Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-1	23	A	0	0	0	0	The biomass discussion gives the impression that biomass is by definition a sustainable energy source implying it is CO2 neutral. The current discussion on the sustainability both in CO2 terms as in other turms (biodiverity impact) is not reflected. Sufficient scientific evidence is available to justify a cautioning note with respect to biomass sustainability. The message should be that biomass has a lareg potential for mitigation if implemented the right way. The definition of modern and traditional biomass is in this respect not sufficient as also modern forms of biomass energy can lead to higher CO2 emissions compared to a fossil equivalent. Especially transportation fuels have this problem that needs to be adressed in order for the IPCC report to be credible. For example see chapter 4, page 49. (Wolter Elbersen, WUR, AFSG)	TIA, Move para 23 up to energy supply section and modify to reflect comments Biomass para will be reformulated on the basis of synthesis text that will be developed for chapter 11.	CG Biomass	
SPM-2	0	A	0	0	0	0	Using a single metric for global mitigation costs does not reflect the variety of metrics used in the literature. Loss of GDP is certainly a common metric, but the literature also reflects changes in GDP growth rate (noted in footnotes only), time delay in reaching the same level of GDP or indeed absolute numbers. See for example Azar, C & Schneider, S H 2002. Are the economic costs of stabilising the atmosphere prohibitive? Ecological Economics 42: 73-80. and studies underlying UK DTI 2003. Our energy future - creating a low carbon economy. London, Department of Industry and Trade. www.dti.gov.uk/renewable/nffo.html. For each cost statement, at least two metrics shoudl be reported (Harald Winkler, University of Cape Town)	ACC, add annual GDP growth rate reduction between brackets		
SPM-3	0	A	0	0	0	0	A challenging task to summarise the copious amounts of relevant work. In my view there are some major policy issues which aren't clearly addressed in the current document. There should be greater discussion of the difference between existing, technically proven abatement options versus promising but still emerging technologies with respect to policy formulation. There is potential confusion regarding what technology development is - it is largely cast within an R&D and Demonstration framework which ignores the role of	ACC, technology maturity to be reflected; suggest table summarizing sectoral mitigation options, their current maturity (using SRCCS method), 2030 potential (qualitative) and effectiveness of policy instruments	CG Cost/potential, 4-11	CLA disc: this is complicated seen the large amount of technologies we are dealing with (SRCCS was simple in this

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							market-pull policies in driving technical progress (it is termed innovation on p.15, line 28).This is at the heart of the present policy 'debate' about 'technology' versus 'market-based' approaches to climate change when both are intended to drive technical progress. (Iain MacGill, University of NSW)			respect). No table, maybe use IEA graphs.
SPM-4	27	A	0	0	0	0	The sole concern of my comments is that emission taxes and tradable emission permits should receive more balanced coverage as possible instruments of mitigation policy. In my view the SPM and TS currently give an impression that is biased in favour of tradable permits, because of how they summarise the key advantages and disadvantages of each instrument. By contrast, Chapter 13 is more balanced. (Jack Pezzey, Australian National University)	DISCUSS	13	ES revised to bring more balance. That will factor into SPM.
SPM-5	0	A	0	0	0	0	This Summary for Policy Makers needed to be the best written, clearest and most focussed part of the Report. However, at present it is far too long, detailed, technical, mathematical, tabular and scholarly. There is no need for this approach, as there is a separate, much longer, Technical Summary. Unless radically corrected it will sharply diminish the impact of the SPM and the whole Report. As well as conciseness and concentration on key points for decision-making, the academic apparatus of references and footnotes should be removed. If any references are deemed absolutely necessary, they should be to the sections of the Technical Summary only. By contrast, the 'Introduction' Chapter is a model of lucidity and pertinence: perhaps the responsible authors could be asked to re-draft the SPM. (Ian Cook, United Kingdom Atomic Energy Authority)	REJ, govts want more detail		
SPM-6	0	A	0	0	0	0	The main focus of the Summary is on the next fifty (or sometimes even thirty) years. While understandable, this directs attention away from the biggest potential problem: during the period 2050 to 2100, most plausible stabilisation scenarios require rapid movement towards limiting annual carbon emissions to very low levels, whilst energy consumption continues to grow; it is unlikely that this can be accomplished without very strong efforts to develop and deploy	REJ, LT is in para 6		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							new power technologies that can almost completely replace carbon-emitting technologies during the course of this century. Essentially, these technologies are carbon capture and storage, solar (substituted by other renewables where locally appropriate), fusion and advanced nuclear fission. This point is not made with real clarity in the SPM: it is diffused and hidden by the detail. (Ian Cook, United Kingdom Atomic Energy Authority)			
SPM-7	0	A	0	0	0	0	In General, "Summary for Policy Makers" doesn't mach the opinions in the original report very well, some statements in "Summary for Policy Makers" can not get supports from relevant chapters. (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	UNCLEAR, which ones?		
SPM-8	0	A	0	0	0	0	Poorly written and full of references, citations and figures. Cumbersome and difficult to read. Unlikely that reading this will be helpful to policy makers. (David Jackson, McMaster University)	See A6		
SPM-9	30	A	0	0	0	0	Overall I find that this section underplays the role of technology research and development and in particular the very positive role that international copoperation plays in this area. (David Jackson, McMaster University)	TIA, in considering comments on para 30 and table 3	13	
SPM-10	27	A	0	0	0	0	Particularly the example of petrol taxes ought to be mentioned more. This is the only truly large scale implementation of carbon pricing (in practice - even though that terminology was not used) before Kyoto. The fact that taxes only have effect in the long run and that the political economy of taxes is tricky makes it all the more important to act immediately. See Hammar, H., Å. Löfgrem and T. Sterner, (2004), 'Political Economy Obstacles to Fuel Taxation', Energy Journal, ISSN0195-6574, Vol. 25(3), pp 1-17. (Thomas Sterner, Univ of Göteborg)	DISCUSS	13	Doesn't belong in SPM. See ch 13.
SPM-11	0	A	0	0	0	0	Not enough emphasis overall on the overarching importance of creating a strong price signal on carbon emissions (Thomas Sterner, Univ of Göteborg)	REJ, see para 26		
SPM-12	0	A	0	0	0	0	Need an overview of climate impact. Especially what it means to			

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							the globe as well as to each nation. Particular focus should be most vulnerable nation. Colour maps of the globe would help to understand which nations are more vulnerable. This report should give an introduction to climate impact before progress for describing mitigation options. (NOIM UDDIN, Macquarie University, Sydney)	NOT FOR WG 3		
SPM-13	8	A	0	0	0	0	ii) We can read a lot about costs of mitigation. Is it possible to counterbalance this in a similar frequentness with data on avoided damages which result from mitigation? (Manfred Treber, Germanwatch)	TIA; para 8 to be strengthened See A-59, A-118	3	Rejected. Counterbalancing information on avoided damages belongs more appropriately in WGII (3) New text for para 8 from ch 3 will come in course of next week.
SPM-14	0	A	0	0	0	0	i) I suggest that the message from Chapter 1, p. 21, l. 26-28 'we are not on track in terms of developing the technologies that will fuel a transition to a steady state concentration level while simultaneously meeting our energy security and economic objectives' deserves being mentioned in the SPM because it sends a strong signal to policy/decision makers who (only) read the SPM and are the ones who can change this deficit (Manfred Treber, Germanwatch)	REJ; contradicts message in PARA 6 OF SPM DISCUSS to avoid contradicting info in ch 1 Check ch 1 (main text /TS)	1,3	This is not a comment pertinent to Ch3. (3)
SPM-15	0	A	0	0	0	0	Overall, a good summary of the state of the art. It contains a good assessment of the new endogenous technical change literature (Jonathan Köhler, University of Cambridge)	Thank you		
SPM-16	9	A	0	0	0	0	The SPM needs in general to be looked through to avoid generalisations which are building on cases and examples claiming that CEOs miss cost-efficient opportunities of energy-saving or	DISCUSS Use Economic Potential	11	

