IPCC Fourth Assessment Report

Expert Review of the First-Order Draft

Chapter 12

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						GENERAL COMMENT : gender and climate change references are missing	SOME REFERENCES TO BE ADDED in section 12.2.2.1
12-1	A	0	0			I have four general observations. 1. There is considerable overlap between the chapters I looked at, between WG2 and WG3, and even within chapters. A lot of material is simply duplicated, and should be cut to improve readability and reduce size. 2. In a number of instances, authors mainly quote their own work. This is unworthy. In a number of instances, authors mainly quote other IPCC material. This is incestuous. The quoting of IPCC material is most pronounced in the scenario discussion, which can be summarised as "We, the IPCC, declare that all previous IPCC work is great." This is silly. 3. When cutting overlap, please concentrate the material in the chapters with experts among the authors. In many places, the authors are out of their depth; the selection of papers is haphazard, the assessment superficial. I also found too many references that are simply wrong; the authors cannot have read these papers. For a supposedly expert panel, this is very serious. 4. In a number of instances, the draft material reads like a political manifesto rather than a scientific document. In other instances, the authors have tried to hide their political message in pseudo-scientific language. For a supposedly	NOTED

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						independent panel, this is very serious. (Richard Tol, Hamburg University)	
12-2	A	0	0			This chapter excels in vagueness. Why don't you decide on two or three alternative working definitions of sustainable development and assess (1) how climate change affects sustainable development (e.g., does climate change impact reduce utility?), (2) how emission abatement affects sustainable development (e.g., does abatement increase inequalities within society?) and (3) how sustainable development affects baseline emissions (e.g., does sulphur control increase energy efficiency?). (Richard Tol, Hamburg University)	NOTED. We do not enter into a theoretical discussion of competing definitions of sustainable development. Questions 1, 2 and 3 are addressed in the chapter.
12-3	A	0	0			My main comment concerns the organization of this chapter which is so poor that it is very difficult to read the chapter. While the Table of Contents suggests a fairly clear structure, the text itself does not respect this. It is often rambling, meanders from one topic to another and on many pages I felt the text could just as well have been in a different (sub)section. If this had been an article submitted to a serious journal it would have been rejected out of hand simply for its lack of structure. To make the chapter effective the first task would be to impose a clear structure and rearrange all the material accordingly. This structure must have an analytical basis and should move well beyond the (not very helpful) distinction between the implications of development choices for mitigation and, conversely, the	ACCEPTED.

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						implications of mitigation measures for development choices. I would strongly encourage the authors to structure the literature review around a number of analytical questions and make sure that the reader knows at every stage which question is being addressed. (This is sometimes done in subsections. For example, e.g. section 12.2.2, p. 23 starts by raising three questions and then indicating what the structure of the remainder of the section is. This is excellent.) (Jan Willem Gunning, Free University, Amsterdam)	
12-4	A	0	0	59		Although I do realise the enormous difficulties of writing an accessible chapter on the topic of sustainable development and mitigation, I find this chapter very tough going. The text is to a large extent disjointed, skipping from one issue to the next in a few lines, sometimes very general and abstract, sometimes suddenly very specific and concrete without an appropriate connection. I have severe doubts about its accessibility for a wider audience. Although the structure appears logically at first sight, I continually loose track because many issues come back in different perspectives and under other headings. I know that this doesn't sound very constructive. My main suggestion is to find a better balance between bland generalities that contain no policy relevant messages and specific examples that may be misleading. (Jos Bruggink, ECN)	ACCEPTED.

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12-5	A	0	0			A fatal weakness is the lack of a clear basis for the conclusions drawn. For example, the "lessons learned" (pp. 30-31) do NOT follow from the preceding text. Clearly, if this defect is not repaired the chapter will lack credibility. (Jan Willem Gunning, Free University, Amsterdam)	ACCEPTED. The linkage will be reinforced.
12-6	A	0	0	0	0	This chapter would benefit from taking into consideration an IEA publication on sustainable development and climate change that considers what role the various technologies could play to simultaneously drive improvements for energy security, towards achieving the Millenium Development Goals, and making progress towards achieving effective mitigation of climate change: IEA, 2003, Energy to 2030, OECD/IEA, Paris (Cédric Philibert, International Energy Agency)	NOTED and ACCEPTED.
12-7	A	0	0			The terms of "sustainable development" and "well-being" are very general and conceptual base, and as a result, these terms include many different reasons. In this chapter, the meaning is consistent? (Toshihiko Masui, National Institute for Environmental Studies)	TAKEN INTO ACCOUNT. Will check consistency.
12-8	A	0	0	0	0	Policies that pursue sustainable development and climate change mitigation can be mutually supportive. In other words climate change mitigation can contribute to sustainable development goals and that sustainable development can create conditions that foster climate change mitigation.	NOTED.

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						(James Bero, BASF Corporation)	
12-9	A	0	0	0	0	There is not much on vulnerability research in this chapter. I assume that section 12.3 (see footnote 15 on p. 50) will address the question how mitigation policies might affect the vulnerability of socities and groups within societies (esp. the most vulnerable, i. e. the poor). [Allow me to cite the WBGU again as an additional source on this topic and for further references: WBGU 2005, World in Transition, Fighting Poverty through Environmental Policy, Earthscan.]+K23 (Margareta Kulessa, Mainz University of Applied Sciences)	NOTED. We will incorporate based on available literature [12.3.1.2]
12-10	A	0	0			Robert Chase emphasized how the aluminium industry focuses on four aspects in reducing emissions, great energy efficiency, more recycling and lastly looking to where the product can be used for applications. Happy to provide literature to the chapter. (Capetown Industry Expert Meeting, Industry)	NOTED. Will be taken into consideration in section 12.3.
12-11	A	0	0			More is needed in the chapter regarding industrial technology transfer and also the linkage between energy efficiency and affordability to reduce GHG emissions. Wendy Poulton from Eskom has case studies and happy to give to the authors. (Capetown Industry Expert Meeting, Industry)	NOTED. Would appreciate receiving case studies [12.3]
12-12	A	0	0			• Tom Heller agrees that empiricial evidence be added, eg. Vogel from Berkeley. Would like to have specific cases	TAKEN INTO ACCOUNT. Will be taken into consideration in

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						from other chapters (or from industries). Invites people to send examples. (Capetown Industry Expert Meeting, Industry)	section 12.3
12-13	A	0	0	0	0	The text of this chapter has to be re-arranged so that the reader can understand it. I think that the **key messages** are there, but finding them is difficult (Rutu Dave, IPCC WGIII TSU)	NOTED.
12-14	A	0	0			Overall an interesting chapter with a large focus on describing sustainable policy measures influencing (intended or not intended) mitigation of GHG. It also gives a good overview of the types of policies, state influence, governance leading to ways to interfere in the sustainable developments paths of countries. However, given this information one would expect a conclusion in which recommendations are given on ways to come to more mitigation focussed policy interferences in different regions of the world. This is not the case. (Berien Elbersen, Alterra)	NOTED. However, we are not permitted to be normative.
12-15	A	0	0			In chapter 8 a good overview is given of the mitigation possibilities in agriculture in different parts of the world. One would expect that in chapter 12 a link would be created between the mitigation possibilities in agriculture and the possble ways to come to implementation of such mitigation measures through policy interference specified per region in the world. Similarly these links could be established with other sectoral chapters. **[need more links**	REJECTED. Chapter 12 is not the place to this material.

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						to sectoral chapters] (Berien Elbersen, Alterra)	
12-16	A	0	0			The text should do a better job of reflecting the literature on the ethical underpinnings of the sustainability paradigm, which is crucial with respect to generating genuine political will to implement sustainable development and effective climate mitigation measures.I attach some relevant excerpts from Arquit Niederberger, A.: Sustainable Development, Ethics and Culture: American Power and Promise, an as yet unpublished manuscript which, however, surveys the relevant published literature: "Implicit in the vision of sustainable development is a nascent global ethic that remains to be formally articulated and acknowledged in sustainable development circles, despite the efforts of a number of (mostly developing) countries and non-governmental organizations (NGOs) to draw attention to ethical considerations. Instead, the debate has centered on detailed negotiation to address global environmental concerns (the primary motivation of industrialized countries) and economic development issues (the immediate concern of developing countries), while more or less carefully sidestepping overarching social and ethical aspects at the crux of cooperation among human civilizations. As a result, real progress has been blocked on various fronts. Globalization is one example: Whereas few oppose trade liberalization and globalization as such, these	ACCEPTED. We will address it in section 12.3.1

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						issues have proven to be very divisive, because of concerns over negative consequences for cultural integrity, state sovereignty and social equality. As Kofi Annan put it in his report to the UN Millennium Summit in 1999 , "The economic sphere cannot be separated from the more complex fabric of social and political life, and sent shooting off on its own trajectory. To survive and thrive, a global economy must have a more solid foundation in shared values and institutional practices – it must advance broader, and more inclusive, social purposes". The Plan of Implementation of the World Summit on Sustainable Development acknowledged the importance of ethics for sustainable development and emphasized the need to consider ethics in the implementation of Agenda 21 , but the WSSD failed to take concrete steps in this direction or to propose a future process to address the ethical dimension. Only recently has the international community begun the search for a humanistic, inclusive global ethic , which would provide a common basis for the further development and implementation of sustainable development. The surge in demand for a set of common ethical values that began in the 1990s was driven by two contemporary challenges, the need to find solutions to concrete, yet morally vexatious problems facing modern society (e.g. negative consequences of otherwise legal business practices), and the transboundary or global nature	

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						of the problems, which require ethical solutions that can be accepted across national and cultural boundaries . The Charter of the United Nations and the Universal Declaration of Human Rights continue to form the basis for much contemporary thought on the subject. In 1993 – for the first time in a century – representatives of more than 120 religions came together in the Parliament of the World's Religions to adopt a Declaration toward a Global Ethic. Two years later, the Commission on Global Governance published its report Our Global Neighborhood, which advocated global governance to enable cooperation among different societies and cultures facing common global problems. According to the report, the foundation for global governance is a global civic ethic, based on a set of core values – respect for life, liberty, justice and equity, mutual respect, caring, and integrity –.that can unite people of all cultural, political, religious, and philosophical backgrounds. Also in 1995, the World Commission on Culture and Development (WCCD), chaired by the former Secretary General of the United Nations, Javier Pérez de Cuéllar, pleaded in its report, Our Creative Diversity, for a global ethics composed of common values and principles. The Commission had been mandated by the UN Educational, Scientific and Cultural Organization (UNESCO) and the United Nations to prepare a policy-oriented report on the interactions between culture and	

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						development. In 1997, the InterAction Council (composed of some 30 former heads of state and government) submitted a Universal Declaration of Human Responsibilities to the UN and UNESCO (which, however, has been heavily criticized by some prominent NGOs and scholars). In the midst of this flurry of activity and interest, UNESCO recognized the importance of shared values in addressing the challenges facing humanity in the 21st century – in particular, in light of globalization, contradictory signs of greater integration and cultural fragmentation, transboundary problems and waning state authority – and in early 1997 launched the Universal Ethics Project. The main output was the 1999 publication A Common Framework for the Ethics of the 21st Century, which was conceived as a living framework and drew on the previous efforts mentioned above, as well as the additional insights of hundreds of experts worldwide. The most recent contribution to the development of an inclusive global ethic is the set of "essential fundamental values" adopted in the UN Millennium Declaration (see box). Contents of Box: Essential Fundamental Values Freedom: right to live in dignity, free from hunger, and free from the fear of violence, oppression or injustice; democratic and participatory governance based on the will of the people.	

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						Equality: equal access to opportunity to benefit from development; equal rights and opportunities of women and men. Solidarity: fair distribution of costs and burdens in accordance with basic principles of equity and social justice; those who suffer or benefit least deserve help from those who benefit most. Tolerance: respect of human beings for one other, in all their diversity of belief, culture and language; differences should be neither feared nor repressed, but cherished as a precious asset of humanity; active promotion of a culture of peace and dialogue among all civilizations. Respect for nature: prudence in the management of all living species and natural resources, in accordance with the precepts of sustainable development; preservation of immeasurable riches provided to us by nature for descendants; unsustainable patterns of production and consumption must be changed in the interest of our future welfare and that of our descendants. Shared responsibility: shared responsibility for managing worldwide economic and social development, as well as threats to international peace and security, exercised multilaterally; United Nations must play central role. (Anne Arquit Niederberger, Policy Solutions)	
12-17	A	0	0			I think it was quite challenging to deal with sustainable	TAKEN INTO ACCOUNT. We

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						development and mitigation. Some reasons for this were mentioned by the authors (e.g. sustainability is ambiguous and delusory). Nevertheless, they did not referred to one feature of the concept scholars should be aware of when at all and when linking it to mitigation and adaptation: sustainability is in many ways a normative and contested notion (see for instance authors' discussion in page 14 where they talk about measurig progress towards sustainable development). Sustainability is context specific, it is politically and not only scientifically defined by actors (nations, stakeholders) with different interests and capacity to influence the policy making process. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	will emphasize this linkage in section 12.1
12-18	A	0	0			I could not read the tables and figures to see how useful they are to convey a message. Authors tell for instance in page 12 that mitigation and adaptation overlap substantially but are not identical. But the reader can not see that. Therefore I suggest to include all of them no matter how developed they are. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	NOTED.
12-19	A	0	0			This chapter provides an overview of the linkages between climate mitigation and sustainable development. The discussion in the chapter engages with much of the relevant literature, makes many valid points, and contains some	NOTED.

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						sound conclusions. I would like to raise several points where improvements could be made as detailed below. (James Meadowcroft, Carleton University)	
12-20	A	0	0			The most interesting and significant observations in the chapter are somehow submerged in a mass of secondary points and detail. Perhaps this is inevitable in a text that attempts such a wide literature review. Paticularly important observations in this chapter seem to me to be that -- discussion of the implications of alternative development pathways for climate change in the industrialised countries has not yet been seriously initiatied (page 22, line 25); that decisions about mainstream policy issues (energy, land use, transport, and so on) are critical for climate (page 31; line 30); that energy is the most critical sector (page 22, line 32); and that policy really matters (page 25). Basic, but absolutely fundamental observations like these should be brought out much more clearly, and the wealth of superfluous detail (which often takes the form of 'many studies point out a,b,c'; 'others point to d,e, f'; 'gee its all so complex', 'guess we need more research') could be trimmed back. (James Meadowcroft, Carleton University)	ACCEPTED. We will highlight the key messages better.
12-21	A	0	0			The discussion of defing development rajectories remains somewhat abstract. It could be rendered more concrete by emphasizing the fundamental transformation of key economic sectors (agriculture, energy, construction,	NOTED. We will add material on dematerialization, based on available literature.

