON the CDM -- Gov. of New Zealand. Will include some information.