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							energy-efficient investments as a general rule. The chapter also needs to state the fact that when cost-efficient investments are not made, this might very well be because they do not meet the internal hurdle rate of the company. If these investments in cost-efficient energy savings etc. were made, they would push aside better, more profitable and more innovative investments made by the company. The risk would be a distortionary impact on the company with less innovation taking place in the company. (Helle Juhler-Kristoffersen, Confederation of Danish Industries)			
SPM-17	9	A	0	0	0	0	The SPM needs in general to be looked through to avoid generalisations which are building on cases and examples claiming that CEOs miss cost-efficient opportunities of energy-saving or energy-efficient investments as a general rule. The chapter also needs to state the fact that when cost-efficient investments are not made, this might very well be because they do not meet the internal hurdle rate of the company. If these investments in cost-efficient energy savings etc. were made, they would push aside better, more profitable and more innovative investments made by the company. The risk would be a distortion impact on the company with less innovation taking place in the company. (,)	Identical A16		
SPM-18	0	A	0	0	0	0	It is vital that any assumptions and uncertainties in the data given on costs and benefits of climate change mitigation policies are properly quantified within the SPM. (,)	TIA, Uncertainty info to be improved	CG Uncertainty	
SPM-19	0	A	0	0	0	0	In a busy world, the content, presentation and message(s) conveyed by the SPM will have to largely stand for the effect of the entire report on the vast majority of (not just) the ordinary public but---experience tends (unfortunately) to show---the vast majority of policymakers also. For the vast majority of people, this effect will be both amplified and pre-empted by media selection of material from the SPM for the maximum news effect. Every word, every statement and every graph or table should therefore be drafted and presented with this dynamic in mind, both on a stand-alone basis	Thank you		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							and as potential contributors to the ensemble. Governments are well enough aware of this dynamic and will try to lever it as much as possible for their own common but differentiated purposes, and have, of course, the power to decide on its ultimate shape, content and message. In its current state the SPM is in fairly good shape to face this process. However, a number of key messages need to be strengthened---most particularly on the overwhelming significance of fossil-fuelled energy for the emissions that cause climate change. Proposals are made in subsequent specific comments on this chapter (Pat Finnegan, Grian)			
SPM-20	0	A	0	0	0	0	Should make it clear that stabilisation scenarios are no in terms of CO2eq, rather than the TARs CO2. (Chris Mottershead, BP)	ACC, add to footnote 3		
SPM-21	0	A	0	0	0	0	Makes the case well that technology and policy options are available, and that many of these can be implemented at a modest CO2 price, shifting the focus upon the political commitment to take action - this represents real progress from the TAR (Chris Mottershead, BP)	Thank you		
SPM-22	17	A	0	0	0	0	The SPM should include the clear results of chapter 6 on buildings, in particular the supply-curves of conserved carbon dioxide displayed on chapter 6 fig 6.4 page 40) (ANTOINE BONDUELLE, Université Lille II)	TIA, no space for details in SPM, but maybe more emphasis on negative cost potetial	6	
SPM-23	0	A	0	0	0	0	Uncertainty needs to be covered better in the SPM than only in point 8. (Expert Review Meeting Paris, IPCC)	See A-18		
SPM-24	0	A	0	0	0	0	Uncertainty is not given sufficient attention in the SPM. (Expert Review Meeting Paris, IPCC)	See A-18		
SPM-25	0	A	0	0	0	0	There appears to be little benefit from singling out a specific GHG stabilisation level. It might be seen as being prescriptive. (Expert Review Meeting Paris, IPCC)	UNCLEAR		
SPM-26	1, F 2	A	0	0	0	0	SPM Figure 2 – it is not clear for policymakers. Therefore either more text is needed or the presentations (graphics) need to be changed.	ACC, replace figure with fig 1.5		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Expert Review Meeting Paris, IPCC)			
SPM-27	6	A	0	0	0	0	Point 6: Suggestion to cut the first sentence in two parts. The IEA can help quantify this work into graphics for emissions from the power plant sector. Figure 4: The Fossil fuel should be on one side and CCS on another side (Expert Review Meeting Paris, IPCC)	TIA Fig 4 comment UNCLEAR	3,4,11	Rejected. Second part of sentence in point 6 relates to first. Fig 4 being reconstructed. (3)
SPM-28	5	A	0	0	0	0	Point 5: Needs to be more precise on the uncertainty statements in this point need to be improved. There is no need to single out 450 ppmv from chapter 3. The lower the stabilization level, the higher are the avoided damages needs to be added. Are technologies only interpreted as energy technologies only? Many references on long-term in Section B. It should mention that short term policies will have an impact on long-term policies. Table 1: the + 20 in the last column will not be taken seriously by policymakers (Expert Review Meeting Paris, IPCC)	ACC; divide ategory A in two	3	Accepted. No need to single out specific stabilisation levels. Table 1 being reconstructed in consultation with WGI. (3)
SPM-29	27	A	0	0	0	0	Point 27: line 15- use of carbon trading as policies should be mentioned line 19- the voluntary agreements of chapter 13 does not links with chapter 7, which talks about voluntary actions. Environmental effectiveness has not to be addressed in the SPM. (Expert Review Meeting Paris, IPCC)	TIA, VA statement to be more balanced	7,13	
SPM-30	16	A	0	0	0	0	Point 16: Mention it is also possible to include ETS from transport (Expert Review Meeting Paris, IPCC)	REJ, no basis in literature		
SPM-31	15	A	0	0	0	0	Point 15: This statement is wrong, as the energy sector has grown faster with regard to emissions There are other ways to decarbonise the fuel mix in the carbon sector- line 26. (Expert Review Meeting Paris, IPCC)	ACC; delete sentence and mention high growth in modified text		
SPM-32	13 14	A	0	0	0	0	Point 13: Deleted “advanced nuclear” Replace unattractive with costly in line 16. The problem with short-medium term measures and CCS which is not available right now.	TIA; delete “advanced”; modify sentence on CCS retrofit and avoid “economically		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Expert Review Meeting Paris, IPCC)	unattractive"		
SPM-33	0	A	0	0	0	0	More attention to the conclusion that energy efficiency is the most important contribution to emission reduction in the short and medium term (Expert Review Meeting Paris, IPCC)	TIA; for LT this is in para 6; for ST needs to be emphasized (see also A-3)		
SPM-34	31 F 7	A	0	0	0	0	Figure SPM 7: the degree of the impacts are difficult to interpret. Unless this information has be presented with some magnitude of scope, it should not be presented. Ther is a case for dropping it from the SPM. What countries have been analyzed in fiscal policy? (Expert Review Meeting Paris, IPCC)	ACC; delete fig 7 and replace with table that covers sector considerations	12	
SPM-35	31 F 7	A	0	0	0	0	Figure 7 SPM needs further explanation or needs to be taken out of SPM. (Expert Review Meeting Paris, IPCC)	See A34		
SPM-36	0	A	0	0	0	0	Biomass has a strong bias in the SPM compared to other renewable energy. (Expert Review Meeting Paris, IPCC)	REJ; not true; see also A-1		
SPM-37	27	A	0	0	0	0	A distinction needs to be made between Voluntary Agreements and Voluntary Actions. (Expert Review Meeting Paris, IPCC)	TIA, see A-29	CG Uncertia nty	
SPM-38	0	A	0	0	0	0	Assumptions and uncertainties in the data given on costs and benefits of climate change mitigation policies need to be adequately described and quantified within the SPM. (Jean-Yves CANEILL, EDF)	See A-18		
SPM-39	0	A	0	0	0	0	SPM, general: It is vital to state early on that greenhouse gases need to be stabilized at levels of 450 ppm CO2eq. or below in order to limit the worst consequences of climate change. Now, the 650 ppm CO2 eq. is often the point of departure, as if assuming that would be sufficient solution to avoid dangerous climate change (Donald Pols, Friends of the Earth Netherlands/Milieudefensie)	REJ; policy prescriptive		
SPM-40	0	A	0	0	0	0	The term ancillary benefits should be dropped. It is often used interchangeably with co-benefits, implying that ancillary benefits and co-benefits are the same. They are not. As indicated in the definitions in the glossary, ancillary benefits are benefits that occur from policies, even though the policy was not designed to provide	CHECK; do we still have the term ancillary benefits, if so, make the point	all	

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							those benefits. Co-benefits occur when policies are designed to achieve multiple objectives. It is unlikely that any government would design a without having multiple objectives, including greenhouse gas emission mitigation, in mind. This point is made explicitly in the Technical Summary, Pg. 104, lines 35-37 and in Section 13.2.2.7, Chapter 13, Pg. 35-36. While ancillary benefits have a theoretical meaning, the emphasis should be put on co-benefits, stressing to policymakers that properly designed policies can achieve multiple goals. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)			
SPM-41	0	A	0	0	0	0	Missing from this SPM, and from the report itself, is a discussion of which technologies provide the largest mitigation potential in 2030. A careful reading of Chapters 4-10 indicates that energy efficiency will be the most important technology, but policymakers and other readers whould not have to dig for this information. Chapter 11 should provide a roll-up of mitigation potential by technology analogous to the rollup of mitigation by sector and cost contained in Table 11.3. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	TIA, see A-3		
SPM-42	0	A	0	0	0	0	The SPM is very readable and presents many highly policy-relevant findings. The only problem is that many of its key summary findings are not well supported by the TS, because TS contains summaries of individual chapters, but virtually nothing to summarise across chapters.. This leaves a degree of arbitrariness in terms of what key messages are highlighted in the SPM. The SPM would be stronger if the TS clearly builds up material provided in the underlying chapters, as an intermediate step as it were, in the same way as successive layers of a pyramid support its top with an increasingly narrowing (=more focused) base. This is more a comment on the TS than the SPM, but it is very relevant for the robustness of the SPM. (Andy Reisinger, TSU IPCC Synthesis Report)	DISCUSS SPM key messages must be in TS/ES. Will be done/improved.	TS	CLA disc: Ensure consistency SPM-TS
SPM-43	0	A	0	0	0	0	What's missing in this SPM is the consideration that policies followed may modify the costs and availability of mitigation	DISCUSS	11 & 3	Section in chapter

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							potential through technology development, economies of scale and learning-by-doing processes. All is written in a linear where potential below some costs are to be identified and then tapped by appropriate policies. The real world is more complex as these policies, while they exhaust part of thes potentials may also contribute to create new potentials through technology dynamics. (Cédric PHILIBERT, International Energy Agency)			currently not reflected in SPM whilst it should. The questions is : is there enough literature to make a statement on the costs related to ITC. Chapter 3 suggests to park it until we get to section 7.
SPM-44	24	A	0	0	0	0	Why is the activities in the CDM only covered in the waste section: The information on the number of CDM project for all types can be updated using table 2, table 9, chart 1, and chart 2 in the "Analysis" sheet in the "UNEP Risoe CDM/JI Pipeline" published monthly on the www.cd4cdm.org web site at the address: www.cd4cdm.org/Publications/CDMpipeline.xls (Jørgen Fenhann, Risø)	ACC; move CDM to para 29	10,13	
SPM-45	0	A	0	0	0	0	"high confidence" and "midium confidence" etc need to be clearly defined. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	ACC; add uncertainty annex	CG Uncertainty	
SPM-46	0	A	0	0	0	0	Throughout the text, when discussing stabilisation level, both W/m2 and ppmv are used and it is very confusing. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	~~ACC; W/m2 will be dropped; CO2 eq only~~ Keep it in table but simplify in text	3	rejected. Equivalences available in Table 1 (3) Discussion: Naki: more transparent to use different metrics because