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						transport, and so on) to which any serious mitigation strategy points. This implies radical decoupling of economic activities from carbon emission over the coming decades. And this in turn offers opportunities for product and process improvement, substantial welfare gains, the emergence of new industrial complexes, and so on. This positive 'opportunity agenda' -- linked to international competitivess, technological innovation, industrial policy, and so on -- is critical to moving climate change beyond the 'merely environmental' frame as this chapter advocates. But the chapter could be more convincing if this angle was developed further. As it is, there are some please for developing countries to adopt an alternative development path. But the idea that the rich countries must take the lead in switching paths -- and exactly what this would ential in terms of reforming exisiting production and consumption complexes is not well developed. Lots of work exisits on this however, including academic studies and material related to government initiatives in this area in the UK, Netherlands, Sweden, Germany and other European countries. (James Meadowcroft, Carleton University)	
12-22	A	0	0			The discussion in the chapter, and the theoretical literatures on which it draws, appear biased towards developing countries and development economics. Although there is a paragraph on 'developed states' at the end of each section,	TAKEN INTO ACCOUNT. Will ensure appropriate representation of developed and developing countries examples in next draft.

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						this still appears as an add on. The authors have clearly tried to address this, but still there is an underlying idea that 'sustainable development' is above all what developing countries do. Many of the examples cite work on China, South Africa, India, and Brazil. Where are the examples from the UK, Germany, the United States, Canada, Australia and so on? There are important literatures on scientific and technological innovation, industrial policy, planning and de-regualtion, and environmental policy-making that are focused on the rich economies that are barely touched upon in this chapter. On page 3, line 51, the point is made that 'the issues and cases discussed in this chapter suggest that the challenge of implementing sustainable development is not confined to the developing countries.' True. this point was well made in the Brundtland Report twenty years ago. And, as many studies have pointed out, with the exception of the United States' sustainable development' has already been accepted into political discourse in the developed countries. Of course, that does not mean that it actually informs policy-making. But that is another story. (James Meadowcroft, Carleton University)	
12-23	A	0	0			I miss work done by T. Parris et al. (e.g. Parris, T.M., R.W. Kates: Characterizing a sustainability transition: Goals, targets, trends, and driving forces. PNAS, 100(14): 8068-8073; or: Kates, R.W., T.M. Parris, A.A. Leiserowitz	NOTED. We will check references.

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						2005: What is Sustainable Development? Goals, Indicators, Values, and Practice. Environment, 47(3): 8-21. (Fritz Reusswig, Potsdam Institute for Climate Impact Research)	
12-24	A	0	0			For the whole chapter there is general need to pay more attention to the socio-economic aspects of mitigation. Currently the draft has much on technical issues but contributes little on the need for political leadership for the kind of change in production and cosumption patterns that are needed and how this could happen as in behavioural change. Continued BAU approach where it would be possible takle climate change by tweaking only on the details of the existing economic growth centred model to create the mitigation efforts will not be sufficient. In the political discource the example of Appolo project style kind of society challenges is often discussed but there is little on the need for mitigation efforts on the needed scale in the draft. Try to include more sociology and behavioural studies aspects. (Lars Friberg, Climate Action Network (CAN) Europe)	***NOTED***.
12-25	A	0	0			Chapter is very theoretical and offers little examples of a practical nature. There is probably some duplication where topics have been covered by different authors under diffreent headings. I am not sure if Sections 12.1 and 12.2 are necessary in this report. (Nick Campbell, ARKEMA SA)	NOTED. Will reconsider the balance. REJECTED. We consider revised 12.1 and 12.2 necessary.

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12-26	A	0	0			The basic structure is very clear and definitely adequate (12.1, 12.2, 12.3, 12.4, 12.5) Within these sections, many aspects of 'SD and mitigation' are touched upon including several quite interesting case studies. But, despite the clear basic structure and the relevance of the remarks, I sometimes find it difficult too identify the major focus within the chapter's sections. Or, in other words: While reading I increasingly wondered where the chapter is heading, which objective it is aiming at and what I will learn from it. This is particularly the case in sections 12.1 and 12.2. My suggestion would be to concentrate on less issues (esp. in sections 12.1 and 12.2), then to discuss them more systematically and thoroughly. The chapter might futher improve if the sections were more obviously interlinked. (Margareta Kulessa, Mainz University of Applied Sciences)	NOTED. See above.
12-27	A	0	0			At the time being, section 12.3 (pp. 50-56) is given too little weight compared to section 12.2 (pp. 18-49), even compared to section 12.1 (pp. 9-18, which is the introduction, "only"). But, as footnote 15 (p. 50) suggests, I expect this to change. Besides further elaborating on "the implications of mitigation choices for SD" (which offers a lot of new and interesting insights), I would (again) recommend to tighten section 12.2 as it touches too many issues (sometimes being too superficial). Especially those	NOTED. Text is being revised.

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						remarks on SD in general (with little direct reference to mitigation) might be shortened as many of them are very wellknown already. (Margareta Kulessa, Mainz University of Applied Sciences)	
12-28	A	0	0			There are so many literature references missing that the reader may wonder how serious the draft should be taken. (Bert Metz, IPCC)	ACCEPTED. Will add more references.
12-29	A	0	0			In many respects this is a very good chapter - certainly a far better survey than any I have seen before. But I have two broad concerns. One is that the chapter could benefit from a bit more in the way of numbers, a bit more input from the "harder" ends of social science, or at least illustration (see my comments on the EKC discussion on 12.2.2). The other is that the chapter seems to be quite ambiguous about the actual role of energy/climate-oriented policies in the context of sustainable development paths. Some parts of the writing seem to imply that "choosing a development path" that also embodies low emissions has little to do with energy/climate policy - low emissions are a free gift without taking hard choices in the sector itself. Other parts imply that energy/climate policies that deliver low emissions can be synergistic with sustainable development. This is a very different message. Personally I cannot see how general concepts about "sustainable development" will do much to actually change investment patterns in the	ACCEPTED. Will try to look for "harder" material. We recognize that switching development pathways may involve hard decisions in the energy sector, and we will address this specifically.

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						energy sector unless underlying prices and incentives change. (Michael Grubb, Cambridge University)	
12-30	A	0	0			Very well written Chapter. A main message, as I read it, is that regional development paths will be decisive for GHG emissions trends and mitagation/adaptation options. However, this important aspect is not integrated to well in the previous sectoral chapters. Especially Ch.4, which I have read carefully, would benefit from such an approach. (Oren Kjell, Norsk Hydro ASA)	ACCEPTED. NOTED. Will pass on to Chapter 4.
12-31	A	1	8			Chapter 12 contains a number of sections outlining the framework for SD which double (in a more detailed way) similar sections in Ch2. In a number of cases it makes sense to deal with the framing issues at the beginning of the report, instead of at the end. In practice that means moving sections 12.1.1.1 and 12.1.2 to what is currently 2.2.2 resp 2.2.4). Also the concept of mitigative capacity is more logically dealt with in Ch2. It could form a new section here on two digit level, after 2.2., also including parts on institutional issues. Coverage of SD in earlier IPCC reports (12.1.3) would then be the opening section of CH12. It would be followed by the general sections on alternative development paths (12.2.1). After this new entry Chapter 12 looks at the relations between mitigation and SD along a number of axes. If this	NOTED. We are discussing this with Chapter 2. REJECTED. But we will revise 12.1 REJECTED. We will keep the current structure.

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						could be brought upfront, the structure of the chapter would be clearer. The axes are: -Sectoral policies (includes ex-post analysis p26-29, and alternative development options p22-23), -Cross sectoral and economy wide policies (includes 12.3.2 (p54-56)), and 12.2.2.1.1 (p24-25) -Governance issues (12.2.2.2 p31 - p.44, maybe also a place for 12.1.2.1 (p16)) -Regional aspects (12.4 p.57-59, and 12.2.1.3 (p21-22)) The analysis in section 12.3 (p50-54) is in a way a step back in the intentions of the chapter, which focus on mainstreaming climate change into development choices. Listing separately socio-economic and environmental impacts of mitigation should be done in chapter 4-10, but not repeated here, where the focus should be on the integration. (Peter Bosch, IPCC TSU WGIII)	REJECTED. 12.3 will be a summary of material in Chapter 4 to 10. ACCEPTED. We agreed that this should be covered in chapter 4 to 10.
12-32	A	2	16	8		The summary is way too long. (Richard Tol, Hamburg University)	NOTED.
12-33	A	2	19	2	26	Suggest to add that SD tries to connect "here and now" and "elsewhere and later"; sometimes also institutial dimension is considered as the fourth pillar. (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	REJECTED. Institutional dimension is a component of the three pillars.
12-34	A	2	19	2	26	Make clear what the aim and goal of this chpter are and	ACCEPTED. Will include at the

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						which questions it will answer (I found this also a general problem for the chapter, that is not very clear what the chapter aims to achieve) (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	beginning of each section.
12-35	A	2	30	3	7	Same comment as 9,10,10,46 applies also to this passage in the Executive Summary (James Meadowcroft, Carleton University)	UNCLEAR
12-36	A	2	31			The term "sustainable development" emerged in the early 1970s - the Cocoyoc Declaration and then the Fournex Declaration, for example - not the 1980s. This misleading wording is repeated on page 9, line 26. (Michael Jefferson, World Renewable Energy Network/Congresses)	REJECTED. The notion of sustainability applied to various sectors emerged earlier, but the specific term “sustainable development” emerged in the 1980s.
12-37	A	3	16	3	20	If this is a correct representation of the TAR it should be referenced. I find it implausible and certainly incompatible with more recent research, for example see the collection of results in Edenhofer, O., et al. (2006). "Induced Technological Change: Exploring its Implications for the Economics of Atmospheric Stabilization." Energy Journal (Special Issue: Endogenous Technological Change and the Economics of Atmospheric Stabilization). Edenhofer's own model in this collection has a very high baseline but with a moderate climate policy, endogenous innovation "flips" the system on to a low emissions path. (Michael Grubb, Cambridge University)	**NOTED. We will check.**

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12-38	A	3	22	3	25	This sentence should be retained in future drafts and strengthened by the addition of examples of mitigation activities that do not contribute to sustainable development and sustainable development activities that raise GHG emissions. It is a critical concept, which is not well understood, even by authors of this report. For example, Chapter 1, Pg. 2, lines 36-37. contain the sentence: "Climate change mitigation is part and parcel of sustainable development and the two are mutually reinforcing." (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	ACCEPTED. Will add example within Chapter 12. Will pass message along to Chapter 1.
12-39	A	3	25	3	27	The dichotomy of framing climate change as an 'environmental problem' versus framing it as a 'sustainable development' problem is not especially helpful. Indeed, it reveals some conceptual confusion. One might more correctly say: framing it as 'merely an environmental problem'. Climate change is obviously an environmental problem and to some extent must be framed in that way. But environmental problems are also sustainable development problems. Indeed 'environment' is one of the three 'pillars' of sustainable development. The parallel here is with economic problems: these are still clearly economic problems, but we gain insight and political purchase by also framing them as sustainable develeopment problems Thus this should not be presented in terms of 'either/or' . It is more precise to speak of 'widening' the cognitive frame to understand climate change as not just an environmental	REJECTED. since focus shifts qualitatively, not just in ambit or scope

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						issue but also a sustainable development issue, (for this still includes an environmental framing). To present things as an 'either/or' exagerates, and potentially weakens the case. because unless climate change is also/simultaneously understood as an environmental issue a balanced view cannot be maintained (James Meadowcroft, Carleton University)	
12-40	A	3	29	2	34	Unbalanced para as the trade offs that may occur between climate and development may also turn out negative (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	REJECTED. The paragraph does allow for both.
12-41	A	3	31	3	33	The concept of sustainable development related to some issues such as MDGs mentions the relatively short-term thing. On the other hand, the climate issue covers not only short-term but also long-term. Why isn't the viewpoint of the difference of time flame mentioned in this part?. (Toshihiko Masui, National Institute for Environmental Studies)	Will be TAKEN INTO ACCOUNT in section 12.1 and the executive summary.
12-42	A	3	35	3	54	**I can see the message that you want to convey that the mitigative and adaptive capacity are part of the "capacity to develop" of countries**. Perhaps that could be put up front. Suggest also to add to title of section " Capacity to develop and mitigative capacity". Interesting publication: Capacity for development (Fukuda-Parr et al. eds, 2002.) (Marcel T.J. Kok, Netherlands Environmental Assessment	TAKEN INTO ACCOUNT. Will take reference into account and revise text accordingly. We REJECT change in the title.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Agency) **[CHECK REFERENCE]**	
12-43	A	3	50			The final conclusion in this paragraph seems to be much broader than the heading of mitigative capacity suggests. (Jos Bruggink, ECN)	NOTED. This section of executive summary and underlying text will be revised.
12-44	A	4	9			The conclusion that new baseline scenarios confirm the main findings of SRES is too broad. First, it is unclear which main findings of SRES are referred to here. The range of emissions possible? The assumptions on demographic and economic developments? Or the fact that emissions are determined by socio-economic development paths. The latter is not a main finding of SRES but a widely held conviction of many experts and standard procedure in scenario studies. Linking the SRES and MEA scenario exercises can be misleading because they address very different issues with very different approaches. The fact that they use similar storylines is just one element for comparison. Such a paragraph in an executive summary suggests a similarity of approach or results that is non-existing. (Jos Bruggink, ECN)	ACCEPTED. Will revise. ACCEPTED. Will revise.
12-45	A	4	10			In chapter 3, MA is used instead of MEA. (Toshihiko Masui, National Institute for Environmental Studies)	NOTED. Will check.
12-46	A	4	20		25	It is not precise to state that international trade allows "a country" in general to partially de-link its economy. Studies on embedded carbon have shown that developed	ACCEPTED. Will qualify statement in text and summary.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						countries like Japan or USA tend to be the ones which have partially de-linked their economies by importing products with embedded carbon from China, Indonesia and other developing countries. It would be good to at least label those countries using the classification presented in section 12.4 (i.e. developed, developing, etc). This argument should be also considered in page 19 lines 36-48 (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-47	A	4	20	4	25	It is not precise to state that international trade allows "a country" in general to partially de-link its economy. Studies on embedded carbon have shown that developed countries like Japan or USA tend to be the ones which have partially de-linked their economies by importing products with embedded carbon from China, Indonesia and other developing countries. It would be good to at least label those countries using the classification presented in section 12.4 (i.e. developed, developing, etc). This argument should be also considered in page 19 lines 36-48 (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	SAME AS ABOVE.
12-48	A	4	21		25	The paragraph should talk of ecological impacts and refer to the ecological footprint methodology to make this clearer. See for example: Chambers, N., Simmons, C. and Wackernagel, M. 2000. Sharing Nature's Interest: ecological footprints as an indicator of sustainability.	NOTED. Will consider inclusion of proposed literature in the underlying text.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Earthscan, London (Lars Friberg, Climate Action Network (CAN) Europe)	
12-49	A	4	27			I find the conclusion in this paragraph unbalanced. Many development pathways for coal rich countries in a hydrocarbon poor world involve severe trade-offs between goals of emission prevention, energy security and income growth. Although it is indeed possible to find pathways consistent with lower greenhouse gas emissions, such pathways are in no way easy to implement or even likely to be followed under present conditions. A positive message is appropriate here, but with a clear note on the difficult choices involved. (Jos Bruggink, ECN)	ACCEPTED. We will qualify the statement. See also response to 12-29.
12-50	A	4	27	4	35	Could a systematic overview of synergies and trade offs between development and climate choices be provided here, especially addressing if and how development and climate priorities and different interests could be combined? Information from the section 12.2.2.3 on Issues and Opportunities as well as from section 12.3 could be added here more strongly (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	ACCEPTED. Will try and provide overview in main text and in executive summary.
12-51	A	4	38	4	38	This statement could be misinterpreted. It is true that GHG emissions are not rigidly linked to economic growth. However, once a country has chosen a development pathway, there is a strong correlation, at least in the short-	ACCEPTED. Will ensure consistency of phrasing with text.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						term, between economic growth and GHG emissions. That correlation can change only as fast as the country changes either its development pathway or the technology it uses to achieve development. Both of these only change slowly. It would be more correct to say "GHG emissions are linked to economic growth within a development pathway. The correlation can be changed by changing development pathway or technology. Policy choices can make a difference" (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	
12-52	A	4	45			The implicit definition of the frontier is wrong: the frontier is defined by efficiency, not optimality. (Jan Willem Gunning, Free University, Amsterdam)	ACCEPTED. Will change
12-53	A	4	45			What do you mean by sustainable development at a local level? Please clarify. (Rutu Dave, IPCC WGIII TSU)	UNCLEAR. No mention of sustainable development at local level here.
12-54	A	4	57	38		Some devices are at a very advanced stage and they will give, probably many informations on the effective costs by the end of this decade. (MICHEL PAILLARD, IFREMER)	UNCLEAR. No line 57 on page 4.
12-63	A	5	0	7		International organisations are also part of the context and should be addressed as they are important stakeholders in this field in their own right. The World Bank Group, OECD or the IEA for example have an conciderable impact and involvement, for good and bad. See for example: “Innovating Global Governance Through Global Public	ACCEPTED. The analytical framework applies at all level. We will find appropriate text to cover the point.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Policy Networks: Lessons Learned and Challenges Ahead", Brookings Review 1/2003, Reinicke et al. (2003); Paul F. Diehl, Ed. 'The Politics of Global Governance: International Organizations in an Interdependent World' 3rd ED. (2005) (Lars Friberg, Climate Action Network (CAN) Europe)	
12-55	A	5	18	7	15	The step from SD policy choices to section on "Role of S, M, CS and P" could be made more explicit, is not self-evident. Would state, private sector, civil society and partnerships be a more appropriate title as also state and civil society play a role in the market. Also I would suggest to give equal emphasis/headings to the four elements of the title of this section, ie expand role civil society. (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	ACCEPTED. Will provide a balanced summary of SM, CS and P.
12-56	A	5	18	7	15	This section should also elaborate on the role of different political systems and how well suited they are to address the challenge of climate change. The text talks of ideological commitments but only in regards to companies, the issue of politics and ideology will very much drive any push for sustainable development and C.C. mitigation. (Lars Friberg, Climate Action Network (CAN) Europe)	TAKEN INTO ACCOUNT. We are addressing the role of political systems by decomposing them into their components. TAKEN INTO ACCOUNT. Will change "ideological commitments" to "values"

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
12-57	A	5	21	5	29	The evolution that is described is generally true beyond "SD and CC mitigation" and not a priori part of SD. At the other hand it is not the only relevant trend (globalisation, liberalisation & privitisation are others) and it is not that relevant everywhere on the planet (good governance might be a more relevant entry point for many countries). **The section would be written differently for each of the regional variations that are decribed in the next section. Perhaps order of those two sections could be changed and section on role of state, market, civil society and partnerships rewritten to reflect regional differences and differentiate the opportunities identified in the previous section....** (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	TAKEN INTO ACCOUNT. We will revise the text to reflect that point.
12-58	A	5	36	5	36	This statement is correct, but it not the usual way the situation is described. Annex I countries consist of the OECD countries in 1990 and the European countries with economies in transition. They all have emissions reduction commitments. Annex II countries are the OECD subset of Annex I, which also have financial obligations. The discussion of differentiated responsibilities is usually couched in terms of Annex I and non-Annex I countries. Change Annex 2 to non-Annex I. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	ACCEPTED. Will change.
12-59	A	5	39	5	43	Could the point how recognition of national policy styles	ACCEPTED.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						would help forming coalitions be made more concrete? (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	
12-60	A	5	45			It may be worth citing the Environmental Sustainability Index here (otherwise first mentioned on page 14) as giving important (if disputed) guidance on institutional capacities of governments. (Michael Jefferson, World Renewable Energy Network/Congresses)	NOTED. Will revise text on page 2, line 40-45.
12-61	A	5	45	6	12	The paragraph should be re-written. It includes a normative statement that seems to indicate that free maket economy is ideal and a requirement for climate change mitigation. According to economic theory free market economy is often equated with Laissez-faire that sees only a minimalist role of governments to regulate the market. Given that the current economic systems of today exhibits market failures for example it does not incorporate the external costs associated with the burning of fossil fuels there is a clear role for government regulation. (Lars Friberg, Climate Action Network (CAN) Europe)	TAKEN INTO ACCOUNT. Will delete phrase “because it possesses … market.”
12-62	A	5	50	5	50	An additional bullet point should be added that take up the state's capacity to implement reform against the will of intrenched interests such as the phase out of subsidies for fossil fuels. (Lars Friberg, Climate Action Network (CAN) Europe)	REJECTED. Covered by first bullet in line 50.
12-64	A	6	6	6	6	"jawbowning" is a slang term that is not likely to be	ACCEPTED. Will revise.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						understood by much of the intended readership. (Paul Baer, Stanford University)	
12-65	A	6	13	6	39	If I understand this correctly, the terms "market" (line13) and "private sector" (line 36) are used synonymously for private corporations. This bears the danger of leaving out the demand side (more specifically, the consumers). [This actually happens on pp. 38-41, upon which page 6 of the summary is based. See my comment no. xx.] (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED. Will revise underlying text, see **comment**. Will define market and private sector in the glossary.
12-66	A	6	13	6	34	I find it confusing that: a) "market" (line 13) is confined to industry (line 15) and/or firms (line 28) only; b) that "market" appears as a headline (line 13) as well as a "corporate sustainability driver" (line 21). (Margareta Kulessa, Mainz University of Applied Sciences)	SAME AS ABOVE
12-67	A	6	31	6	33	this introductory section could usefully refer to the advent of CSR, and SRI (Andrew Dlugolecki, university of east anglia)	NOTED. CSI and SRI are already noted in the supporting text, not in the executive summary.
12-68	A	6	36	6	39	The second sentence requires justification from literature sources. I do not believe that with respect to sustainable development there is much significant evidence. (Nick Campbell, ARKEMA SA)	REJECTED. References are in the main text.
12-69	A	6	41	7	15	Civil society cover a multitude of different stakeholders and they are not all market actors, it therefore deserves its	ACCEPTED. See response to 12-55. In the main text, will

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						own heading and more elaboration on its role and possible contributions to SD and CC mitigation. Partnerships does not fit into the list of actors, state, market, civil society and could be addressed under a Civil society heading if at all. Partnerships does at this stage not play a significant role to merit such preminence despite considerable hype over the last few years following the Johannesburg 2002 WSSD meeting. (Lars Friberg, Climate Action Network (CAN) Europe)	change title from “partnerships” to “interactions between state, market and civil society” **Check “global public goods” reference by Inge KAUL, 2003.**
12-70	A	7	17	8	10	Maybe some words on developed countries within the EU could be included in the summary (this is not essential but maybe advisable from a "diplomatic" perspective.) (Margareta Kulessa, Mainz University of Applied Sciences)	NOTED.
12-71	A	7	23	7	23	Why is the term "comparative" advantages used? Why not simply "advantages" or "advantages compared to other country groups"? If this term is used, the reader might wonder where lies the comparative disadvantage (which capabilities) .... My suggestions would be to delete the term "comparative". (Margareta Kulessa, Mainz University of Applied Sciences)	REJECTED. “Comparative advantage” is a term of art.
12-72	A	7	24	7	25	Delete the sentence that starts: "The US, Norway ..." It is a misrepresentation to say that these countries are focusing more of their effort on sinks and carbon sequestration. The U.S. has a very large and varied climate technology	ACCEPTED. Will clarify. “… than other countries”.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						program, of which sinks and carbon sequestration are a small part. (See www.climatetechnology.gov for details) Japan also has a large program (See www.nedo.go.jp/english/activities/index.html). Information on the EU's program can be found at www.jrc.cec.eu.int. These countries and others have entered a series of multi-lateral partnerships, which in addition to sinks and sequestration, cover energy efficiency (Asia-Pacific Partnership), use of hydrogen, development of advanced fission and fusion reactors and capture of methane emissions. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	
12-73	A	7	25	7	29	I have difficulties to understand this causality: Why might priority mitigation areas lie in these five ares (energy efficiency etc.) as the climate change impacts for countries in this group (better: "**for most countries in this group**") are manageable? (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED.
12-74	A	7	25	7	26	It's not clear whether "these countries' in line 26 refers to the US Norway Japan or to all developed countries. (Paul Baer, Stanford University)	ACCEPTED. Will clarify.
12-75	A	7	25	7	26	It's not at all obvious that climate impacts in these countries are "manageable", e.g., Katrina, to say nothing of future risks of meters of sea level rise. (Paul Baer, Stanford University)	ACCEPTED. Will drop “As the impacts of climate change in these countries are manageable,”

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
12-76	A	7	28	7	28	It's not clear that the mitigation priority for fostering low-emissions development has to be "mutually remunerative" - a good case can be made that it's an ethical obligation whether it's profitable for developed countries or not. (Paul Baer, Stanford University)	TAKEN INTO ACCOUNT. Will drop the phrase.
12-77	A	7	34	7	35	SD as any other structural reforms (or, even nearly any structural process) creates, at least in the interim period, winners and losers, in this case its less employment in the coal mining sector. To label this "socially unsustainable" , in my opinion, goes a bit too far (though some lobbyists indeed argue in this way). This approach appears in several paragraphs in this section. It favours the status quo (esp. in income distribution) to an extent that seems exaggerated to me. (Similar: p. 52, lines 27-30). I would suggest a) to use another example, b) only use the label "socially unsustainable" if very severe (in quantitative and qualitative respect) negative impacts occur (e.g. negative effects on the very poor) . (Margareta Kulessa, Mainz University of Applied Sciences)	UNCLEAR. “socially unsustainable” does not appear in Chapter 12.
12-81	A	8	0			The suggestions on the Executive summary have a bearing on the main text, but will not be repeated again in this review. In general my feeling is that the executive summary tries to provide a coherent story - which the main chapter not yet does... (Marcel T.J. Kok, Netherlands Environmental Assessment	NOTED

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Agency)	
12-78	A	8	12	8	35	This last section need further work, to make it more concrete and practical… (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	NOTED.
12-79	A	8	14	8	20	The operational guidelines from Heller and Shukla would probably also be valid for industrialised countries and countries in transition. (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	NOTED. Will ask Tom Heller.
12-80	A	8	15	8	16	Heller/Shukla is the only source (besides IPCC itself) that is cited in the summary. I would suggest either to cite more, or (which I find better) to delete this citation. (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED.
12-82	A	9	3	18	13	The introductory section on sustainable development is not consistent with the discussion on SD-CC in Ch 2 (that is serious). Ch 12 should not have its own framing of the issue, but refer to ch 2. The idea was that Ch 12 elaborates the practical aspects (how is the relationship SD-CC, what are the synergies and trade-offs and how can the positive aspects be maximised). Integrate Ch 12 material in ch 2. This also applies to Ch2's treatment of adaptation/ mitigation linkages. It is strange that the coverage of SD in previous IPCC reports is presented AFTER the new literature. Should come first.	NOTED. Being discussed with Chapter 2. REJECTED.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						(Bert Metz, IPCC)	
12-83	A	9	9			This section fails to raise one crucial issue: When considering climate policies at the national, sub-national, company or individual level, do decision-makers consider the sustainability implications? At which scale (sub-national? national? global?)? What are the implications of decision-making tools such as cost-benefit analysis when the costs and benefits of a national policy are analyzed at the national level as opposed to the global level? For example, implementing a high CO2 tax in Switzerland might ensure Kyoto compliance and result in reductions in local air pollutants, but the same level of climate mitigation could also be achieved via CDM projects which could have much larger local sustainability benefits (reduction of local air pollution and health impacts), see Arquit Niederberger, A., The Swiss Climate Penny: An innovative approach to transport sector emissions, Transport Policy, 12(4), 303-313, July 2005 for a mention of this issue. With a global problem like climate change, there needs to be more research on traditional decision-making processes and tools (such as cost-benefit analysis) and their applicability in the context of sustainable development. Sustainable development does not merely require cross-sectoral policy coherence at the national or company level; it also requires us to think about the overall international policy response and the collective coherence of national policies.	NOTED. Will send comment to Chapters 2 and 13.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						(Anne Arquit Niederberger, Policy Solutions)	
12-84	A	9	10	10	46	The discussion of sustainable development is necessarily brief. But what is included here is somewhat skewed and does not do service to contributions from political theory and political science regarding the understanding of sustainable development. Here there is an emerging consensus that sustainable development should be understood as a normative concept of the same order as other key normative concepts that structure contemporary political debate such as 'democracy', 'freedom', 'rights', 'justice' and so on. These concepts have determinate meaning, and play an essential role in structuring political argument. On the other hand controversies over their meaning and implications in any given context are unavoidable. To complain that there are many understandings of sustainable development is simply beside the point. That is the essential character of this sort of normative political concept. Long ago people stoped worrying that 'freedom' can be understood in many ways. Instead they get down to arguing just how they think it should be understood/applied in a given context. And this is how sustainable development is most usefully deployed. The comment on 'constructive ambiguity' (page 9, line 30) points in the right direction, but somehow makes it sound as if sustainable development is in somhow odd in this regard. It is not. This is a basic characteristic of key	ACCEPTED. Will note this perspective in the discussion.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						normative political concepts. Sustainable development was originally formulated as a political concept (not a social scientific,economic or legal term), and forgetting this leads to much wasted energies. For a fuller discussion of this issue consider some of the following items: --- Meadowcroft, J. 'Sustainable development: a new(ish) idea for a new century?', Political Studies 48 (2000): 370-387 ; 'Planning for sustainable development: what can be learned from the critics? in M. Kenny and J. Meadowcroft (eds.) Planning for Sustainability (Routledge, 1999), pp. 12-38; Lafferty, W. and J. Meadowcroft (2000), (eds.), Implementing Sustainable Development, Oxford: Oxford University Press; Lafferty, W. and O. Langhelle (1999), (eds.), Towards Sustainable Development: On the Goals of Development and the Conditions of Sustainability, London: Macmillan; and Lafferty, W. (1996) 'The politics of sustainable development: global norms for national implementation', Environmental Politics 5: 185-208. (James Meadowcroft, Carleton University)	
12-85	A	9	11			John Stuart Mill wrote about sustainability before Brown's father was born. (Richard Tol, Hamburg University)	NOTED.
12-86	A	9	24	9	24	Figure 12.1: The figure is not explained within the text (except the three dimensions). I would suggest to delete this figure because a) it does not need a figure to illustrate that SD has three dimensions, b) if fig. 12.1 is included it	ACCEPTED.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						has to be explained, but c) this figure is very wellknown and using many lines to explain it, is in my view not necessary. (Margareta Kulessa, Mainz University of Applied Sciences)	
12-87	A	9	35	9	35	I would suggest to delete the word "simply" (Margareta Kulessa, Mainz University of Applied Sciences)	TAKEN INTO ACCOUNT. We will drop "…, or simply hypocrisy"
12-88	A	9	35			The term "greenwashing" should be avoided, it sounds more like slang than sound scientific language. (Oren Kjell, Norsk Hydro ASA)	REJECTED. It is a commonly used term
12-89	A	9	40	9	46	It seems strange that there is no reference supporting this paragraph, which identifies what the authors feel is the most serious concern about sustainable development. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	ACCEPTED. Add references
12-90	A	9	41			Please identify these critics. (Richard Tol, Hamburg University)	ACCEPTED. Will add references.
12-91	A	10	17	10	20	See comment on the same statement on the Executive Summary (Michael Grubb, Cambridge University)	NOTED. See response to 12-37
12-92	A	10	28	10	34	It should be pointed out that while development is linked to energy use. It does not have to lead to increased GHG emissions. What should be pointed out is that the challenge is to de-link energy growth from GHG emission growth through the use of renewable energy and demand side	NOTED. The point is made in 12.2.1.1