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										they refer to specific variables. Refer to table 1 to have the translation. Possibly use one metric in text?
SPM-47	0	A	0	0	0	0	As with other WGs contributing to AR4, this draft is a major achievement and the appreciation to all involved is due. The following comments are restricted to issues of clarity in the SPM only. (Michael Raupach, CSIRO Marine and Atmospheric Research)	Thank you		
SPM-48	0	A	0	0	0	0	FY2005 was the memorable year for global warming prevention: Kyoto Protocol entered into force following Russia's ratification, and EU-ETS has started as the 1st international scheme. Also the discussion on Post-Kyoto has started from COP11, then the policymaker and industies are very interested in next climate chang measures.`(1) Table SPM.3 show us the criteria for assessing international agreements on climate change, but I think it shold be clearer and in more detail, in order to be refered by each government/organization's policymaker. (2) This table makes me receive the impression that "National emission target and emission trading" is most suitable climate change policy, and also I think so. If my interpretation is correct, more concrete suggestion such as design of scheme and emission target should be written down. Extremingly speaking, it's preferable that the explanation on scenario studies (p.5-8) is decreased and should expand the sugession on "National emission target and emission trading". Scenario studies should be explained in Technical Summary. (3) (Takuya NAKAMURA, Mizuho Information & Research Institute)	(1) REJ, no space in SPM (2) Table to be deleted and replaced by text (3) REJ; no reason to drop from SPM	13	
SPM-49	0	A	0	0	0	0	The number of pages of the present text WG3, being presently	Shorten report	All	

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							more than 1350 pages, well meant, but that is too much. I suggest that the final draft should be shortened, with a factor 2. This request is made earlier (FOD). May I suggest that the total IPCC-2007, beautifully illustrated and well documented should encompass not more than 2000 pages and should then be simultaneously published as PDF on internet on the IPCC Website for perusal of all interested persons on this world! That means a lot of work to done soon!! (Robbert Misdorp, Ministry of Transport and Public Works)			
SPM-50	0	A	0	0	0	0	2) Concerning the contents of IPPC-WG3: "It should be concentrated on the positive side, on the implementation: not on the uncertainties, but directed towards harmony with our direct natural surroundings (=statements of the mothers). And that's why we should undertake all these our efforts." Above means that the total IPCC-2007 Report should be readable. A beautiful job is done so far, an enormous amount of data is gathered, information is provided … but for whom? For the scientists to further investigate or for the decision makers to implement pro-active, mitigating, urgent measures to reduce GHG emissions? (Robbert Misdorp, Ministry of Transport and Public Works)	Shorten report	all	
SPM-51	0	A	0	0	0	0	It is better to refer to the work completed recently by the World Energy Council who charged the ADEME and ENERDATA (ODYSSEE) to count the best practices as regards energy efficiency and clean technologies for the reduction of the GHG emissions at the European level. (Néjib Osman, Durable et l'Environnement - CIEDE Agence Nationale pour la Maîtrise de l'Energie)	NOT FOR SPM	4-10	
SPM-52	0	A	0	0	0	0	Concerning the energy projections, several models were quoted to establish the projection of energy demand with medium and long terms. It would be also recommended to resort to the model Medpro-environment conceived by ENERDATA who at the same time allows to project the energy demand and the emissions of GHG.	NOT FOR SPM	1,4-10	

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Néjib Osman, Durable et l'Environnement - CIEDE Agence Nationale pour la Maîtrise de l'Energie)			
SPM-53	0	A	0	0	0	0	When reading the report you have the sense that something important should happens in the near future with regard to CC and then you wonder why further research needs are missing. (Juan F Llanes-Regueiro, Havana University)	TIA; add Gaps in Knowledge paragraph at the end	all	
SPM-54	0	A	0	0	0	0	I did not found any bullet on research priorities on the SPM. PM are not interested on that? (Juan F Llanes-Regueiro, Havana University)	See A-53		
SPM-55	0	A	0	0	0	0	General remarks concerning tourism in WG3. There is a striking contrast between the treatment of tourism and recreation in WG2 and WG3. Tourism is substantially dealt with in numerous chapters in WG2 and conspicuously absent in WG3 SOD. This situation does not reflect in a balanced manner the dual relation between tourism and climate change. CC impacts on tourism which leads to adaptation issues on the one hand, and tourism emits substantial amounts of GHG and will in return be impacted by mitigation policies on the other hand. This second aspect cannot be expected to be dealt with purely through the usual (and legitimate) discourses on sectors (transport, residential) simply because the drivers of tourism and recreation are specific (tourists cannot be treated like freight is). The IPCC does recognize the need to take into account the mitigation potential of socio-economic systems besides economic sectors such as energy, agriculture and transport (IPCC 2001). With a few colleagues, we already tried to pass this message during the FOD review (text attached to this mail: "Mitigating tourism's contribution to GHG emissions)" (Jean-Paul Ceron, CRIDEAU)	TIA; tourism to be strengthened in Ch 5 and 6 and then discuss SPM reference (para 15, 17)	5,6	CLA disc: Tourism buildings are not different from other buildings. No need in ch6. Chapter 5 mentions tourism in two lines, and it would be imbalanced towards other drivers of transport to give it more attention, Chapter 5 and 6 suggest rejecting: Conclusion: No basis for the SPM.
SPM-56	9	A	0	0	0	0	Summary for Policy Makers: More emphasis should be placed on	TIA; emphasise negative cost		

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							the huge cost effectiveness and potential for CO2 mitigation that lays in the building sector. Not enough emphasis is placed on the issue for the time being (Philippine de T'Serclaes, International Energy Agency)	potential in para 9		
SPM-57	0	A	0	0	0	0	Overall I think the SPM reads very well and has the right content. (Rachel Warren, University of East Anglia)	Thank you		
SPM-58	0	A	0	0	0	0	This Summary for Policy Makers is generally very well compiled. It is readabale, understandable, well balanced and authoritative. My comments are relatively minor. (James Curran, Scottish Environmental Protection Agency)	Thank you		
SPM-59	0	A	0	0	0	0	The SPM as it stands could, in the UK's view, convey more about the need for action over the next decade. Estimates of costs of delaying mitgation action have not been given. Including some of key headings in both the SPM and the TS will help emphasise key findings including the message that recent work is confirming earlier impacts and revealing new important impacts. (Government of UK)	TIA; strengthen para 5 & 8 See A-13	3	Rejected. Refer to WGII. (3)
SPM-60	0	A	0	0	0	0	Language and structure are too complex to be accessible to policy-makers and the style is sometimes uneven– simple structure and more plain language would help pull out the key messages. More explanation is required in some places. (Government of UK)	TIA		
SPM-61	0	A	0	0	0	0	It is not immediately apparent in the SPM (or for that matter the TS) what is new and important since the publication of TAR. It would be helpful to start the SPM by saying that the TAR of 2001 IPCC painted a picture of what we knew with a range of certainty - repeat the 4-5 key points from TAR. Then summarise what we have learnt since TAR - ie those parts of the story in whjch we have greater confidence, and those parts where we need more reserarch, any new significant points whch have emerged in AR4, and lastly the relationship to the work of other Working Groups; - eg is there any view on, for example, the relationship dangerous climate change and tipping points? Does the AR4, generally speaking, confirm the trends seen in TAR. There seems to be very little	TIA; try to strengthen references to TAR, but no space to summarise TAR findings. Aspects of other WGs: covered in para 5 and table 1 and in para 8, but limited in view of mandate and space limitations	all	