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						measures. (Lars Friberg, Climate Action Network (CAN) Europe)	
12-93	A	11	20			Suggest to replace constraints by conditions to reflect that these are indeed components of a society and its development path (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	ACCEPTED.
12-94	A	11	25	11	35	What stages of decision-making are linked with which elements of mitigative capacity? Not clear. (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	ACCEPTED. Will make connections clearer
12-95	A	11	28	11	30	I would suggest to delete the references to determinants 5, 4 and 7 in the brackets as they seem unnecessary. (Margareta Kulessa, Mainz University of Applied Sciences)	REJECTED.
12-96	A	11	50			The authors present appealling ideas. E.g. adaptive and mitigative capacities are related to and rooted in development paths. But they don't tell the reader which the relationships are, how are former rooted in later. Neither is any empirical evidence presented to support that statement. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	ACCEPTED. Will try to be more concrete
12-97	A	11	50			The authors present appealling ideas. E.g. adaptive and mitigative capacities are related to and rooted in development paths. But they don't tell the reader which the relationships are, how are former rooted in later. Neither is	SAME AS ABOVE

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						any empirical evidence presented to support that statement. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-98	A	11	53	11	53	"response capacity": I find it very convincing to use this term instead of differentiating too much between AC and MC. Still, I would like to point out that the term "response capacity" is NOT used by the authors in this chapter (except when it comes to explaining it, also see p. 12, line 25-26) (Margareta Kulessa, Mainz University of Applied Sciences)	NOTED. Will consider dropping the notion of “response capacity”
12-101	A	12	0			I could not read the tables and figures to see how useful they are to convey a message. Authors tell for instance in page 12 that mitigation and adaptation overlap substantially but are not identical. But the reader can not see that. Therefore I suggest to include all of them no matter how developed they are. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	See response to 12-18.
12-99	A	12	15	13	25	The term alternative development paths is not defined in any way. Alternative to what? Are we talking here of economic growth trajectories in terms of sectoral patterns of production and consumption? Or should the term be interpreted much more broadly, f.i. the role of markets versus regulations, the role of international trade etc.?	TAKEN INTO ACCOUNT. Will put a preamble text on “alternative development paths” based on TAR.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						This whole section is so abstract and general, that it is very difficult to extract a message that would be meaningful to policy makers. The last paragraph is typical: stating that decisions about all kinds of generic issues could have impacts for climate change issues, is hardly revealing. But what kind of technology decisions, investment decisions, what kind of trade decisions are important in this respect? Perhaps some appealing examples would clarify the value of this statement. (Jos Bruggink, ECN)	ACCEPTED. Try to develop some examples, but need literature
12-100	A	12	25	12	26	This is a repetition of p. 11 line 53. (Please see my comment no. 13) (Margareta Kulessa, Mainz University of Applied Sciences)	See response to 12-98
12-102	A	13	26			It would be helpful for this section to provide an overview of the basic principles that are emerging from the multifaceted international process to reach a common understanding of the ethic of sustainable development: a balanced consideration of economic, environmental and social concerns; universality of human aspirations for betterment and progress; intergenerational equity and a long-term orientation; solidarity and priority to poverty eradication and meeting basic human needs of the poorest and most vulnerable; respect for cultural diversity; pluralism (stakeholder involvement in strategy development, decision-making and implementation);	NOTED. These are already covered by the references that are included in the first paragraph of section 12.1.2. Will refer the comment to Chapter 1. Will be adding more text.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						multilateralism; good governance as a critical basis. (Anne Arquit Niederberger, Policy Solutions)	
12-103	A	13	28	16	5	The title of this section is much broader than its contents, which mainly focuses on the need to measure sustainable development and various ways of doing so. So a change of title is in order. The text of page 14, line 13 to 42, more or less covers the same ground as the contents of box 12, but with a different focus and selection of indices. Moreover, it is more a description of widely divergent alternatives than an assessment of their value and purpose. What kind of indicator is "best" for measuring what kind of performance? Any recommendations or guide to practitioners? Some indicators for instance such as ecological footprints are hotly debated as to their usefulness or empirical foundations. (Jos Bruggink, ECN)	REJECTED. More text being added (see comment 12-102) TAKEN INTO ACCOUNT. Box 12 will be dropped and text expanded. REJECTED. There is no single answer to this question, and it is beyond the scope of this report.
12-104	A	13	28	13	52	WSSD missing (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	ACCEPTED. Will include
12-105	A	13	28	14	11	I find this critique of the discussion of SD in "the old days" a lttle bit too harsh. Surely the social dimension was not at the heart of the discussion on SD but it was not ignored	ACCEPTED. Text will be expanded and revised.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						either (sometimes discussed under a different heading; just one example of a "mainstream" publication s the World Development Report 1992 which build on ongoing discussions and led to further discussions). Maybe the wording could simply be altered a little. (Margareta Kulessa, Mainz University of Applied Sciences)	
12-106	A	13	33	13	40	The challenge is that if the concept of SD is anthropocentric (as it has increasingly become) then economic, political, 'social' and cultural factors will succeed over environmental ones, and this is likely to prove suicidal. (Michael Jefferson, World Renewable Energy Network/Congresses)	REJECTED. This is a false dichotomy. If sustainable development does not take care of the people, the people won't take care of the environment.
12-107	A	13	43		47	How has the linkage been articulated? Could you be more precise? (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	REJECTED. See reference.
12-108	A	13	43	13	47	How has the linkage been articulated? Could you be more precise? (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	SAME AS ABOVE
12-114	A	14	0			I think it was quite challenging to deal with sustainable development and mitigation. Some reasons for this were mentioned by the authors (e.g. sustainability is ambiguous and delusory). Nevertheless, they did not referred to one	SAME AS **ABOVE**

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						feature of the concept scholars should be aware of when at all and when linking it to mitigation and adaptation: sustainability is in many ways a normative and contested notion (see for instance authors' discussion in page 14 where they talk about measurig progress towards sustainable development). Sustainability is context specific, it is politically and not only scientifically defined by actors (nations, stakeholders) with different interests and capacity to influence the policy making process. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-109	A	14	13	14	42	Similar to my comment no. 15. I find the comments on the four approaches of SD indicators a little simplified. My suggestion would be to list the approaches without explicitly adding the flaws of approaches (1) and (2) [or, alternatively at least the flaws of approaches 3 and 4 should be explicitely mentioned as well.] (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED. Will delete flaws of approaches 1 and 2.
12-110	A	14	21	14	22	Human well-being as such is not an indicator, suggest to delete (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	REJECTED. A Human Well-Being index exists. Will reference.
12-111	A	14	32		33	Sustainable development at the "local" level is not a meaningful concept. (Jan Willem Gunning, Free University, Amsterdam)	REJECTED. SD can be implemented at the local level, as noted in local Agenda 21.

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12-112	A	14	39		42	This key finding from chapter and other chapters in AR4 (the lack of both an integrating approach and data on sustainability and its relationships with climate change) should be included in the summary. Authors could propose as a research priority to fill this gap. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	NOTED. Will consider this in section on Future Research Needs.
12-113	A	14	39		42	This key finding from chapter and other chapters in AR4 (the lack of both an integrating approach and data on sustainability and its relationships with climate change) should be included in the summary. Authors could propose as a research priority to fill this gap. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	SAME AS ABOVE
12-120	A	15	0			In Box 12.1a, under the heading "HANPP" it is projected that NPP will be unable to support future human population. The calculations in the discussion, however, assume no growth in NPP, whereas it is likley that humans will continue to find ways to increase the productivity of lands managed to support human existance. (Reid Miner, NCASI)	ACCEPTED. Will delete “Doubling the human population… of encroachment”.
12-115	A	15	16	15	22	private sector initiatives like Carbon Disclosure Project, IIGCC, INCR etc could be referenced here (Andrew Dlugolecki, university of east anglia)	TAKEN INTO ACCOUNT. Will reference.
12-116	A	15	16	15	22	The GRI may be misplaced. It is an important reporting initiative and provide background for but several	NOTED. Will include DJ Sustainability Group Index and

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						benchmarking indexes, as Dow Jones Sustainability Group Index, FTSE4Good. Management systems (as ISO14000 and EMAS), reporting systems and indexes should be given a more thourough presentation and evaluation. (Oren Kjell, Norsk Hydro ASA)	FTSE4Good, but not management systems.
12-117	A	15	24	15		Box 12.1a. I would suggest to either call the fourth concept "Material Input per Service Unit" (how it is originally called) or, explain the abbreviation MIPS (Margareta Kulessa, Mainz University of Applied Sciences)	NOTED. Spell out MIPS
12-118	A	15	37			The importance of traded goods in a country's emissions profile should be exemplified, an important point that needs attention. (Oren Kjell, Norsk Hydro ASA)	NOTED. Comment refers to page 25 and not 15. Will consider.
12-119	A	15	48	15	48	…,40% of "NNP" was… should be …,40% of "NPP" was…. (Shigeo Murayama, The Federation of Electric Power Companies)	ACCEPTED.
12-121	A	16	6	17	15	Just an idea: Maybe it would be worth mentioning that the term SD also appears in the WTO Agreement (which was not the case within the old GATT), and already played a role in one or two of the appelate body's decisions on trade disputes. (one potential source on this topic: Sampson, G. (2005), The WTO and Sustainable Development, United Nations University, New York) (Margareta Kulessa, Mainz University of Applied	ACCEPTED. Will check reference.

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						Sciences)	
12-122	A	16	32		40	See: Arquit Niederberger, A., and S. Schwager, Swiss environmental foreign policy and sustainable development, Swiss Political Science Review, 10(4), 93-123, December 2004 for a discussion of how the Swiss Constitution embraces the sustainable development paradigm and adopts a "global citizen" approach to its foreign policy (as opposed to narrow national economic interest). (Anne Arquit Niederberger, Policy Solutions)	NOTED. Will consider reference.
12-123	A	18	17	23	34	This is an interesting and important section. It would gain strenght if some paragraphs, e.g. 12.2.1.4, page 22, line 25, could end with directive conclusions about which scenario/paths offers the best results in terms of sustainable development and/or climate change mitigation. (Gert de Gans, Kerkinactie)	REJECTED. We can't be prescriptive.
12-124	A	18	17	49	54	Section 12.2.1 makes the point that development paths determine GHG emissions. It should refer to ch 2 (not done) and 3 (done) where this issue is discussed. Ch 3 in its current state is very thin on assessing non-climate literature, which makes the treatment of this point very weak. This should be strengthened in Ch 3 (with material from ch 12) and then ch 12 can be more extensive on the non-climate scenario literature. Section 12.2.2 is supposed to discuss literature on synergies and trade-offs and how to maximise positive	ACCEPTED. Will clarify and rewrite. ACCEPTED. Will consider revised tables.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						linkages. Currently it remains too much a description. There is not much analysis that would help the reader understand how to avoid trade-offs and how to maximise synergies. A table, such as suggested for the TS, could summarise such analyses. 12.2.2 could draw more on material in chapters 4-11 (in the non-climate policy parts). Many subsections are now rather superficial (e.g. health, rural development, transport, trade). For instance the issue of embedded carbon in traded products has no effect on emissions per se, only on bookkeeping emissions. (Bert Metz, IPCC)	ACCEPTED. Will revise text. REJECTED. Not necessarily true.
12-125	A	19	15	19	25	I find the presentation of potential conflicts unbalanced. First of all, I think the issue of energy security will play a major role in policy priorities besides local air pollution. The troublesome fact is, that domestic coal may become a very attractive alternative compared to oil and gas. To mention gas as an unattractive option from the climate change perspective, obscures the fact that the alternative from the energy security point of view is often domestic coal, not renewables. Secondly, the most attractive option of all is not mentioned at all and that is energy conservation. Alternative development pathways should be attractive foremost from the point of view of low energy	ACCEPTED. Will try to improve text.

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						and material intensities. Choices with respect to supply options will in many cases involve tough trade-offs, not just with local air pollution, but with energy security. (Jos Bruggink, ECN)	
12-126	A	21	23	22	11	Another appealling idea is that different regions have different posibilities and priorities for alternative development pathways. But authors need to be more precise and systematic by explaining how the context-specific articulation of posibilities and priorities may work. Instead of just listing examples (lines 39-54) they can for instance pick one scase study for each of the regions they use in section 12.4 and compare how factors such as availability of technological political and technological options and access to resources constrain and/or enhance priorities and possibilities. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	ACCEPTED. Will insist on how to shift development pathways.
12-127	A	21	23	22	11	Another appealling idea is that different regions have different posibilities and priorities for alternative development pathways. But authors need to be more precise and systematic by explaining how the context-specific articulation of posibilities and priorities may work. Instead of just listing examples (lines 39-54) they can for instance pick one scase study for each of the regions they use in section 12.4 and compare how factors such as availability of technological political and technological	SAME AS ABOVE

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						options and access to resources constrain and/or enhance priorities and possibilities. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-128	A	21	27			Correct ref is Kok and de Coninck (eds), 2004 instead of RIVM (2004) (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	ACCEPTED.
12-129	A	22	14			The statement that "...alternative pathways determine mitigative capacity" is logically problematic. By definition, alternative pathways (or scenarios) are counterfactual visions of future development, based on assumptions about driving forces. As such, they cannot determine mitigative capacity, but merely point to the implications for mitigation/adaptation of different assumptions in each scenario (e.g., related to energy prices, technology progress, emission levels). It is an "if-then" exercise, not a "cause-effect" relationship. (Anne Arquit Niederberger, Policy Solutions)	ACCEPTED. Sentence will be rephrased.
12-130	A	22	14			Pls explain this line (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	SAME AS ABOVE.
12-131	A	22	25	22	27	Does this statement really hold as I think that at from a climate perspective several industrialised countries (ie Netherlands, UK, France, Japan, Germany) have or are exploring implications of carbon neutral societies (see for	NOTED. Will reformulate the sentence and check reference.

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						instance for the Netherlands: Global Warming and Social Innovation. The Challenge of a Climate-Neutral Society Kok, Vermeulen, Faaij and de Jager - eds. (2002) which also includes the outcomes of a major stakeholder exercise on exploring the implications of 80% emission reduction for four major sectors in the Netherlands (Earthscan). (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	
12-132	A	22	30			Title can be changed to something like "alternative developments in energy sector crucial" if no other sectors are mentioned. More to the point however, I believe other sectors should be mentioned in line with and referring to the other chapters in the report (particularly dealing with energy conservation potential in industry, transport and built environment), where undoubtedly issues of alternative sector developments are treated in much more detail. With respect to access to energy, I personally feel it somewhat artificial to link up climate change issues with poverty issues. We need to solve issues of poverty regardless of GHG emission effects (and kerosine access may be more appropriate in many (urban) cases than access to	REJECTED. Because other sectors will be added. ACCEPTED. Will include examples from other sectors. REJECTED. ACCEPTED.

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						renewables). Climate change is caused by people moving up the income scale, not by those starting at the bottom. In other words, access to energy is a response capacity improvement issue, not a GHG emission reduction issue. (Jos Bruggink, ECN)	
12-133	A	22	31	22	39	Stress the importance of energy as a multi-sector issue. Energy alone doesn't bring development - it has to be part of other sector planning (industry, housing, public services). It's crucial for economic and social development (link poverty reduction, health etc - MDG agenda) (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	NOTED.
12-134	A	22	41			The statement on p. 22, line 41 that "Developing countries need to increase their energy use in order to fuel their social and economic development" is misleading. First of all, energy is only one key ingredient for economic development. Secondly, what developing countries need is not "increased energy use" in itself, but increased access to energy services (e.g., lighting, heating, traction). Although this may mean an increase in end energy demand, it might not. The Medium and Long-Term Energy Conservation Plan in China, for example, estimates that energy efficiency can deliver enough energy savings to offset the projected need for new capacity in the 2010-20 period. If all developing	NOTED. Will clarify sentence. Suggestions not well grounded. Send references.

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						countries were to strive to reach the same energy consumption per capita as the USA (12,000 kWh per capita) or Europe (8,000 kWh per capita), we would be in big trouble, and given the gap between market and technological potential, there is huge potential for technological leap-frogging. Throughout the chapter, one should refer to required energy services rather than energy (Anne Arquit Niederberger, Policy Solutions)	ACCEPTED.
12-135	A	23	21		23	The statement that "Policies which encourage innovation and technological improvements may enable emissions reductions at costs far lower than can be achieved today" is problematic, because it ignores the large potential for emission reductions that can be achieved immediately using the most advanced technologies already available on the market. According to the IPCC Third Assessment Report, adoption of demonstrated high-efficiency technologies would make it possible to reduce global emissions to below 2000 levels by 2010-20 (IPCC, 1996). Half of the potential reductions would result in direct benefits (energy saved) exceeding direct costs (net capital, operating, and maintenance costs), whereas the other half could be implemented at a net direct cost of less than US$27 /tCO2eq. With the price of an EU Allowance currently trading at between € 20-25 per ton (Figure 2), the feasibility of realizing this untapped potential becomes	NOTED. Please provide reference.

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						clear. The statement made in the AR4 gives no numbers to back it up. Energy efficiency should come out of the AR4 as a top immediate priority, based on its rapid implementation, low cost, job creation capacity, contribution to flexibility (as it avoids the need for new energy infrastructure), local environmental benefits, etc. (Anne Arquit Niederberger, Policy Solutions)	
12-136	A	24	18	24	20	The assumption that the relative strong growth of the services' sector (shift towards services) leads to a decrease in energy consumption is not as clear as is suggested, at least it is debatable (and not empirically proven yet). First, several services are energy intensive (either production or/and consumption, e.g. transportation and travel). Second, some share of the shift is purely statistical (e.g. outsourcing of computing or accounting services). (Margareta Kulessa, Mainz University of Applied Sciences)	NOTED. Please provide reference.
12-137	A	24	20			Shouldn't say developed countries? (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	ACCEPTED.
12-138	A	24	20			Shouldn't say developed countries? (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	SAME AS ABOVE.
12-139	A	24	40	25	47	This reasonable survey of the literature underplays the conclusion that "the relation …. Does not appear to be econometrically extremely robust". In fact the literature	NOTED. Will check reference.

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						seems to be in disagreement about whethere there is any statistically significant relationship at higher income levels. This really is important and its significance in the context of the chapter is vastly underplayed - if this "**lack of any robust relationship**" is itself robust it lends support to the entire basis of the "softer" science arguments about sustainable development and climate change. The authors could also look at Grubb M., L. Butler and O.Feldman, 'Analysis of the Relationship between Growth in Carbon Dioxide Emissions and Growth in Income', Cambridge University Faculty of Economics working paper (draft available from m.sato@econ.cam.ac.uk). An additional point: this section, and the points made, could usefully be illustrated with some scatter diagrams. Many are available, the paper referenced contains several if the authors want to consider these. (Michael Grubb, Cambridge University)	ACCEPTED. Will enter collection of key messages. NOTED. Will check reference for suitability of diagrams.
12-140	A	25	11		20	"some degree of causality" .. "limited causality" ??? (Jan Willem Gunning, Free University, Amsterdam)	ACCEPTED. Will revise text.
12-141	A	25	27		28	surely you do not mean "orthogonal"? Quite the opposite! (Jan Willem Gunning, Free University, Amsterdam)	ACCEPTED.
12-142	A	25	49			What does the IPCC understand under the term "development policy"? It appears to include all sectoral policies other than climate, whereas development policy	TAKEN INTO ACCOUNT. Will refer to “socio-economic” policies.

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						often refers more narrowly to policy to guide economic and social development. Furthermore, this section is highly anecdotal. Much more comprehensive data on sectoral policies is available (database and systematic analysis of climate policies of IEA countries and of global renewable energy policies), so the added value here is not obvious. (Anne Arquit Niederberger, Policy Solutions)	REJECTED. Literature is sparse on impacts of development policies on emissions.
12-143	A	25	49	30	10	I liked the approach of section 12.2.2.1.2. The section explains the methodology used and successfully combines general statements and ilustrative examples. Perhaps because of lack of empirical data some subsections lack a balanced description of policies' positive and negative impacts on CO2 emissions. Authors for instance offer in p.28 Curitiba as a successful example. Mexico City offers a different example. Not only because local authorities have not been able to integrate infrastructure and urban planning. Not because they have not been consistent during last two decades. But also because since the 1980s local authorities reduced their participation in the management of public transportation. Privatization of the bus system (Ruta 100) and decreased public expenditures became one of the drivers of the shift in mode share from Metro and buses to minibuses and low	ACCEPTED. Will check reference.

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						capacity modes. This shift, which included a slight reduction in the use of private autos, resulted in an increase in GHG emissions by the transportation sector of 8.1% during 1996-2000. Motorization is taking place in Mexico City. The total fleet for instance augmented 1.5 times in 1986-2000. Most automobiles are private cars (73%) which emit 40.8% of GHG, but this is not reflected in their share of daily trips (19.9%). See Romero Lankao et al. 2005. Can Cities Reduce Global Warming? Urban Development and Carbon Cycle in Latin America. México, IAI, UAM-X, IHDP, GCP. It can be also download at www.globalcarbonproject.org (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-144	A	25	49	30	10	I liked the approach of section 12.2.2.1.2. The section explains the methodology used and successfully combines general statements and ilustrative examples. Perhaps because of lack of empirical data some subsections lack a balanced description of policies' positive and negative impacts on CO2 emissions. Authors for instance offer in p.28 Curitiba as a successful example. Mexico City offers a different example. Not only because local authorities have not been able to integrate infrastructure and urban planning. Not because they have not been consistent during last two decades. But also because since the 1980s local authorities reduced their participation in the management	SAME AS ABOVE

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						of public transportation. Privatization of the bus system (Ruta 100) and decreased public expenditures became one of the drivers of the shift in mode share from Metro and buses to minibuses and low capacity modes. This shift, which included a slight reduction in the use of private autos, resulted in an increase in GHG emissions by the transportation sector of 8.1% during 1996-2000. Motorization is taking place in Mexico City. The total fleet for instance augmented 1.5 times in 1986-2000. Most automobiles are private cars (73%) which emit 40.8% of GHG, but this is not reflected in their share of daily trips (19.9%). See Romero Lankao et al. 2005. Can Cities Reduce Global Warming? Urban Development and Carbon Cycle in Latin America. México, IAI, UAM-X, IHDP, GCP. It can be also download at www.globalcarbonproject.org (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-152	A	26	0	29		The categories energy, transportation, health, rural development and international trade are important, but it looks like an arbitrary list of sustainable development issues. Would like to more clearly see it structure along economic, environmental and social dimensions, too. But I also see this is treated Ch. 12.3.1. (Oren Kjell, Norsk Hydro ASA)	NOTED. Will take into consideration.
12-145	A	26	5	29		The term development policies is usually reserved for	NOTED. See above…

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						macro-economic growth policies having to do with employment creation, institutional capacity building, infrastructural investments, trade and tariffs, the role of foreign capital fiscal measures etc. In this section a direct step is made to a few crucial sectors. Although this touches on concrete issues, that I find in many ways more revealing and interesting than abstract notions of sustainable development and mitigation capacity, I am not sure if such an eclectic, sectoral approach is appropriate here. Moreover, the treatment of these issues is far from complete and depends strongly on a few examples. Other examples might have led to completely different conclusions. The literature on rural electricification and energy sector reform for instance is huge and it may be misleading for an assessment to concentrate on a few studies. For example, in the case of liberalisation, there is a strong emphasis on the negative aspect of subsidies for fossil fuels. But no mention is made of the need for high subsidies for renewable energy sources in a world with little pricing of emissions and decreasing private R&D budgets nor are the much higher cost of capital in a liberalised power market inducive to investment in capital intensive renewable technologies. The primary motive for	REJECTED. Tried to summarize available literature. NOTED. But the main goal of the section is to illustrate impacts of development policies on emissions, not to discuss the pros or cons of these policies.

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						liberalisation, lower prices, is not good for energy conservation and the consequences for the poor can be disastrous. SImilarly, the discussion of international trade does not refer to the potential and problems for a race to the bottom in terms of global environmental performance. No reference is made to the acrimonious debate on globalisation that is going on and the huge problems surrounding WTO negotiations. A much more elaborate and comprehensive assessment may be needed here. (Jos Bruggink, ECN)	NOTED. There is literature on the impact of macroeconomic policies on environment, but the literature linking these policies on climate is lacking. Point to be made in the "research needs" section. (Youba to send reference David REED)
12-146	A	26	7	30	6	Could the analysis perhaps focus more on development priorities/interests as that would be the basis to link mainstream climate concerns in the respective policy domains and identify new stakeholders to be included in climate change mitigation efforts. (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	UNCLEAR.
12-147	A	26	25	26	25	Maybe include a reference to chapter 4 (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED.
12-148	A	26	25			A good discussion on energy, but a suggestion: WBCSD has suggested the A Quartet as frame for the business case for sustainable energy: Access to energy, at Affordable prices, with Acceptable impacts, and Adequate returns for	REJECTED. But we will not that there are other ways to categorize energy policies.

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						investors. Would it be beneficial to introduce these aspects as well? (Oren Kjell, Norsk Hydro ASA)	
12-149	A	26	27	26	50	References: UNDP (2005a), Energizing the Millennium Development Goals, UNDP, New York, USA, UNDP (2005b), Vijay Modi, Susan McDade, and Dominique Lallemont, Energy Services for the Millennium Development Goals, UNDP, New York, USA. (David Nissen, Columbia University)	NOTED. Will check reference.
12-150	A	26	27	26	50	Electrification has nothing to do with firewood, and indeed, is the lesser of the basic energy needs of the rural poor. About 1.6 G people have inadequate access to electricity, but about 2.4 G people have inadequate access to commercial fuels for clean cooking (Modi, et.al, UNDP, 2005b, p. 11). While the lack of electricity limits water supply, health care, education, and communication, the use of non-commercial cooking fuel in inefficient stoves has the most direct impacts on child and maternal health due to interior air quality, and on the diversion of time and reduced productivity, especially for females. Minimum needs for modern cooking fuels and basic electricity can be met with about 50 kgoe/capita of primary energy (40 kgoe for cooking and 10 kgoe for electricity). (Modi, et.al, UNDP, 2005b, p. 9) (David Nissen, Columbia University)	ACCEPTED. Will revise text.