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							reference the oceans, which are a large buffer to climate change and absorb CO2 - hence the acidification problem. It would be helpful to mention (linking to other WG) that stabilising GHG concentrations on the atmosphere is closely coupled with concentrations in the ocean. (Government of UK)			
SPM-62	0	A	0	0	0	0	IPCC Abbrevaitaions like SRES,HM and TAR should be avoided where possible to make the SPM easier to understand by unfamiliar readers(e.g new governmnet officials without the long history), who want this as a stand alone document. (Government of UK)	ACC; add SPM glossary at the end		
SPM-63	0	A	0	0	0	0	In general it would be useful to make more of the headings in bold and turn them into short paragraphs which could stand alone as key policy relevant conclusions, leaving more technical info for the bullet points. Indeed the bold text should notionally form a set of key conclusions on their own. Some of the headings in bold in the technical summary might be used in the SPM. (Government of UK)	UNCLEAR; that is exactly what we try to do		
SPM-64	5 T 1	A	0	0	0	0	Some conclusions from WGI report need to be used in this SPM. However, there are several places where the wording is not consistent with that in WGI report.Consistency between IPCC reports is very important. Please check WGI report and keep consistency. (Government of China Meteorological Administration)	ACC; statement in para 5 and table 1 need to be made fully consistent with WG I findings	3, 1	Accept, consistency will be ensured. . Table 1 to be revised in consultation with WGI. (3)
SPM-65	0	A	0	0	0	0	CCS part is too long compared to other mature and commercialized technologies such as wind, hydro- and nuclear energy, etc. This part should be greatly simplified and shortened to balance with other technologies. Furthermore, it is not appropriate to overemphasize an immature technology in the IPCC report. (Government of China Meteorological Administration)	REJ; CCS is not giving too much attention; see also A-3		
SPM-66	0	A	0	0	0	0	The SPM highlights most of the very relevant issues. However, there are some pieces of information included in the TS that seem	UNCLEAR; which ones?		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							to be worth to be included in the SPM in order to get a more balanced and complete information on the assessment of WG 3. (Government of Austria)			
SPM-67	0	A	0	0	0	0	The breakdown in sections A, B, C, D,E with the key messages presented at the start is welcomed. A: This general statement could be illustrated graphically (see general comment on figures) (Government of European Community / European Commission)	TIA; however, others are confused and beter to take out heading statements. Fig 1 can be improved to include projections	1	
SPM-68	0	A	0	0	0	0	In general, the presentation of the figures requires improvement and harmonisation amongst each other is required (e.g. regarding the units used: PgCO2 or GtCO2 or GtC). Key messages should easily be illustrated by the figures themselves, without explanatory footnotes. Where relevant, and if possible statements made in the text should be more supported by graphs (e.g. emission projections mentioned in section 2 (2030) and 3 ("long-term") on page 4 could be added to figure SPM.1 or a similar graph. This would illustrate both the emission trends and the range in these projections. (Government of European Community / European Commission)	ACC; units to be harmonized (GtCO2) Graphs: see A-67		
SPM-69	0	A	0	0	0	0	Delete references to data sources and literature in text, captions and graphs. (Government of European Community / European Commission)	DISCUSS use of references in captions	All	
SPM-70	0	A	0	0	0	0	There seems to be an unfortunate focus on cost instead of physical potential. This could be valuable for the period 2015-2030, but stabilisation will not take place in this period. In the longer term cost projections are wild guesses at best, and in addition, supply constraints could increase prices for low cost but limited energy technologies dramatically. The importance of short run stimulus (not only R&D but also deployment incentives to make room for learning and scale economies) of longer term options with larger potential (like solar) should at least be acknowledged (Government of Sweden)	REJ; potential without costs is meaningless; importance of LBD and R%D is emphasized in para 6 and 26		
SPM-71	7	A	0	0	0	0	Para 7 on page 8 and the heading C on page 9 doesn't seem to be consistent. (Government of Sweden)	REJ; para 7 is on LT; section C on S/MT		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-72	0	A	0	0	0	0	It should be made clearer what's new since the third assessment report. (Government of Sweden)	TIA; see A-610		
SPM-73		A	0	0	0	0	With regard to evaluations of sectors, public sector evaluations are lacking. Therefore, the public sector should be mentioned in this section because it is an important one to address. (Government of Japan)	UNCLEAR		
SPM-74	0	A	0	0	0	0	The headings need a more concrete referencing system. The mixture of lettering (A, B, C…) and numbering is confusing. It's also not clear what sections the lettered headings are meant to represent in the SPM. This information is found in the Technical Summary (a description of which letters correspond with which chapter). However, the organization needs to be clearer to the reader, without the expectation that the reader will reference the Technical Summary later. Layout editing is strongly recommend. (Government of Japan)	ACC; drop section heading statements (see also A-67)		
SPM-75	0	A	0	0	0	0	Costs are presented as % of global GDP. This could be critisised for hiding the fact that mitigation measures are costly. (Government of Norwegian Pollution Control Authority)	REJ; costs are also presented as $/tCO2 avoided		
SPM-76	5	A	0	0	0	0	A additional point which should be considered for inclusion in the SPM is that if postponed mitigation is to meet the same long-term temperature target as early mitigation, the of year-on-year abatement must be significantly greater. This has wide economic, technological, logistical, and political implications - to the extent that postponed mitigation may make it impossible to reach the same targets as with early mitigation, thereby putting us at risk of dangerous climate change. It should also be considered to include a figure illustrating how a later year for decline in emissions will have implications on the need to reduce deeper and faster later on - as it was shown in TAR. (Government of Norwegian Pollution Control Authority)	TIA; this is discussed in para 5 (with ref to table 1, but might be strengthened	3	Noted. Current text in Ch3 does not yet cover this issue. Will consider adding assessment of relevant literature to chapter. (3)
SPM-77	0	A	0	0	0	0	Throughout the SPM needs to be better integration of existing and to be developed policy and technical options, challenges to their	UNCLEAR		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							uptake, their costs, and the potential GHG reductions. (Government of Environment Canada)			
SPM-78	0	A	0	0	0	0	Throughout the report there were several acronyms that should be defined the first time they are used. (e.g., TAR, SRES). (Government of Environment Canada)	ACC; add glossary for SPM	Glos	
SPM-79	0	A	0	0	0	0	Throughout SPM, "additional" efforts needed to deploy existing tools is confused with where further development of technologies, etc. is required. Policy makers need to know what goals can be achieved through options that exist but are not being employed vs. where achieving a goal depends on development of something new. (Government of Environment Canada)	TIA; see A-3 on technology maturity	4-11	
SPM-80	0	A	0	0	0	0	There is too much focus on the energy supply side "mitigation technologies" at the expense of the suite of options on the energy demand side. (Government of Environment Canada)	REJ; much attention to demand side from ch 5-10		
SPM-81	0	A	0	0	0	0	The SPM is too abridged. While some sections were straightforward and will provide policy makers with the necessesry insight into options, other sections are not easy to understand and more context is needed for enhanced clarity. It would be further improved by presenting information in a more visual/graphic way. (Government of Environment Canada)	TIA; however space is limited; consider additional graphs	all	
SPM-82	0	A	0	0	0	0	The response of forests to climate change with respect to productivity and capacity to sequester atmospheric carbon is not thoroughly addressed. While this probably reflects the fact that there is still so much uncertainty, it is an important issue and the report should mention this as a research gap. (Government of Environment Canada)	ACC; add “gaps in knowledge” para	all	
SPM-83	0	A	0	0	0	0	The SPM would benefit from a short introduction (similar to WGII) so that readers are aware of the structure and content that will follow.A couple of sentences from the Technical Summary would be helpful to explain the scope of the report (e.g., Technical Summary, page 1 lines 11-19). It would also be helpful to include a summary of main conclusions. Furthermore, according to the first sentence of the TS indicates that "the main air of this report is to	TIA; include general intro (box), but not a summary of the summary; add table as in A-3	4-11	

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							assess options for mitigating climate change" but the SPM does not give the reader a sense of the options, their feasibility or the barriers to implementation. (Government of Environment Canada)			
SPM-84	30	A	0	0	0	0	add "the private sector needs long term perspectives, in terms of prices and policy instruments, to become fully enganged in combatting climate change." (Government of The Netherlands)	TIA in reconsidering para 30	13	
SPM-85	0	A	0	0	0	0	Also a more illustrative overall view about the mitigation situation should be given to the policy makers (Ch Summary for Policy Makers). (Technical Summary includes that material, but is rather long for policy makers.) (Government of Finland)	UNCLEAR		
SPM-86	5	A	0	0	0	0	Summary for Policy Makers should include a picture about the need to decrease emissions to reach the long term objectives (450 or 550 ppm CO2-eq.). The short term objectives might give a rather optimistic view about the needed actions. Especially because emissions might increase in the short term. Figure SPM.4 has been given, but it is not the most basic and illustrative. (Numbers of this Figure have been mentioned to be indicative because they are just from two models in Technical Summary p.20 lines 10-11) Also units for cumulative emissions (GtC) might cause misunderstandings, when mostly units for CO2 have been used (Government of Finland)	TIA; consider graph with emission reduction profiles Units will be standardized (GtCO2)	3	Accepted. Figure being revised. (3)
SPM-87	0	A	0	0	0	0	The SPM should include information on the characterisation of uncertainty in the WG3 report. In the WG2 report an Appendix to the SPM contained information on uncertainty and likelihood as it related to the IPCC standard terms. WG3 should consider using a similar mechanism. (Government of Australia)	ACC; add annex	CG uncertainty	
SPM-88	0	A	0	0	0	0	The SPM is the only part of the WG3 report that will be read by many people. However, currently it is too technical for many policy makers and assumes too much knowledge. It is also disjointed and the main messages are not highlighted appropriately.	TIA; explain where needed, add glossary, but technical level cannot be changed in view of many other comments		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							Fundamentally the SPM could do with a redraft styled to the needs of non-scientific audiences. (Government of Australia)			
SPM-89		A	0	0	0	0	The SPM is clearly in a very early stage of development. It contains significant sections that are poorly drafted and/or do not accord with the text in the body of the WG3 report. In addition it seems to equate mitigation actions with political instruments. This is not appropriate and should be reviewed. (Government of Australia)			
SPM-90	1	A	0	0	0	0	SPM should including global net emissions from LULUCF, 'land use change' and estimate of global 'sink' . (Government of Australia)	TIA; add to caption of fig 1		
SPM-91	1 F 1	A	0	0	0	0	SPM should include a statement on what is the current total global emission of CO2-e (see comment 4). (Government of Australia)	REJ; is in fig 1		
SPM-92	0	A	0	0	0	0	It is identified that the Fourth Assessment Report "Climate Change 2007: Mitigation of Climate Change" is of particular interest to policy makers seeking authoritative information on mitigation measures. The SPM as it stands would appear to be is a collection of key information from the TS and requires more contextual information. To assist policy makers develop and evaluate mitigation policy the SPM would benefit from integrating the rationale behind the report. (Government of Australia)	See A-83		
SPM-93	0	A	0	0	0	0	Each of the Figures used in the SPM should be sourced from one of the chapters of the text and the original Figure should be referenced. If a Figure or Table has been created purely to summarise information contained in the Chapters, the methodology used by the SPM authors need to be clearly explained. (Government of Australia)	REJ; that is consistently done, but in some cases tables are merged for SPM purposes		
SPM-94	0	A	0	0	0	0	The report of the WG-III of Fourth Assessment Report (FAR) provides a comprehensive account of advancement in understanding of the subject after the Third Assessment Report of the IPCC. The overall text of the Summary for Policy Makers	TIA; see A-88		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(SPM) though highlights the key points and provides the current status of knowledge touching upon the entire gamut of issues in this area. However the SPM will need to be appropriately organised in a more comprehensive text for easy readability and comprehension. In general the scientific information relating to developing countries remain smaller perhaps because of non-availability of same. (Government of India)			
SPM-95	0	A	0	0	0	0	Why are the units on the ordinant of Figure SPM.1 different from those on the ordinants of Figures SPM.2 and SPM.3. Recommend GtCO2-eq rather than PgCO2-eq. as standard unit. U.S. Government (Government of U.S. Department of State)	Units will be harmonized (GtCO2)	1	
SPM-96	0	A	0	0	0	0	Most of the emission levels in this report are given in terms of tCO2-eq. At many points in this chapter, emission levels are given in tC-eq. These should be converted to tCO2 or the values in tCO2 given as supplemental information, to allow comparison with other information. U.S. Government (Government of U.S. Department of State)	All units will be in tCO2 in SPM; chapters to be made consistent with tCO2 (tC)	3	accepted. Issue to be addressed. (3)
SPM-97	25	A	0	0	0	0	Modifying solar radiance may be an important strategy if mitigation of emissions fails for one reason or another. Doing the R&D to estimate the consequences of applying such a strategy is important insurance that should be taken out. This is a very important possibility that should be considered. Should also be included in Figure SPM.6. Add a indication of radiative offset. needs to be also coordinated with WG1 on radiative offset . U.S. Government (Government of U.S. Department of State)	TIA; chapter 11 to update literature; then possibly modify para 25; not in fig 6 (too detailed)	11	
SPM-98	0	A	0	0	0	0	Mitigation potential and cost are the among the most important outputs in this report. The chapter indicates that CH4 is the most important GHG emission from the waste management system. Table 10.6 contains a comprehensive analysis of mitigation potential and cost for CH4 in 2030 by region. This information should be summarized in the chapter's Executive Summary, and also added to Tables SPM.2 and TS.19, to provide the same	REJ; in SPM mitigation potential cannot be presented at gas level		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							information for the waste sector that is provided for other sectors. The Chapter enumerates the authors' concerns about data quality. These concerns should be noted in footnotes to tables SPM.2 and TS.19. U.S. Government (Government of U.S. Department of State)			
SPM-99	1 F 2	A	0	0	0	0	Figure SPM.2 is an attempt to use the Kaya Equation to illustrate the impact of each factor in the equation on the change in carbon emissions over 10 year periods. The ordinary policy maker reader will have much difficulty with this Figure. Where do the numbers come from and what do they mean? This could be described using an example of one of the decades in question. The net change number could not be deduced in this figure from Figure SPM.1, but it is interesting that the net change for the 1983-1993 decade was nearly the same as for the 1993 -2003 decade. For SPM, the Figure is too complicated; the point should be made in words with reference back to the discussion and figure in Chap 1. U.S. Government (Government of U.S. Department of State)	Fig 2 to be replaced by fig 1.5	1	
SPM-100	0	A	0	0	0	0	Explain what radiative forcing is. It is used extensively and importantly in Table SPM.1 and Figures SPM. 4 and SPM.5. U.S. Government (Government of U.S. Department of State)	TIA in SPM glossary		
SPM-1	0	B	0	0	0	0	There needs to be increased communication, collaboration, and partnerships. For instance, there are many publicly-owned lands (eg, Forest Service, BLM, NPS) and lands owned by NGOs (eg, TNC). Additionally, increased communication, collaboration, and partnerships are essential for information sharing. There is an increasing need to share species level data and information and make it available to decision makers at the local, national, and regional levels worldwide. This is particularly important in relation to gauge the impacts of climate change on biological diversity from an adaptation and mitigation perspective. Also, with the increase in interconnectedness across the globe, the problem of transboundary issues such as invasives and animal diseases will play an	UNCLEAR		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							increasingly important role when monitoring global changes. Also important is the role of distributed networks in sharing data, information, and standards in making biodiversity information available globally. U.S. Government (Government of U.S. Department of State)			
SPM-2	0	B	0	0	0	0	The term ancillary benefits should be dropped. It is often used interchangeably with co-benefits, implying that ancillary benefits and co-benefits are the same. They are not. As indicated in the definitions in the glossary, ancillary benefits are benefits that occur from policies, even though the policy was not designed to provide those benefits. Co-benefits occur when policies are designed to achieve multiple objectives. It is unlikely that any government would design a [policy] without having multiple objectives, including greenhouse gas emission mitigation, in mind. This point is made explicitly in the Technical Summary, Pg. 104, lines 35-37 and in Section 13.2.2.7, Chapter 13, Pg. 35-36. While ancillary benefits have a theoretical meaning, the emphasis should be put on co-benefits, stressing to policymakers that properly designed policies can achieve multiple goals. U.S. Government (Government of U.S. Department of State)	Identical A-40		
SPM-3	0	B	0	0	0	0	Need to better reflect the role of adaptation in addition to (or as a complement to) mitigation. U.S. Government (Government of U.S. Department of State)	ACC; see suggestions van Ypersele	11	
SPM-4	0	B	0	0	0	0	Need for a candid assessment of strengths and limitations including gaps in knowledge in the SPM. This assessment needs to be igeneralized to all chapters. U.S. Government (Government of U.S. Department of State)	Add Gaps in knowledge para	All	
SPM-5	0	B	0	0	0	0	Discussion of what is occurring in the developing versus developed world needs more elaboration. There needs to be greater recognition and more discussion of the different circumstances and challenges facing developing versus developed countries. U.S. Government (Government of U.S. Department of State)	DISCUSS; problem is space constraint in SPM	All	Mostly in table 3, chapter 5 will rewrite para 15 and address it to some extent. Chapter 10, para 24 rewrite from

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										chapter. Chapter 4 SPM text (para 14) addresses it as well. TS gives more room for this discussion.
SPM-6	9 T 2	B	0	0	0	0	Both bottom-up and top-down analyses are an important part of the literature and both should be reflected. Chapters 4-10 should, at the very least, present the sectoral estimates from top-down models. A more appropriate approach for Chapters 4-10 would be to present both the global and bottom up estimates at the regional level (leaving global estimates to global models) and then discuss the differences in estimates, the strengths and weaknesses of the alternative approaches, and key priorities for improving estimates. This same comparison between the top-down and bottom-up estimates should be made within each sectoral discussion. The following table provides an example. Sector TS-8 Range of Model Results TS-19 Estimate Comment Forestry 0-604 2,700 Why is TS-19 so much higher? Is this a limitation of the IAMs? Energy supply and transportation 6,500 – 16,000 5,200 – 8,100 Why is the TS-19 estimate lower than most standard models? Agriculture 604 – 1,656 3,300 Why is the TS-19 estimate so much higher? Buildings 627 – 2,238 3,700 – 4,100 Why is the TS-19 estimate so much higher? Our specific comments on Chapters 4 to 11 detail these and other	DISCUSS; sectoral breakdown from TD models cannot be used because of widely differing sector definitions; however, TD models provide a way to take cost-curves into account that are not part of the ch 11 method to determine overall mitigation potential	4-11 CG Cost/potential	

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							concerns and offer a recommendation on an appropriate comparison of the bottom-up estimates from Chapters 4 to 10 and the top-down estimates from integrated models in Chapters 3 and 11. U.S. Government (Government of U.S. Department of State)			
SPM-7		B	0	0	0	0	Because bioenergy is treated partially in so many chapters (renewables, transport, and industry) there is no integrated or detailed discussion of its potential. More cross-referencing is needed and there should be a fuller discussion of the biorefinery concept in one of the chapters—perhaps transport since biofuels are perhaps the most important of its multiple products. U.S. Government (Government of U.S. Department of State)	See A-1	CG biomass	
SPM-8	6	B	0	0	0	0	Advanced technology should play a much more central role in the SPM. Material should be brought forward from Chapter 2 into the SPM. Suggested insertions to the SPM can come from: -Chapter 1, p. 17, paragraph beginning w/line 33: the key concepts this para should be better covered. -Chapter 1, p. 20, line 46: Generally speaking, it would be economically impossible, without technology research, development, demonstration, deployment and diffusion (RDDD&D) and Induced Technology Change (ITC) to stabilize GHG concentration at a level that would prevent DAI with the climate system. -Chapter 2, p. 65, Figure 2.2: The point that distribution "optimal" (cost-minimizing) emission scenarios is bimodal, illustrating that technological lock-in into either high or low emissions futures respectively that arise from technological interdependence and spillover effects. -Chapter 2, p. 69, lines 11-16: "Differences in the cost of meeting a prescribed CO2 concentration target across alternative technology development pathways that could unfold in the absence of climate policies are more important than cost differences between alternative stabilization levels within a given technology-reference	TIA in considering para 6, but space limited ➔ include ➔ include ➔ to be considered in para 6.	3	issue not for ch3. (3)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							scenario. In other words, the overall "reference" technology pathway can be as, if not more, important in determining the costs of a given scenario as the stringency of the ultimate climate stabilization target chosen. (cf. Figure 2.4)" U.S. Government (Government of U.S. Department of State)			
SPM-9		B	0	0	0	0	"optimal" (cost-minimizing) emission scenarios is bimodal, illustrating that technological lock-in into either high or low emissions futures respectively that arise from technological interdependence and spillover effects. U.S. Government (Government of U.S. Department of State)	Identical B-8		
SPM-10		B	0	0	0	0	"Differences in the cost of meeting a prescribed CO2 concentration target across alternative technology development pathways that could unfold in the absence of climate policies are more important than cost differences between alternative stabilization levels within a given technology-reference scenario. In other words, the overall "reference" technology pathway can be as, if not more, important in determining the costs of a given scenario as the stringency of the ultimate climate stabilization target chosen. (cf. Figure 2.4)" U.S. Government (Government of U.S. Department of State)	Identical B-8		
SPM-101	3	A	0	0	0	0	The issue of PPP, Purchasing Power Parities, is not mentioned in the SPM. It is a fact that there is uncertainty about the impact of using MER versus PPP. It is also a fact that there is a data problem if PPP is used, so most surveys are based on MER. However, there is no doubt that PPP would be a better option, and MER underestimates the purchasing power in especially poorer countries, thereby GDP growth and CO2-emissions are overestimated (as stated in chapter 3, p. 21-25). The use of MER is therefore likely to distort the distribution of global emissions and will distort the cost impact of the mitigation effort. Though facts of how big this distortionary impact is, cannot be found, it might be significant. This uncertainty and potential impact is too important to be totally neglected in the SPM.	DISCUSS; issue is mentioned in para 3 but is very weak conclusion; ch 3 to better analyse literature to formulate more meaningful conclusion	3	Noted. Material in Ch3 being revised and core messages will be brought into SPM. (3)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Helle Juhler-Kristoffersen, Confederation of Danish Industries)			
SPM-102	5 T 1	A	0	0	0	0	The SPM uses in several places (text, tables, figures) the unit of W/m2 to describe stabilisation levels. This makes this information very hard to use in other contexts, and also makes the combination of WG3 findings with stabilisation assessments by WG2 difficult, because they generally use CO2eq as metric. At the SPM level, it would be helpful if you could only refer to the metric most commonly referred to by policy-makers, which is CO2eq, and do the translation between W/m2 and ppm at the appropriate place in the TS to ensure full scientific support for the statements, figures and tables in the SPM. (Andy Reisinger, TSU IPCC Synthesis Report)	ACC; delete W.m2 column from table 1		
SPM-103	0	A	0	0	0	0	Some numbers in the SPM are inconsistent with the chapters, such as 50% in L9P1 is 75% in Chapter1, etc. SPM should be consistent with the contents in the chapters and should not have new numbers or new results. Please check and keep consistency in the whole report. (Government of China Meteorological Administration)	CHECK consistency	all	
SPM-104		A	1	0	16	0	Actual headings for sections A-E would be helpful (Stephen Sheppard, University of British Columbia)	ACC section heading statements will be deleted		
SPM-105		A	1	0	0	0	An outline of the sections in the Summary for Policy Makers would help the reader. (Stephen Sheppard, University of British Columbia)	ACC; intro box to be added		
SPM-106	0	A	1	0	20	0	The tone of the whole SPM is rather too laid-back. This is epitomised by the phrase: "Global emissions need to start declining at some time in the future .." on page 5 at line 5. Surely something more urgent, such as "need to start declining at the earliest practicable opportunity, because not only is there a cumulative impact of rising atmospheric concentration of greenhouse gases, which becomes increasingly difficult to reverse, but severe constraints on conventional oil resources will force change within the next three decades or so." [See below comments on page 12 of SPM on the latter point]. (Michael Jefferson, World Renewable Energy Network &	TIA in considering reformulations		