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12-151	A	26	27	26	50	If supplied to, say 2G people by commercial fossil fuels this would entail annual carbon emissions of roughly 0.1 GtC/y, less than 2% of current global emissions. Escape from the trap of extreme rural poverty, found primarily in sub-Saharan Africa and South Asia, is not possible without the combination of efficient supply of basic fuels and a concomitant increase of (especially female) productivity to achieve its affordability. While solar power has a place in areas of low economic and demographic density, the role of commercial fuels for cooking and the provision of electricity through diesel gensets will be the efficient solution to providing adequate basic energy for a large fraction of the rural poor. **Development policy must not impose excessively costly technology standards on the poorest.** Rather development technology policy should factor in environmental impacts and then promote the most efficient technologies at the rural village level. Otherwise, an excessive imposition of environmental technology standards on the poorest will stymie prospects for development. (David Nissen, Columbia University)	TAKEN INTO ACCOUNT. Will be emphasized in the text.
12-153	A	27	23	27	25	The example (subsidies for LPG ...) could be explained in 2-3 additional sentences (readers who are not familiar with the case might have difficulties to understand the story) (Margareta Kulessa, Mainz University of Applied	ACCEPTED.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Sciences)	
12-154	A	27	40	28	7	This section doesn't include much of the recently published literature on the issue of energy security and climate change. (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	NOTED. Ask for reference.
12-155	A	27	40	5	50	The examples here on this page are all from developing countries but the conclusions are equally robust for industrialised countries. See for example Chapters 6 and 7 of this report on energy effciency; and also note projection that low CO2 futures for the UK would be far more diverse in terms of supply (and consequent energy security), see, Grubb, M., L. Butler, et al. "Diversity and security in UK electricity generation: The influence of low-carbon objectives." Energy Policy In Press, Corrected Proof. downloadable from http://www.econ.cam.ac.uk/faculty/grubb/publications.html . (Michael Grubb, Cambridge University)	ACCEPTED. Will check reference.
12-156	A	28	14			is the opposite of inelastic "endogenous"? (Jan Willem Gunning, Free University, Amsterdam)	ACCEPTED. Will revise.
12-157	A	28	40			"lower federal support .." does not in itself explain these differences. (Jan Willem Gunning, Free University, Amsterdam)	REJECTED. Citing reference.
12-158	A	29	9			We are in a section on health and we now get a discussion on combined versus individual caps on emissions?	TAKEN INTO ACCOUNT. Will revise.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						(Jan Willem Gunning, Free University, Amsterdam)	
12-159	A	29	19	29	19	something is missing (similarly .....) (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED.
12-160	A	29	31	29	36	There are extense literature showing that significant amount of land is available for increasing agricultural activities either for food and for fuel without putting pressure on existent forest area. See Moreira, 2005, Global biomass energy potential. Mitigation and Adaptation Strategies for Global Change(Special Issue, forthcoming). for such discussion and large list of references. (Jose Moreira, Institute of Electrotechnology and Energy - University of Sao Paulo)	NOTED. Will check substance of reference.
12-161	A	29	41			This section does not reflect a full literature review of the relevant issues. There has been a big discussion about embodied carbon in traded goods, WTO compatibility of policies to account for this and discussion under the UNFCCC of crediting for exports of low-carbon electricity. The literature is much richer than the current text would imply. This is also a key issue for futher research and IPCC consideration, since it is a key consideration in the design of the future climate change regime. Also, see Shui & Harriss (in press) The role of CO2 embodiment in US-China trade, Energy Policy. (Anne Arquit Niederberger, Policy Solutions)	NOTED. Check reference. NOTED. Will be considered in the "Future Research Needs" section.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
12-162	A	30	12	31	24	There is some overlap with the previous section, for example the interesting example based on Hourcade and Kostopoulou fits in the discussion on energy security on page 27/28 (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	REJECTED. The reference has significance beyond energy security.
12-163	A	30	35	30	40	Note that modeling work on innovation underlines the importance of long-term commitment to building new industry sectors. Dennis Anderson and Sarah Winne have done work on this at Imperial College, I am not sure how much is published (contact dennis.anderson@imperial.ac.uk). (Michael Grubb, Cambridge University)	NOTED. Will check reference.
12-175	A	31	0	44		Section 12.2.2.3 is a bit of a long section in the overall storyline - which also seems not fully integrated and linked to the issues this chapter wishes to address (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	NOTED. Will improve integration with other sections.
12-164	A	31	6	31	6	Incomplete sentence. (Jose Moreira, Institute of Electrotechnology and Energy - University of Sao Paulo)	ACCEPTED. Will rephrase.
12-165	A	31	10			The preceding sections presented examples from which lessons are to be drawn in this section, but now suddenly new examples are introduced. (Jan Willem Gunning, Free University, Amsterdam)	NOTED. Will consider having a box.
12-166	A	31	10	31	24	Here one could also give the example of Sweden, one of	REJECTED. This is a climate

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						the few EU-15 countries in line to reach its Kyoto target. It was able through the use of a carbon tax and through an climate investment program (Klimp) introduced during 2002. A total of SEK 900 million is allocated for funding Klimp during 2002-2004.Municipalities may apply for grants for projects which reduce the emissions of greenhouse gases in Sweden. The application shall also include information avtivities and it should be elaborated together with industry, various interest groups and the general public. The programmes should be based on a climate action plan within the municipality. So far, Swedens emissions have been reduced by two per cent since 1990. Another example is the Brazilian ethanol program. The ProAlcool program demonstrated cost reductions and economies of scale in ethanol production technologies, achieving factors of two or three improvement in ethanol yield from a given acreage of sugar cane. It also brought about policy changes in sugar cane pricing (from being based on weight to being based on sucrose, or energy, content) that changed the composition of the sugar cane crop and made ethanol production even more effective.From the global environmental perspective the program is a success, replacing 7 MtC/yr, due its excellent energy balance, requiring very small	policy. However, may fit in 12.3 or in 13. NOTED. This example is already mentioned in the text in 12.2.2.1

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						amount of fossil fuel in its production. From the development perspective national and sectorial positive impacts are noticed through: a) hard currency savings from replacement of oil importation; b) improvement in air quality in large cities: c) through the large number of direct and indirect employments in rural areas created at very low value of investment - complying with the UNFCCC condition on sustainable development. See: for example http://www.ivig.coppe.ufrj.br/doc/paper-suzpau.pdf (Lars Friberg, Climate Action Network (CAN) Europe)	
12-167	A	31	21			"suggesting that ..". Really? Are the three countries identical in all other respects. If not, how can you draw this conclusion? (Jan Willem Gunning, Free University, Amsterdam)	REJECTED. Citing reference.
12-168	A	31	26	45	13	Section 12.2.2.2 is fraught with an inconsistency: it does not present a theoretical discussion and empirical evidence of how state, civil society and market actually interact to influence certain national development path and/or to create a "national way of doing things", i.e. of dealing with cc. The reader does not know at the end what are the carbon relevant implications of this interactions (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	NOTED. The theoretical discussion on the interactions between state, market and civil society interact will be expanded.
12-169	A	31	26	44	5	The section on state, markets, etc is actually on governance and institutions. Maybe better to use that title.	ACCEPTED. Will change title.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Material should be analysed better to get meaningful policy relevant conclusions (see eg draft TS). Under "market"the role of the private sector is discussed Call the subsection "private sector". Discuss the drivers for sustainability by private sector in a more coherent manner; it is rather fragmented now. Some material on specific examples in this subsection might be better put in a box. (Bert Metz, IPCC)	ACCEPTED. Will focus on interactions. NOTED. Will be more explicit about the usage of the term "market" ACCEPTED. Will revise.
12-170	A	31	26	45	13	Section 12.2.2.2 is fraught with an inconsistency: it does not present a theoretical discussion and empirical evidence of how state, civil society and market actually interact to influence certain national development path and/or to create a "national way of doing things", i.e. of dealing with cc. The reader does not know at the end what are the carbon relevant implications of this interactions (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	SAME AS 12-168
12-171	A	31	26	43	5	Several chapters mention institutional issues, sometimes in the context of mitigative or adaptive capacity. The most logical place to deal with the topic upfront is in Ch.2. The main question here is the role and importance of institutions for mitigation.Ch 12, on sustainable	ACCEPTED. Subject to Chapter 2 agreement to include appropriate material

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						development is a second place for mentioning institutional issues, but here in the framework of a transition to SD. The main question is here: what are the institutional changes that go together with a more sustainable development. The focus is on changes. The extensive text in 12.2.2.2 can be shortened by incorporating general institutional parts in Ch 2. : e.g. Page 34, lines 15-26; and by incorporating texts on specific climate policy instruments in Ch. 13. There is scope for making the remaining text more concise. (Peter Bosch, IPCC TSU WGIII)	NOTED. Section will be shortened and subdivided if needed.
12-172	A	31	43	31	44	"These reforms in process enlarge the prospect that mainstream development policies and climate favoring may be shaped to coincide": this is a rather optimistic conclusion. The main development path is (still) neo-liberal with, according to the scenario, grave concequences for CO2-emissions. (Gert de Gans, Kerkinactie)	NOTED. Will rephrase.
12-173	A	31	46			Two general comments on this section: > The text appears to draw on a literature base that is skewed to OECD countries, and even within that group, to the ideology of a select few. The statement that "Free market competition is now perceived by many actors as superior to government direction of the economy and commercial activities" reflects market fundamentalism and	ACCEPTED. Will rephrase.

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						is certainly not reflective of the prevailing social market economies in Europe or China, for example. The premise that there is consensus on market fundamentalism and a rational choice economic approach that fails to accommodate any consideration of moral commitment to the welfare of others is inconsistent with the prevailing social market economy approach common in Europe and many other countries. > Since climate forcing is mainly caused by the use of fossil fuels, climate policy, particularly in OECD countries, is energy policy, and energy policy has a domestic and a foreign policy component. To date, the foreign policy decision-making process has generally been a black box, with little stakeholder involvement or public policy debate. Thus the trends mentioned in the text do not reflect the fact that climate change is largely a foreign policy issue. See, for example: Arquit Niederberger, A., and S. Schwager, Swiss environmental foreign policy and sustainable development, Swiss Political Science Review, 10(4), 93-123, December 2004 for an overview of sustainable development in the overall foreign policy context, as well as an analysis of decision-making processes. (Anne Arquit Niederberger, Policy Solutions)	ACCEPTED. NOTED. We will clarify and expand.
12-174	A	31	48	32	17	These parts give the impression that free market	ACCEPTED. Will rephrase.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						competition and economic globalization are autonomous processes which can hardly be influenced anymore by government. States still play an important role besides other actors. (Gert de Gans, Kerkinactie)	
12-176	A	32	30			"but it does mean that they have so more often than they did ..". Meaning? (Jan Willem Gunning, Free University, Amsterdam)	ACCEPTED. Will rephrase.
12-177	A	32	36	32	44	In relation to the previous remark, also here the role of government is very much minimized. Traditional govenments very often still determine the framework within which other actors must find room to operate. (Gert de Gans, Kerkinactie)	SEE 12-174.
12-178	A	33	52	33	53	Check sentence. Typo error. (Jose Moreira, Institute of Electrotechnology and Energy - University of Sao Paulo)	ACCEPTED.
12-179	A	34	26	37	31	Chapter 12 includes several paragraphs that are not exclusively relevant for sustainable development, and can be moved with or integrated in Ch 13. It concerns: p34 line 26 to p37 line 31. (Peter Bosch, IPCC TSU WGIII)	NOTED. Belongs in Chapter 12. But it is also relevant to Chapter 13.
12-180	A	34	27	37	31	Consider incorporating several paragraphs into chapter 13: p34 line 27 to p. 37 line 31 describe general (and not specific SD aspects) of policies and instruments. (Peter Bosch, IPCC TSU WGIII)	SAME AS ABOVE

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
12-181	A	34	35		52	The more "confrontational" approach in the US can be linked to the underlying nature of the legal system and legal framework (extremely detailed regulations), which encourages a backward-looking, "compliance"-oriented approach in industry to HSE issues. The goal becomes compliance, which places the regulator in the position of determining how the company should manage HSE risks & opportunities and is essentially defensive. Progressive companies worldwide, in contrast, regard climate change as a strategic governance issue, assign responsibility to Board-level committees and aim to proactively protect value and gain competitive advantage. These differences at the corporate management level have been detected though efforts such as the Carbon Disclosure Project and other sector analyses demanded by institutional investors, who increasingly regard climate risk management as a proxy for overall management capacity. The role of the financial markets in influencing company behavior relative to the role of governments should be addressed by the IPCC. Furthemore, it is not clear what point the current text is trying to make about the localization of agents of change with government vs. other actors. In a direct democratic system like Switzerland, for example, interest groups and	ACCEPTED. This is an elaboration of what is already noted in the text. NOTED. Dealt with in the market section. NOTED. Will check literature.

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						the people have direct, institutionalized roles in the federal and state decision-making processes, and individuals can bring proposals. For example, a popular initiative forced the Swiss government to implement a policy to transfer road transport traffic onto the rail system crossing the Alps to protect the environment. The current text implies that the European social market economies are purely top-down, which is not the case, at least not in Federal Switzerland. In addition, it is important to make a distinction between domestic and foreign policy decision-making processes, the latter generally being much more top-down and responsive to non-state actors: Arquit Niederberger, A., and S. Schwager, Swiss environmental foreign policy and sustainable development, Swiss Political Science Review, 10(4), 93-123, December 2004 (Anne Arquit Niederberger, Policy Solutions)	
12-182	A	34	52	35	8	If the conclusion of Rayner is presented in lines 5 to 8, it is necessary to keep the text on line 52. (Jose Moreira, Institute of Electrotechnology and Energy - University of Sao Paulo)	ACCEPTED. Will revise.
12-183	A	35	34			The discussion of the pros and cons of different types of climate mitigation policies is a comparison divorced from the results that they are intended to achieve. As noted in comments on chapter 1, policies should be evaluated with respect to their intended function, which requires a link to the market transformation process and the entry points for	REJECTED. It is climate policy, and thus not relevant to this section. In addition, this material is appropriate to be addressed in chapters 4-10.

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						the different types of policies. For any given technology, its energy/greenhouse intensity, for example, is distributed as a bell curve in terms of market share (y axis) vs. intensity (x axis). We need policies (i) to eliminate the least efficient technologies (referred to as "market push", for which minimum energy performance standards can be very efficient), (ii) to encourage continuous development of new, even more efficient technologies (referred to as "market pull", for which procurement programs or technology R&D are important) and (iii) to promote timely replacement of equipment in the center of the curve, which will result in more efficient equipment in use. In general, there has been too little attention to energy efficiency and market transformation and there is a huge literature (and experience) on the subject. A generic evaluation of policies, in isolation of their intended function (e.g., market push), is not of much practical use. We will need a whole suite of policies. (Anne Arquit Niederberger, Policy Solutions)	
12-184	A	36	31	36	32	My impression is that many NGOs have by now taken a rather positive view of emissions permits. Therefore, I find it difficult to make such a general remark. (Even in 1990 the perceptions of NGOs alreday differed on this topic.) (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED. Will revise.
12-185	A	36	36	36	47	Does this paragraph reflect the authors' ideas/findings or, is	ACCEPTED. Will add

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						it based on literature review (if so, citations might be helpful) ? (Margareta Kulessa, Mainz University of Applied Sciences)	references.
12-186	A	37	27	37	27	Of course, subsidies require money .... (maybe the wording could be altered) (Margareta Kulessa, Mainz University of Applied Sciences)	REJECTED. Citation taken out of context.
12-187	A	38	14	41		Section 12.2.2.2.3 This reads like a very early draft. It is often not clear what point is being made. (Jan Willem Gunning, Free University, Amsterdam)	ACCEPTED. Will be revised.
12-188	A	38	14			This section does not reflect the literature on carbon risk management by the private sector. There are a growing number of analyst reports and indices that benchmark climate risk exposure and company climate and sustainability strategies (such as the Carbon Disclosure Project or the Goldman Sachs Energy Environmental and Social Index) and attempt to make the business case for a proactive approach. This report should document that body of information. It should also address the challenges of benchmarking and rating with respect to climate risk management and sustainability that rating agencies and their clients are grappling with at a great level of sophistication. In addition, there should be a mention of the particular situation of both multinationals and SMEs. With respect to	NOTED. Carbon specific indexes belong in section 12.3. We will consider including broader sustainable development indexes in this section. REJECTED. This is not relevant to this section.