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							Congresses)			
SPM-107	6	A	1	1	1	4	WG3 thus makes estimates of accumulated costs of mitigation, amounting to $16 trillion, that means that WG3 has largely increased model knowledge on mitigation measures: as for instance illustrated in chapters 11 and 13. B.6.: Reference is made to Ch 3.3.5.3: Stabilization costs : uncertainties! My, RM question: What are the basic ingredients in order to be able to make the calculations….. How are the costs of mitigation being determined? The presented costs, reveal that you know the differentiated costs of the different sets of measures. That means that you must know by and large the type of measures to be executed and the estimated costs per measure, per country.. This relation is important but I cannot find that in the SPM, nor in the Chapters 11 and 13. Now my principle suggestion is: This built-up level of IPCC knowledge on measures must be enough to make for and with a good selection of IPCC countries: a first set of structured mitigation measures, ranked according to costs and effectiveness reducing GHG emissions, related to various degrees of no-regret experiences. With the latter I mean: i) Assessing large scale applications of solar PV technology which could well be considered as a high ranked, no-regret measure for all sunny countries, which are more or less "blessed" with oil/gas/coal reservoirs. Legal provisions by the governments of such countries can stimulate long term, very profitable capital investments. The present day example is the legislative & economic stimulating Spain, realising that PV is only 0.001 % (FAR-WG3) of the present energy production, there is a scope for growth and subsequent export of gained knowledge. ii) Or, assessing : Japan and the development of Toyota Hybrid cars not only experimental but, also at an industrial operational scale, not only experimenting with hydrogen but also with	TIA; text is misunderstood; reformulate Rest of comments mostly irrelevant, except listing of technologies (see A-3)	3,4	Noted – N.A. not part of Chapter 1 (CH1) Issue for Ch11. (3)

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							renewable energy sources. Japan and Toyota may economically gain from the export of their gained knowledge, while contributing to most promising no-regret measure type of transport. iii) Or, assessing the economic and ecological effects of GHG capturing, by a seemingly no-regret measure, such as a large scale, airborne reforestation with a million, mixed forest seedlings dropped in a marginal, barren area by a crazy American with assistance of the US Air Force, a few years ago. Just to mention a few examples of pro-active mitigating measures. So important , so imaginary for decision makers. Providing a first set of ranked mitigation measures per country or per group of countries, has a preliminary character and is very roughly estimated, but will definitely stimulate the UNFCCC/IPCC stakeholders: governments, industry, NGO's with challenging ideas in order to start experimenting with no-regret options during period between now and the Fifth Assessment Report of IPCC. You should not speak about uncertainties, you speak about a first attempts, a very first overview of pro-active measures, to be applied and its effects should be reported by the member states. A simple but trustful guidance should be provided by WG3, on the preliminary measures, and on how to analyse to its effectiveness. IPCC is an assessment body. Why is WG3 assessing mostly beautiful scientific models dealing with impacts, effects, and measures, and not so much assessing promising applications. Assessment of non-model type of gained knowledge is also assessment. According to my perception WG3 should certainly be "allowed" to undertake a first ranking of most promising no-regret measures undertaken. The results of such an structured assessment can provide series of promising no-regret solutions for the policy- and decision makers, eager to absorb new ideas to be applied in their country. A first attempt of a structured frame for analyses of mitigating measures, I offered through my contribution to the First Order Draft			

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							of WG3 (dated: 21/1//2006). "- If I were a policy or a decision maker and I might have the opportunity to browse through the more than estimated 3000 pages of Fourth AR IPCC in 2007, or to read the many tens of FAR-IPCC SPM pages, I will wonder what to do in order to prepare my country to executed the well defined goals of UNFCCC. Where should I start? – " IPCC-WG3 with so many intellectual gifted contributors, should now be able to make a good attempt to bridge the gap between the assessment of modeling and the assessment of experiences of measures, and the gap between scientists and decision makers, in the few months left. This in order to prevent to be found obsolete in the near future by decision makers, looking for more or less ready made mitigating solutions after 17 years of IPCC existence! There is not so much time to loose. The most promising measures to reduce GHG emissions should be analysed in a structured way. These pro-active results should then be compared with the effects of adaptive measures. Thus providing a first, preliminary but descent overview of measures for the decision makers to be implemented. Enough efforts is spent by WG3 in providing valuable impacts Models and in refining of such Models. More assessments by WG3 of the effects of practical, proactive no-regret Measures are needed. That should be the WG3 credo. Not so much time is left over: See, for example, the increasing number and the force of the devastating, hurricanes in the Gulf of Mexico, which will definitely increase with the increasing SST. The increasing, devastating effects of these hurricanes are more and more difficult to be financed. See the staggering statistics of Re-Swiss and Re-Munch, reporting in 2005/2006, on their websites! Did WG3 take on board such statistics of the Re-insurance companies, based on their own, thoroughly investigating Climate Change Departments? So, yes where and so not why not? Investing in no-regret, pro-active, preventive, practical policy			

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							options will never hurt, and is necessary in order to provide guidance for the present policy- and decision makers, eager to implement! Some clear examples of such policy options have to be set. Dear Bert, I may draw your attention to the methodology applied with the GVA (Netherlands RWS/Tidal Water Waters Division – Ministry V&W and WL-Delft Hydraulics , January 1993: " A Global Vulnerability Assessment for a 1meter Sea Level Rise") – produced in the frame of the IPPC-CZM-Sub-Group-1992/3, under my guidance initiated and executed, being a first attempt of estimating, at a global level, encompassing the statistics of 179 coastal countries, of four types of CC impacts: global coastal population at risk, global ecosystems at loss, and global rice production at change, and estimates of costs of basic coastal protection measures. Of course this was a simple, first estimate, but strangely enough up till now, ever used, as back ground reference by IPCC involved scientists, such as Robbert Nichols e.a. I would like to draw your attention on that methodology used, and I am of the opinion that such a structured methodology on measures could be applied for the IPCC-WG3, to sort out the most promising pro-active measures, on a relatively short notice. (Robbert Misdorp, Ministry of Transport and Public Works)			
SPM-108	0	A	1	1	1	2	That is a very pessimistic statement. This statement is based on what, on which references? By scientists far from reality? The solar energy development in Spain, as example, takes no decades to be implemented., but only years! The positive attitude of the Spanish Government is accompanied by innovative stimulating legislation and is subsequently responded by innovative small and large scale companies. If Spain can do this, then many other countries may have already made preparations for implementing renewable, energy source exploitations. Oke, these efforts occupies only a limited part of the energy segment. But it is the beginning, a rising sun! And that should be reported by IPCC!	UNCLEAR		Noted – no action (CH1)

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							Which are the positive results of the IPCC-FAR inventory on present day initiatives of mitigation of GHG by nations, industries, NGO's dealing with the stimulating renewable energy resources & adaptive technologies in transport-, agriculture ect sectors in order to reduce GHG emissions? There are many to mention, and that cause a more positive sound, than is heard from IPCC so far! References needed: I will search them! Did I miss something? I looking forward to inventory ongoing initiatives to mitigate. That is needed in order to show that a number of UN member states (including the State of California) are busy with preparing and implementing mitigating measures, now! That stimulates the policy – and decision makers of other member states and could reduce the time for introduction of mitigating measures by learning. That takes away the high level of doom saying and the so-called uncertainties of the present FAR-WG3 report. I have to state that the level of doom saying and uncertainties in this SOD is less than in the FOD! One of my messages to IPCC-WG3: away with uncertainties, we know now enough on the causes and impacts of CC, it is high time after 18 IPCC years to prepare and to execute no- regret measures. During the last lag of the Fourth IPCC Assessment Report, which is not so much discriminating from the preceding ones, concerning causes and impacts, it is now high time to really shift from science to application: to do, to prepare, to experience and to execute no-regret measures. This shift is absolutely necessary, in the case that IPCC in time should be taken seriously, in particular by many of the developing countries and by a growing number of the developed countries, aiming at a longer sustainable time horizon for their economic development. (Robbert Misdorp, Ministry of Transport and Public Works)			
SPM-109	1 F 2	A	1	1	3	10	Figure SPM2 shows that C intensity of energy did decrease a lot in 1970s but that this has now stopped and become less important in reducing CO2 emissions that decreasing the energy intensity of the	TIA; Replace by fig 1.5	1	Chapter feels that Figure SPM2 is more

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							economy. This is a different impression from the statement on page 1 that "C intensity did not change much" - I would that it did in the 1970s but not since. Suggest edit line 11 to 12 to read "...GDP. Whilst the C intensity of energy declined in the 1970s, it has contributed little towards limiting CO2 emissions in the last 2 decades". (Rachel Warren, University of East Anglia)			informative especially if projected trends are added. Text/caption will be improved (CH1)
SPM-110	1	A	1	5	2	11	Figure 1 states that uncertainty for CO2 from deforestation, CH4 and N20 from agriculture, and fluorinated gases have the highest uncertainty, but doesn't quantify it at all - some order-of-magnitude quantification would be very helpful here. (Paul Baer, EcoEquity)	REJ; quantification of uncertainty to be left to chapter	1	Partially accepted – uncertainty associated with deforestation will be dealt with (Bill) (1)
SPM-111	1	A	1	5	1	15	It would be useful to quantify global current GHG emissions in absolute terms, as reported in Figure SPM1 (Government of UK)	REJ; has no added value		Agreed with TSU (1)
SPM-112	1	A	1	5	1	15	Add a note clarifying what the Montreal Protocol gases are. (Government of UK)	ACC; add in brackets		Accepted – (1)
SPM-113	1	A	1	6	1	7	Change "without additional policies ---" to "without additional climate and technology policies ---". It is unclear here whether "policy" means simply climate polices or it includes technology policies (especially basic R&D policies). It is certain that introduction of climate policies alone can not stabilize/reduce global GHG emissions (This is clearly stated in Technical Summary p. 18, lines 30-33). Therefore to make it clear, a word "technology" should be inserted. (Mitsutsune Yamaguchi, Teikyo University)	Rej; it is all policies		AGREED WITH TSU (1)
SPM-114	1	A	1	6	0	0	"without additional policies" are better changed to "without additional climate policies and technological innovation". The necessity of technological innovation is described, for example, in para 6.	See A 112		Agreed with TSU (1)

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							(Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))			
SPM-115	1	A	1	6	1	6	Point A - To complete in the following manner: ¨ A.Without additional policies global GHG emissions, interlinked with sustainable development policies, will continue....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	~~REJ; confuses the messag~~ TIA		Agreed with TSU (1)
SPM-116		A	1	6	1	6	It is suggested to revisit the exact wording with regard to the qualification of "next few decades". This is because similar phrases are used also in the Technical Summary of the WG3 Report but not the same ones. In order to make the AR4 more userfriendly it is suggested to use a consistent wording across the whole AR4. This wording should be based on the wording developed by WG1. Otherwise the reader might be confused. One step towards this direction might be to delete the word "few" in this phrase. (Government of Austria)	TIA; ensure consistency with TS; there is no IPCC standard and certainly not one established by WG I	1	Agreed with TSU (1)
SPM-117	1	A	1	6	1	6	"without additional policies" are not clear enough. Suggest to add after "without additional policies" as follow ", including technology policies, ". (Government of Japan)	See A-113,114		Agreed with TSU (1)
SPM-118	1	A	1	6	1	0	Insert on line 6 after “the next few decades”, the following: “However, even the most drastic emission reductions are unlikely to reduce climate change significantly in the next few decades because of the inertia of both the climate system and the energy infrastructure. This suggests that in order to reduce any climate-change-related-damages in the short-to-medium term, it will be necessary to adapt and reduce vulnerability to climate change. U.S. Government (Government of U.S. Department of State)	TIA; that is not the issue of para 1; consider this suggestion in context of para 8		Rejected – no such claim made here. Agree with TSU (1)
SPM-11	1	B	1	6	1	7	The title of the section could be changed to a more factual expression such as:"With current current policies greenhouse gas emissions will cotinue to grow over the next few decades" (Government of Switzerland)	TIA; section headings will be dropped; consider in context of reformulating para 1 and possibly merging with para 2		Rejected – not clear which & whose policies – too general (1)

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SPM-12	1	B	1	6	1	0	Insert on line 6 after "the next few decades", the following paragraph. "However, even the most drastic emission reductions are unlikely to reduce climate change significantly in the next few decades because of the inertia of both the climate system and the energy infrastructure. This suggests that in order to reduce any climate change-related damages in the short-to-medium term, it will be necessary to adapt and reduce vulnerability to climate change. Some analysis suggests that over such a time horizon, such an approach would be very cost-effective, particularly if policies emphasize reducing vulnerability to current climate-sensitive problems that are urgent and might be exacerbated by climate change. Such problems include death and destruction due to extreme weather events, and numerous problems that currently hinder sustainable development in the poorer segments of the world, e.g., malaria and other climate-sensitive diseases, hunger and food security, and access to safe water supplies. " U.S. Government (Government of U.S. Department of State)	See A-118		Agree with TSU (1)
SPM-119	1-2	A	1	7	4	6	Findings/major paragraphs #1 and #2 all need to reflect that "additional policies" as well as "new technologies" will be needed to reduce greenhouse gas emissions consistent with the mandate laid out in Article 2 of the UNFCCC. Even if one adopts a time frame that only extends to 2030, it still holds true that the solution set includes both technology and policy. Please revise these findings so that they reflect the broad literature that says technology and policy are needed to address climate change. (James Dooley, Battelle)	REJ; for 2030 technology is certainly available; what is lacking is appropriate policy		Agree with TSU (1)
SPM-120	1	A	1	7	1	8	Significant GHG emission reductions could be achieved with the further use and implementation of existing technologies and policy instruments, , so "additional" policies is not necessarily the only requirement. The International Energy Agency (IEA) in its World Energy Outlook (2005) notes that substantial GHG reductions can be achieved with the implementation of existing technologies and policy prescriptions. "Without aditional implementation of	See A-119		Rejected as additional policies are needed (1)

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							policies..." (would cover existing and new) (Government of Environment Canada)			
SPM-13	1	B	1	7	1	8	Recommend that the IPCC add references to the relevant underlying chapters on emission scenarios and policies (e.g., Chapters 3 and 13). U.S. Government (Government of U.S. Department of State)	REJ; this statement is based on ch 1 material		Agree with TSU, however cross-referencing is a possibility (1)
SPM-121	1	A	1	8	0	15	This first section does not read very clearly: the sentences do not clearly link to each other in terms of content or flow. (Stephen Sheppard, University of British Columbia)	UNCLEAR		Agree with TSU (1)
SPM-122	1	A	1	8	0	0	Point 1: Need to have a dummies guide to high confidence etc along in the SPM. Need to elaborate what early action can achieve? Figure 2: the major problem is related to higher consumption level and NOT to higher population. In general figure 2 is unclear. It should be connected better to the mitigation story in the rest of the SPM. Perhaps the word consumption should be removed. The difference between Montreal Protocol gases and Kyoto Protocol gases need to be outlined to the policymakers. (Expert Review Meeting Paris, IPCC)	TIA; will have uncertainty annex; fig 2 to be replaced; KP/MP gases will be mentioned		ACC except replacement of Figure 2 (1)
SPM-123		A	1	8	1	15	Before reviewing the last three decades I recommend a small paragraph on was happened before, specially after SWW. (Juan F Llanes-Regueiro, Havana University)	REJ; SPM is limited in space		Agree with TSU (1)
SPM-124	2	A	1	8	1	15	Suggest to add lines 11-13 or 11-17 of TS-5 here (Government of European Community / European Commission)	REJ; space limitation		Agree with comment of EC (1)
SPM-125	1	A	1	8	1	10	Replace "emissions of greenhouse gases covered by the Kyoto Protocol" by "emissions of CO2, CH4, N2O, HFCs, PFCs and SF6" (or spell out the names of these (groups of) greenhouse gases). Motivation: be specific. The line could be misinterpreted as 'emissions of GHGs by countries that have signed/ratified the KP'. (Government of European Community / European Commission)	ACC		ACC to spell out gases but add in brackets (Kyoto gases) (1)
SPM-	1	A	1	8	1	8	Delete "of greenhouse gases covered by the Kyoto Protocol"	REJ		REJ: ODS are

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126							replace with "of the major greenhouse gases" (then footnote and list the gases referred to). (Government of Australia)			major gases but not covered by UNFCCC & Kyoto (1)
SPM-127	1	A	1	8	1	15	This paragraph is incomplete in that it provides Annex 1 countries' share of world population (20%) and GHG emissions (46%) but does not provide their share of other global metrics, such as economic output that are equally if not more relevant. This results in a misleading comparison. lso, why is there no indication of GHG emissions intensity over the period, which is in many ways a more useful measure? U.S. Government (Government of U.S. Department of State)	ACC; add reference to E/GDP and figure 3b		ACC: develop a sentence that addresses concern (see also SPM-21/B) by referring to direction of change (relative direction) (1)
SPM-128	1	A	1	8	1	0	Add a new paragraph 1, at line 8 that would read as follows: "1. Given the inertia of both the climate system and the energy infrastructure, over the next few decades climate change related damages cannot be reduced effectively via mitigation. Therefore, while mitigation would be necessary in the long term, adaptation and vulnerability-reduction measures are necessary to reduce any such damages over the short-to-medium term." U.S. Government (Government of U.S. Department of State)	REJ; see A-118		REJ: General issue belongs to Paragraph 8 and formulation of comment incorrect (1)
SPM-129	1	A	1	8	0	0	In the TS 1.4 and Chapter 1 Art. 2 of the UNFCCC is discussed as an important issue for long-term mitigation policy planning. This should be reflected in the SPM to give guidance to policymakers. (Government of Germany)	DISCUSS Economise on wording! Connection is; decisions in short terms need to be guided by what to do in the long run	1,3	Accepted – will be done (1) Bill hare will make proposal for art 2 in SPM, goes via Holger to Bert. Needs carefull phrasing to avoid policy