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						multinationals, their role in climate-friendly technology transfer (e.g., as a result of internal CSR policies or in response to the determinants of foreign direct investment) is very important. In general, the link between foreign investment - technology transfer - Clean Development Mechanism needs to be addressed (see: Arquit Niederberger, A., and R. Saner, Exploring the relationships between FDI flows and CDM potential, Transnational Corporations, 14(1), 1-40, April 2005) (Anne Arquit Niederberger, Policy Solutions)	NOTED. Should be sent to Chapter 13.
12-189	A	38	14	41	28	The "market" is more or less restricted to the private corporations. The demand side (consumers) is only implicitly touched (p. 38, line 35). In my view this approach neglects the role of consumers in the market and, the siginficant share of GHG emissions due to household consumption and, in general, the role and responsibilities of consumers regarding sustainable development. (Margareta Kulessa, Mainz University of Applied Sciences)	NOTED. Will add material about the demand side.
12-190	A	39	14	39	16	however , just relying on broad-based SRI is insufficient because it has too many interests eg child labour, tobacco, etc. More usefully , various climate-change focussed initiatives have appeared eg CDP, IIGCC, INCVR etc and these should be referenced (Andrew Dlugolecki, university of east anglia)	NOTED. We need to clarify that this section is about broad-based sustainable development.
12-191	A	39	19	39	20	In fact more important are the big investment houses and	NOTED. Will mention them,

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						pension funds , because they are they are the big shareholders today (Andrew Dlugolecki, university of east anglia)	also reinsurance.
12-192	A	39	22	40	7	Cases of three companies are provided as examples, but not clear why these particular companies are presented while Toyota and GE, for example, are much more widely acknowledged as leading companies in the field. (Koji Kadono, Global Industrial and Social Progress Research Institute)	REJECTED. We believe that those are interesting examples.
12-193	A	40	29	40	35	In fact more important are the big investment houses and pension funds , because they are they are the big shareholders today. The old model of short-term profit-maximising shareholders is also under question. The new model is for universal investors eg see Hawley and Williams "Fiduciary Capitalism" (Andrew Dlugolecki, university of east anglia)	SEE 12-191 NOTED. Will check reference.
12-194	A	40	42	40	53	"SRI firms" should be "SRI funds". But also "SRI" is too narrow, the new model is that it makes economic sense to factor in environmental issue- there is considerable literature eg see Cowe for ABI, Austin for WRI etc (Andrew Dlugolecki, university of east anglia)	ACCEPTED. Will be addressed.
12-195	A	41	21	41	22	This more enlightened view is spreading , and can be referenced in the literature in UK and USA. Particularly important is the push from institutional shareholders eg the large Californian and Scandinaviam pension funds, CalPERS, CALSTRS, ABP	ACCEPTED. Will include.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						(Andrew Dlugolecki, university of east anglia)	
12-196	A	41	30			The whole literature on boundary organizations and hybrid management is not mentioned in this section: Arquit Niederberger, A., Science for climate change policy-making: applying theory to practice to enhance effectiveness, Science and Public Policy,32(1), 2-16, February 2005. It should also distinguish between the role of civil society in domestic climate change policy and climate change policy pursued in the context of environmental foreign policy, as the policy- and decision-making processes can be quite different: Arquit Niederberger, A., and S. Schwager, Swiss environmental foreign policy and sustainable development, Swiss Political Science Review, 10(4), 93-123, December 2004 (Anne Arquit Niederberger, Policy Solutions)	
12-197	A	41	30	42	33	Although it is important to stress the valuable way in which civil society can play a role in mitigation of climate change, I think this chapter is much too optimistic. The organisations mentioned do laudable work, however the general public, or even NGO's in general, are not very active on the climate front. In the Netherlands only a handfull of people concern themselves with the climate negotiations, there is no sense of urgency among public organisations, trade unions or local governments, to mention three major sectors from Agenda 21. The impact	

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						of the NGOs in the field is actually rather small, they just do not have enough people in their service, compared with companies. Coverage in the news of the COPs is almost absent, which does not help the absorption capacity of the general public. (Tineke van der Schoor, Sustainability Centre Lauwersoog/ RUG-Bedrijfskunde)	
12-198	A	41	30	42	35	As this is one of the few discussions about public attitudes to energy policy in the report, it should be strengthened (HEDGER MERYLYN, Environment Agency)	
12-199	A	41	30	42	33	The paragraphs on civil society and NGOs is one-sided. By now there exists a pile of literature not only praising the role of NGOs etc. but also critically discussing their role when it comes to SD. (Margareta Kulessa, Mainz University of Applied Sciences)	
12-200	A	42	14			The portrayal of the IPCC as a "voluntary knowledge community" under the civil society subsection is misleading, as the IPCC is an intergovernmental body established by governments. (Anne Arquit Niederberger, Policy Solutions)	
12-201	A	42	14	42	19	The knowledge community is indeed doing great work, and therefore is it a pleasure to be invited to add to the IPCC-process. What is the next step however is to inform the public about the consequences of climate change and what they can do to help mitigate and prevent it. In the North of	

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						the Netherlands I am director of a stichting that proposes to build a public 'experience' centre on sustainability. Climate and energy is one of the important aspects. How can we involve people in the necessary transition to a sustainable energy-society? Currently we have produced a simulation which shows the way the Netherlands will be flooded when the sealevel rises (simulation goes up till 20 meters, but the IPCC predictions are added). People immediately look up their hometown or place of birth. Funding is very difficult to find for initiatives like these. (www.duurzaamheidscentrum.nl, only in Dutch) (Tineke van der Schoor, Sustainability Centre Lauwersoog/ RUG-Bedrijfskunde)	
12-202	A	42	35	43	45	Initiatives like CERES (http://www.ceres.org) which in my estimation extremely effective NGO business public policy networks should be examined more thoroughly in this section (Jacob Park, Green Mountain College)	NOTED. Please provide published reference
12-203	A	42	37	43		Partnerships are a promising new working method, but is not really taking off on the national or regional level in the Netherlands. It takes a lot of time and effort to devise, install en sustain a partnership, which is a great burden, especially for NGOs, but also for small and medium companies. Next comes the problem of finding funds to actually do something, and the traditional subsidy/ sponsor - NGO relationship is coming in again through the	NOTED. Please provide published reference.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						backdoor. Partnership is between equals, each bringing effort and motivation to work together. Sponsoring a project is something else entirely. (Tineke van der Schoor, Sustainability Centre Lauwersoog/ RUG-Bedrijfskunde)	
12-204	A	43	35	43	45	In some countries (and the UK has become a classic example) governmental 'spin' and duplicitous coercion has overtaken the concept of 'partnership' and taken on its apparent guise. Thus emissions targets, renewable energy targets, governmental stances on population growth/net immigration, responses to international targets (UNFCCC, EU) are fundamentally incompatible with the realities of vehicle and aircraft projections, airport expansions, energy use projections, concern for the countryside/species protection/habitat protection, etc. Where opposition occurs local authorities, public opinion, nature and conservation groups are simply overruled. This makes a mockery of 'joined up government', democracy, and sustainable development. Some governments need to be required to look again at the fundamentals of their existence if meaningful cross-sectional partnerships are to prosper. (Michael Jefferson, World Renewable Energy Network/Congresses)	NOTED. Please provide a published reference.
12-205	A	44	6			I think it would be appropriate to present the CDM at the beginning of this section, because the CDM was designed with the explicit dual goals of: facilitating compliance with	REJECTED. This is not within the scope of Chapter 12.

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						the KP by developed countries and assisting DCs in achieving sustainable development and contributing to the ultimate objective of the UNFCCC. This is another area for which there is a vast literature, in particular, since the TAR, and the financial flows could be significant, reaching tens of billions of dollars annually by 2010. Somewhere in this chapter, technology transfer also needs to be addressed comprehensively. (Anne Arquit Niederberger, Policy Solutions)	
12-206	A	44	6	48	22	**This section 12.2..2.3 is a strange appendix, while the material is very much like that in 12.2.2. better to integrate it there. The same applies to 12.2.3, where the central issue of 12.2 is discussed again but under a different heading. Merge into 12.2.2** (Bert Metz, IPCC)	
12-207	A	44	12	48	23	This section presents a mixture of very general statements (mostly commonplace) combined with very concrete and specific examples, that bear little relation to the main text. The piece on natural gas opportunities in coal prone China belongs elsewhere, not even in this chapter. Not a balanced assessment. Moreover, It overlaps in topics with 12.2.2.1.2. (Jos Bruggink, ECN)	ACCEPTED. Will improve relationship between boxes and text and improve links with previous sections.
12-208	A	44	14	44	19	Also better health, and the avoidance of urban drift may be great benefits, particularly as many megacities are in coastal zones, vulnerable to sea level rise. The chapter seems to be too focussed on bigscale technology- the	ACCEPTED.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						advantages/benefits of off-grid energy are considerable. (Andrew Dlugolecki, university of east anglia)	
12-209	A	44	21	44	25	When referring to large modern energy use it would be useful to consider the following. Renewables sources of energy may be used for two very different markets. One market is populated by the poors that have no access to conventional energy sources and can only rely on non-market energy. Actions appropriate for such market are essentially based in energy efficiency improvement. Example on this category is the cooking stove. The other market is populated by the remaining share of the society. This share can afford to pay for the energy they use and may be willing to replace conventional energy by renewables if these ones can provide the same energy service at competitive price. The second kind of market can yield much more demand for renewables than the first. Also, it creates an opportunity for the poors that are producing such energy to increase their revenue selling their products to the ones that can afford to pay. Without better revenue the poors can improve their life quality and select the kind of priority they prefer. Only large use can penetrate the second type of market. **I suggest a positive sentence about large modern energy use be added to balance the negative one presented;** (Jose Moreira, Institute of Electrotechnology and Energy - University of Sao Paulo)	REJECTED. The distinction between large- and small-scale is not relevant in the context of this section.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
12-210	A	45	16		33	Section 12.2.2.3.2 has a rationalistic approach. Authors propose a list of requirements (means) to enhance sustainable development (goal). The approach has the advantage of being simple and streightforward, allowing for some parameterization. Stakeholders appear though with kind of predetermined interests, and seem to be perceived as homogenous and to work in a social vacum. **This approach neglects that sustainable development is in any case a dynamic process in which interests are constantly constructed by stakeholders with both diverse interests/decision making-power, and different posibilities of being negatively impacted by climate change**. It tends to assume that more information can create change, but forgets the role of conflicting and competing interpretations of what sustainable development means. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	NOTED. Will improve link with 12.2.2.2
12-211	A	45	16	45	33	Section 12.2.2.3.2 has a rationalistic approach. Authors propose a list of requirements (means) to enhance sustainable development (goal). The approach has the advantage of being simple and streightforward, allowing for some parameterization. Stakeholders appear though with kind of predetermined interests, and seem to be perceived as homogenous and to work in a social vacum. This approach neglects that sustainable development is in	SAME AS ABOVE

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						any case a dynamic process in which interests are constantly constructed by stakeholders with both diverse interests/decision making-power, and different posibilities of being negatively impacted by climate change. It tends to assume that more information can create change, but forgets the role of conflicting and competing interpretations of what sustainable development means. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-212	A	45	36			".. Helping these countries move towards a more sustainable development future". How can you conclude that from these boxes? What does "more sustainable" mean anyway? (Jan Willem Gunning, Free University, Amsterdam)	NOTED. Will define or explained “making development more sustainable” in introduction.
12-213	A	45	38	47	5	The two Box discuss examples from South Africa. It would be better that one of them deals with another country. (Jose Moreira, Institute of Electrotechnology and Energy - University of Sao Paulo)	ACCEPTED. We will combine them.
12-214	A	45	45	45	45	In Box 12.2: please include "per month" ("... 50 kWh per month at ...) (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED.
12-215	A	46	6	46	6	In Box 12.2: Some studies even come to the result that in some areas the share of income that is spent on energy in some case equals 33% of rural poor's income (for further sources: WBGU 2004: World in Transition. Towards	NOTED. Will check reference.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						Sustainable Energy Systems, Earthscan+K48, esp. pp. 117-126) (Margareta Kulessa, Mainz University of Applied Sciences)	
12-216	A	47	5			For the case study results shown in Table 12.2 and discussed in the box, suggest: 1) that both the costs and benefits be given in both R and $/kWh (unclear if this is US cents in table?); 2) that other benefits of electricity be discussed (e.g. time not spent collecting biomass) in addition to local health effects; and 3) the climate impacts in the Table (presumably 7043 R corresponds to roughly 0.035$/kwh) be compared to the WG2 assessment of cost of impacts. (Haroon Kheshgi, ExoonMobil Research and Engineering Company)	NOTED. Will improve.
12-217	A	48	9		22	A rationalistic approach appears here again. I'd like to add to my last comment that the approach leads to omit an assessment of the contrains to both the design and implementation of those requirements. A key question here is how feasible all these requirements are under current process of structural reform and retrenchment of the state, especially in developing countries. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	NOTED. Will address.
12-218	A	48	9	48	22	A rationalistic approach appears here again. I'd like to add to my last comment that the approach leads to omit an	SEE PREVIOUS POINT.

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						assessment of the contrains to both the design and implementation of those requirements. A key question here is how feasible all these requirements are under current process of structural reform and retrenchment of the state, especially in developing countries. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-219	A	48	24	49	55	I would suggest to make this section part of a concluding section that tries to give concrete suggestions to make climate part of development changes to make development more sustainable. That step is currently missing in the chapter. (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	NOTED. Will take into consideration.
12-220	A	49	1			Case studies from China should be mentioned. E.g., Aunan et al (2004), which is mentioned in several chapters, Mestl et al (above) or Vennemo et al (above). (Haakon Vennemo, ECON)	NOTED. Will check literature.
12-221	A	49	7			No-regrets but not no-challenges? (Richard Tol, Hamburg University)	SEE COMMENT 12-222
12-222	A	49	7			Which challenges? Give some examples (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	ACCEPTED. Will explain 'challenges"
12-223	A	49	7	49		Which challenges? Give some examples (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	SEE ABOVE

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12-224	A	49	28	49	55	The paragraphs on the Finnish and Dutch studies contain important messages that should find a place somewhere in the report, but it is unclear why they are cited under mainstreaming. Explain the reasons or move the discussion elsewhere. (Jos Bruggink, ECN)	NOTED. Will find appropriate place for studies or an explanation.
12-225	A	49	42	49	45	Sustainable development (including climate change mitigation and adaptation) in essence requires an alternative development pathway. Although it can be acknowledged that actual intervention will be a compromis and will be the outcome of a political process, the report would gain strenght if it could stress that an alternative development pathway is really needed. In chapter 12, page 49, lines 42-45 reference is made to four scenario's representing four world perspectives with four different views on future priorities for action to make development more sustainable. Why not give these scenario's a much more prominent place in the report and clearly indicate what the consequences are of the different paths. (Gert de Gans, Kerkinactie)	REJECTED. This is prescriptive REJECTED. These points are discussed in Chapter 3 and in WGI and II reports.
12-231	A	50	0	56		Section 12.3 will be based on final information coming available. I understand that section 12.2 and 12.3 address both one direction of the mutual relationship between development and climate change mitigation. The reader is	NOTED: Will include table to better describe relationship

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						perhaps better served if this mutual relationship (synergies/trade offs is treated in an integrated manner for the key issues at stake identified in both sections. (Marcel T.J. Kok, Netherlands Environmental Assessment Agency)	
12-226	A	50	5	55	47	this section seems to overlook small-scale solutions eg run-of-stream hydro, offgrid PV etc (Andrew Dlugolecki, university of east anglia)	REJECTED. This belong to Chapter 4
12-227	A	50	6	56	53	This section is weak; it does not use the rich material that is available in the other chapters. A summary table (see draft TS) would be very helpful. It also in many places focusses on the wrong relationship (SD >CC), while the intent is to focus on the relation between CC and SD. E.g.material on reporting methods on SD that is not linked to the question how CC actions influencing the movement towards or away from SD does not belong here. (Bert Metz, IPCC)	ACCEPTED. Summary table is considered. Waiting for inputs from other chapters. NOTED.
12-228	A	50	15		16	Carbon sequestration through tree plantation is given as an example of effective mitigation. Given the well documented concern over this approach to sequester carbon I doubt it should be listed. Also, as described in Frank Keppler, John T. G. Hamilton, Marc Brass and Thomas Reickmann Methane emissions from terrestrial plants under aerobic	REJECTED. Methane emissions, to the extent of current knowledge, are very small.

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						conditions Nature, January 12, 2006 There is the issue of methane from sinks as well. (Lars Friberg, Climate Action Network (CAN) Europe)	
12-229	A	50	26	50	27	SD as any other structural reforms (or, even nearly any structural process) creates, at least in the interim period, winners and losers, in this case its less employment in the coal mining sector. To label this "socially unsustainable" , in my opinion, goes a bit too far (though some lobbyists indeed argue in this way). This approach appears in several paragraphs in this section. It favours the status quo (esp. in income distribution) to an extent that seems exaggerated to me. (Similar: p. 52, lines 27-30). I would suggest a) to use another example, b) only use the label "socially unsustainable" if very severe (in quantitative and qualitative respect) negative impacts occur (e.g. negative effects on the very poor) . (Margareta Kulessa, Mainz University of Applied Sciences)	NOTED. Will rephrase SENTENCE
12-230	A	50	44	50	45	RECOMMENDATION: "Nuclear and large hydro forms of energy supply reduce carbon emissions but can have other environmental and social impacts that are not beneficial." with "Nuclear and renewables (including large hydro) reduce carbon emissions but can have other environmental and social impacts that are not beneficial, although these impacts are lower than for fossil fuels." JUSTIFICATION: The UK ExternE study ("Power Generation and the	NOTED: Will rephrase.

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						Environment - A UK Perspective, Vol 1", Dr. J.E. Berry, 1998, page ix; available at http://externe.jrc.es/uk.pdf) shows that all generation sources have environmental impacts. It assesses that impacts from nuclear energy supply are of a similar magnitude to many forms of renewables. Similar results were published for all of Europe in "External Costs Research results on socio-environmental damages due to electricity and transport", available at http://www.externe.info/externpr.pdf. The text should note that many renewables, in addition to large hydro and nuclear, have environmental and social impacts, and should note that the magnitude of these non-carbon impacts is typically less than those for fossil fuels. (Jonathan Cobb, World Nuclear Association)	
12-232	A	51	25	52	35	The subsection is rather weak. Rewrite by someone familiar with general equilibrium reasoning. (Haakon Vennemo, ECON)	REJECT. Comment is too vague.
12-233	A	51	26			In this chapter/section, it would be interesting to report on the US Apollo Alliance (http://www.apolloalliance.org/) and analyses of impacts on jobs, economic growth, etc. (Anne Arquit Niederberger, Policy Solutions)	NOTED: Will check website for referenciable material.
12-234	A	51	39	51	40	Not in the case of biomass energy. Plantation and harvesting require the highest share of man-power and high qualification isn't necessary. Installations of solar heaters is in the same category as biomass energy. (Jose Moreira, Institute of Electrotechnology and Energy -	ACCEPTED: Qualify statement

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						University of Sao Paulo)	
12-235	A	52	5	52	6	The causality is unprecise. Increased production does not enable the industry to hire more workers. Maybe: "Removal of electricity shortages .... has the potential to increase employment and production. This means higher income and ceteris paribus an increase in tax revenues." (delete "sales tax" as this is true for most taxes, esp. income tax revenue). (Margareta Kulessa, Mainz University of Applied Sciences)	Accepted. Will rephrase
12-236	A	52	27	52	30	See my comment for line 50,26,50,27 (losing jobs in the older, unsustainable industry, is not a danger or risk, but actually inevitable and in the long run even desirable). (Margareta Kulessa, Mainz University of Applied Sciences)	ACCEPTED
12-237	A	53	14			This vague reference to social capital does not work. Either drop it or develop a clear argument. (Jan Willem Gunning, Free University, Amsterdam)	ACCEPTED. We will develop the argument.
12-238	A	54	5	54	11	The example of wind power cited puts harm to birds before visual intrusion (not aesthetically pleasing). In fact, apart from the example of Tarifa, and some examples in the USA, bird damage has been small to date. Some find wind turbines aesthetically pleasing and some do not. But, importantly, with the industry (often backed by government subsidy) seemingly bent on maximising technical potential by building ever taller wind turbines (125 m and higher to	NOTED. Please provide a published reference.

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						come) on shore the visual intrusion is becoming ever more menacing. In addition, areas of low wind and high (officially designated) landscape value are being increasingly targeted by these mammoth machines, leading to increasing and more extreme opposition - which some governments seem loathe to consider with sympathy. On biomass, indoor pollution is not the only challenge (and in the case of modern biomass, not a challenge at all), but monocultures, water availability, habitat protection, and visual/noise/dirt effects of large-scale harvesting and traffic movements may be important issues. This is touched on, but perhaps too briefly, at the end of the next paragraph (line 19). (Michael Jefferson, World Renewable Energy Network/Congresses)	
12-239	A	54	7	54	9	Increased use of biomass is expected using modern technologies. Traditional use can't increase any further since the poors are already filfilling their necessity through it. All measures being pursued will only reduce the use of traditional biomass, mainly considering the rural population will have the opportunity to sell bioenergy to the inhabitants of the cities, while improving their revenue and opening opportunity for moving up in the energy stair. (Jose Moreira, Institute of Electrotechnology and Energy - University of Sao Paulo)	ACCEPTED. Reference to indoor air pollution is not appropriate.
12-240	A	54	18	54	19	Yes, probably some evidence exist for harmful impact on	ACCEPTED. Will be taken into

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						human health, through the use of biofuels. But what about the human health effect caused by burning fossil fuels? You have to consider the net effect and not only biofuels!! (Jose Moreira, Institute of Electrotechnology and Energy - University of Sao Paulo)	account. Please provide reference.
12-241	A	54	30	56		This section seems to me one of the weaker ones. First, I don't see a big difference between "technology choices" and "policy choices" - which technologies are utilised is a function of policy. Moreover, I think the section should definitely discuss pricing, and liberalisation, policies. Also link with Chapter 11, including the "double dividend" literature. (Michael Grubb, Cambridge University)	**NOTED. Will take into consideration in redrafting.**
12-242	A	54	39			It is important to discuss the role of energy efficiency in the context of technology and policy choice, because realizing energy savings with existing technologies leads to greater flexibility on both counts. The potential for energy savings by using the most efficient existing technologies is so large that policies to rapidly introduce them can avoid the need to invest in new energy infrastructure now, and can buy time to develop new technologies, resulting in more policy choice. The TAR had a detailed analysis of the scope for energy efficiency to reduce emissions to below the 2000 level by 2015. China has also done an analysis as part of their Medium and Long-Range Energy Conservation Plan that shows that potential energy efficiency improvements	REJECTED. Not an economy-wide choice, discussed in energy sector.

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						for the period 2010-20 exceed planned new generation capacity by 11%. (Anne Arquit Niederberger, Policy Solutions)	
12-243	A	55	16	55	18	The paragraph should not only focus on costs but on impacts, and also not only on ecological but also on social impacts of technological choices. (Lars Friberg, Climate Action Network (CAN) Europe)	REJECTED. The paragraph does focus on social impacts, except the last sentence.
12-244	A	55	24			Aunan et al (2004) and Mestl et al (2005) are good case studies from China. (Haakon Vennemo, ECON)	TAKEN INTO ACCOUNT. Please provide references.
12-245	A	56	44		46	If climate change policies can create benefits to sustainable development, why then we don't implement them? My preliminary guess is because we are confronted to constrains this report should address. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	REJECTED. We have noted earlier in the chapter the constraints.
12-246	A	56	44	56	46	If climate change policies can create benefits to sustainable development, why then we don't implement them? My preliminary guess is because we are confronted to constrains this report should address. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	SAME AS ABOVE.
12-247	A	57	5	59	30	This section does not address so much implications of mitigation choices fo sustainable development goals, but the problems of generalising messages across countries of very different characteristics, a very important message,	**TAKEN INTO ACCOUNT. Will consider in key messages.**

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Considerations by the writing team
						that should fit somewhere but probably not here. (Jos Bruggink, ECN)	
12-248	A	57	5	59	47	The role of this section is unclear. The distinction in various groupings would be relevant for Chapter 13 (where it also is), but I do not see the relevance for chapter 12. Could be deleted/ merged into ch 13. (Bert Metz, IPCC)	**NOTED. Will consider dealing with regional variation elsewhere, in addition to 12.2.1.3.**
12-249	A	57	12		38	Section 12.4.1 is almost identical to parts of section 2.8. Can be deleted here, with a reference to 2.8. (Peter Bosch, IPCC TSU WGIII)	ACCEPTED. Suggest integration of 12.4.1 into 2.8
12-250	A	58	8		16	Do all nations take a leading role in emissions reductions? What about US and Australia? As of impacts the 2003 heat wave and Katrina reminded us that each country faces a particular set of vulnerabilities and capacities to adapt to cc. (Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	REJECTED. Text says 'most of', not "all".
12-251	A	58	8	58	9	(why not simply use the term "advantage", deleting "comparative"?) (Margareta Kulessa, Mainz University of Applied Sciences)	SAME AS ABOVE. See response to 12-71
12-252	A	58	8	58	16	Do all nations take a leading role in emissions reductions? What about US and Australia? As of impacts the 2003 heat wave and Katrina reminded us that each country faces a particular set of vulnerabilities and capacities to adapt to cc.	SAME AS 12-250

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						(Romero Lankao Patricia, Metropolitan Autonomous University, campus Xochimilco)	
12-253	A	58	12	58	13	(I do not understand the causality ...) (Maybe the authors had the following in mind: "As most developing countries are less affected by the impacts of the climate change to come they will have to spend less resources on adaptation which means they may put a larger emphasis on mitigation measures than developing countries can." But I am not sure if that was the intention ...) (Margareta Kulessa, Mainz University of Applied Sciences)	SAME AS 12-76.
12-254	A	58	33	58	34	A) an average growth rate (of real GDP, I suppose) in the past 15 years seem too little to me (according to the World Bank Development Indicators average GDP of "CEE" growth has been 0.6% during 1990-2003, for example). B) Anyway, citing this average might give a misleading impression as growth was on average negative up to 1995, and starting approx. around 1998 it was not only positive but remarkably high (esp. compared to developed). This does not change the point that is made here but even emphazises it. I suggest to refer to negative/low rates up to approx. 1998 and would add which average growoth rate was observed since 1999. (Margareta Kulessa, Mainz University of Applied Sciences)	TAKEN INTO ACCOUNT. Will check the reference.
12-258	A	59	0	60		Future research needs: as was clear from a workshop	ACCEPTED. Will check the

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						arranged at COP/COPMOP 1 in Montreal the research needs on gender and climate change is substantial, see workshop report on scope of research need:http://www.genanet.de/fileadmin/downloads/themen/G_CC_research_workshop_report.pdf (Lars Friberg, Climate Action Network (CAN) Europe)	web-site.
12-255	A	59	38	59	41	It would be wrong to single out the new EU member states as suited for energy efficiency measures. As IEA and the EU Green paper on energy efficiency made clear there are large energy saving potentials in both developing and developed countries. In fact developing countries have often much higher energy intensity in their economy with large potentials for saving. As it is almost always is cheaper to make better use of existing energy energy supply than to build new power plants it energy efficiency is the cost effective, available mitigation option that should be promoted. See for example: Experience with Energy Efficiency Policies and Programmes in IEA Countries, IEA (2005); Geller, H., P. Harrington, M.D. Levine, A.H. Rosenfeld and S. Tanishima. 2005. “Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries.” Manuscript accepted for publication in Energy Policy. (Lars Friberg, Climate Action Network (CAN) Europe)	TAKEN INTO ACCOUNT. Change will be made to incorporate comment.
12-256	A	59	38	59	38	I do not understand the idea behind "... physical expansion of their economy is rather limited ..." (for example, not	NOTED. Will rephrase.

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						much hindered most western industrialized countries' economies to expand quite a lot in volume terms since, let's say, the seventies. Or, do the authors refer to the amount of land on which industrial plants exist? If so, I see little reason why real production growth (and ceteris paribus increases in energy use) should be siginificantly restricted by this? (My suggestion: simply make the statement easier to understand.) (Margareta Kulessa, Mainz University of Applied Sciences)	
12-257	A	59	49			The discussion of future research needs related to sustainable development and mitigation is inadequate. Many crucial issues are not mentioned that warrant more thorough analysis, such as the role of technology transfer, foreign investment and trade in stimulating or hindering sustainable development (including mitigation of greenhouse gas emissions) and implications for policymaking and burden-sharing; the contribution of the CDM to the sustainable development of host countries; decision-making tools that can help mainstream sustainable development considerations into policymaking; etc. (Anne Arquit Niederberger, Policy Solutions)	ACCEPTED. Will add other areas of future research needs.
12-259	A	60	15	60	19	Indeed, this appears somehow paradox. Therefore, in my view, this recommendation deserves this prominent positioning at the end of the chapter! (Margareta Kulessa, Mainz University of Applied	ACCEPTED.

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						Sciences)	
12-260	A	75	0			Tables 12.1 & 12.2. Comment: The Table captions are not self-explaining in that they do not refer to country (South Africa) - they should do despite the fact that the Box deals with SA) (Jukka Käyhkö, University of Turku)	ACCEPTED. Will rephrase.