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										prescriptiveness.
SPM-14	1	B	1	8	1	8	The word "covered" is ambiguous, as only Annex I emissions are "covered" by the Kyoto Protocol. A footnote might help to clarify. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	REJ		See SPM-125 (1)
SPM-15	1	B	1	8	1	8	Change the egining of the sentence to:"Since the preindustrail era global emissions ..." (Government of Switzerland)	REJ; no reliable data and not needed		REJ: Data presented start in 1970 (1)
SPM-16	1	B	1	8	1	15	This paragraph is incomplete in that it provides Annex 1 countries' share of world population (20%) and GHG emissions (46%) but does not provide their share of other global metrics, such as economic output that are equally if not more relevant. This results in a misleading comparison. Also, why no indication of GHG emissions intensity over the period, which is many ways a more useful measure? U.S. Government (Government of U.S. Department of State)	Identical A-127		REJ: See SPM-127 (1)
SPM-130	1	A	1	9	1	9	I suggest to change source by gas emission in the following manner: ¨....being the largest gas emission , having grown by about....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; not good English		Agree with TSU (1)
SPM-131	1	A	1	9	1	10	"increased by more than 50%, with CO2, being the largest source, having grown by about 60%", there are conflicts between this sentence (two figure 50% and 60%) and the chapter1 P9L47 (75%and87%). Please carefully check them and correct to be consistent. (Government of China Meteorological Administration)	ACC; make fully consistent with ch 1	1	ACC (1)
SPM-132	1	A	1	10	1	11	please write '... increases in GDP per capita and in population have outweighted ...' because from Fig SPM.2 we see that recently (and this is the more interesting period), i.e. 1993 - 2003, the wealth influence was higher than the one from population growth. On page 16, lines 2 and 3 of Chapter 1 is already the 'correct' order. (Manfred Treber, Germanwatch)	TIA in reformulating sentence		Agree with TSU (1)

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SPM-133	1	A	1	10	1	10	insert "very" before "high confidence" (,)	REJ; we only use “high confidence”		Agree with TSU (1)
SPM-134	1	A	1	10	1	15	The linkage between fossil fuelled energy and emissions needs to be clearly presented at the first available opportunity, i.e. after the first sentence, which describes the rise in emissions since 1970 and presents Figure SPM.1. **Insert new second sentence in line 10**: "Fossil energy use is responsible for about 87% of the anthropogenic CO2 emissions produced annually [4.2.1]" (This statement is contained in 4.2.1 at line 26 of Chapter 4). **Insert** and reference new Figure SPM.2 = existing Fig 4.2.4 in Chapter 4 (global primary energy 1971-2003). This sentence and this graph immediately (and visually) make the connection between historic fossil-fuelled energy and emissions, thus connecting to the message in Section A that, without additional policies, emissions will continue to grow. Furthermore, it sets up both the regional and percapita considerations that are considered next in this section, both textually and graphically. The existing 2nd sentence in line 10 (new 3rd sentence) then begins: "The rise in emissions has ocurred...". (Subsequent Figures become re-numbered accordingly). (Pat Finnegan, Grian)	TIA; mention fossil fuel in para 1, but no additions because of space constraint		Agree with TSU (1)
SPM-135	1	A	1	10	1	13	In fact, it must be stated that low oil and other fossil fuels' prices dominated energy market, and however climate change concerns, fossils represent now almost 90% of commercial energy supply and this picture hasn't change very much during the last more than twenty five years. It is very easy now to say that "increases in population and GDP per capita have outweighed decreases in ..."; but this is only a "half-true" which bring some darkness to the global picture and helps to hide the actual and most important cause of the problem, which is the lack of political will for switching fossil fuels to renewable energy sources, mainly at developed countries which can afford that change and also have the technologies for doing so, or could make the R&D efforts and investments to design and manufacture them. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science	See A-134		Agree with TSU (1)

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							and Technology)			
SPM-136	1	A	1	10	1	12	This wording for policy-makers should be modified and simplified, with less reliance on technical terms from economics. Surely GHG emissions are not directly caused by GDP per capita or reduced by less energy use per unit of GDP; they are caused by absolute increases in fossil fuel consumption and other anthropogenic emissions. GDP represents one way in which to characterize these nett increases. (Stephen Sheppard, University of British Columbia)	~~TIA; use "economic activity" in stead of GDP~~		REJ: TSU and Reviewer should read the Economist (1)
SPM-137	1	A	1	10	1	15	This section needs to make its POINT and not get bogged down in metrics. It mixes too many ratios and message is unclear. It needs to say in layman's terms that emission growth has continued despite significant achievements in reducing emissions/energy intensity (i.e. the SPM states a 40% decrease in C02 emissions/GDP) because of: population growth, economic growth and the carbon intensity of energy supply (the drivers of this emission growth). Let Figure SPM2 deal with technical terms. Change to: "This has occurred because increases in population and GDP per capita have outweighed, particularly in some countries, significant decreases in energy use per unit of GDP". If "carbon intensity of energy did not change much" means that energy is still predominantly fossil fuel based, state this in clear terms. (Government of Environment Canada)	TIA in reformulating		Agree with TSU and may adopt text suggested (1)
SPM-138	1	A	1	10	1	15	specify growth CO2 emissions from fossil fuel use (Government of The Netherlands)	See A-134		See preceding comment SPM-137 (1)
SPM-139	1	A	1	10	1	12	The sentence "This has occurred …….. change much" may be modified as .. .."This has occurred because increases in population, GDP per capita and energy intensive consumption behavior have outweighed decreases in energy use per unit of GDP, while carbon intensity of energy did not change much". (Government of India)	TIA in reformulating		See comment SPM-137 (1)
SPM-	1	A	1	10	1	0	Stating emissions growth since 1970 might be misinterpreted.	REJ; too technical		REJ: Math is

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140							Suggest adding—maybe in parentheses—that 60% over 35 years is about 1.7%/year, assuming a constant rate. U.S. Government (Government of U.S. Department of State)			wrong (1)
SPM-17	1	B	1	10	1	11	We propose to change the sentence to:"This has occurred because continuous use of fossil fuel by an increasing world population. Increases in GDP per capita ..." (Government of Switzerland)	TIA in reformulating		See comment SPM-137 (1)
SPM-18	1	B	1	10	0	0	Stating emissions growth since 1970 might be misinterpreted. Suggest adding—maybe in parentheses—that 60% over 35 years is 1.7%/yr, assuming a constant rate. U.S. Government (Government of U.S. Department of State)	REJ; not needed		REJ: Math is wrong (1)
SPM-141	1	A	1	11	1	12	replace ", while carbon intensity of energy did not change much" with "and declines of carbon intensity of energy", because Figure SPM.2 doesn't support the original statement in the period of 1973-1983" (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	TIA in reformulating; see also A-109		TIA: Will include data and clarify text (1)
SPM-142	1	A	1	11	1	12	"carbon intensity of energy did not change much" is applicable to 1993-2003. (Toshihiko Masui, National Institute for Environmental Studies)	See A-142		TIA: Will include data and clarify text (1)
SPM-143	1	A	1	11	1	12	According to Chapter 3, carbon intensity of energy has decreased 0.9% annually. This is quite a big change. Therefore, the conclusion "…while carbon intensity of energy did not change much..." is not proper. (Government of China Meteorological Administration)	~~CHECK~~	3	REJ: Long-term decarbonisation SINCE 1860 is 0.9% but not for the period as of 1970 (will be checked) (1) noted. Numbers in Ch3 correct. (3)
SPM-144	1	A	1	12	1	14	Both clarity and balance are needed as to the basis of the share of global GHG emissions, in particular whether they are calculated an	TIA; adding “annual is ok; rest not needed because already in		ACC: “annual” Rest agree with

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							annual, cumulative, or per capita basis (or any other). I suggest adding in the existing sentence "… account for 46% of ANNUAL global GHG emissions." And adding a sentence after this: ' In 2003, average Annex I emissions were 14.6 tCO2 / capita compared to 4.2 tCO2 / capita for non-Annex I countries.' And further adding a sentence reflecting the figures for historical cumulative shares, based on the sources cited for Figure SPM.3, e.g. for Annex I from 1955 - 2005. (Harald Winkler, University of Cape Town)	fig 3 or too detailed		TSU (1)
SPM-145	1	A	1	12	1	14	It is proposed to include also the year which reflects the emission data as described in the sentence "Developed countries (UNFCCC Annex 1 countries) ..". This is because the relationship between Annex 1 and Non-Annex 1 emissions is changing over time and therefore this year is important. (Government of Austria)	ACC;		ACC (1)
SPM-146	1	A	1	12	1	0	"Did not change much" is too general a statement. Concurrently, in Figure SPM 2, which this statement references, it is shown that carbon intensity of energy did change. How much is not clear as there is no reference for what is considered "a lot of change" or " a little change". Quantifying this statement for a more accurate description of carbon intensity of energy use over time is suggested. (Government of Japan)	see A-109		See comment SPM-142 (1)
SPM-147	1	A	1	12	1	15	There seems a 'dis-connect' between the two sentences, particularly the last sentence does not look consistent with what is being summarized in the whole paragraph. (Government of Environment Canada)	REJ; these are complementary sentences		Agree with TSU (1)
SPM-148	1	A	1	12	1	12	Phrase "…did not change much" is unscientific; suggest "…changed little.", or "changed only a few percent". (Government of Environment Canada)	See A-109		See comment SPM-142 (1)
SPM-149	1	A	1	12	1	12	Delete "did not change much" and provide a figure for how much the carbon intensity of energy did change. (Government of Australia)	See A-109		See comment SPM-142 (1)
SPM-150	1	A	1	12	1	0	"Carbon intensity of energy did not change much" is a bit oversimplified. Figure SPM.2 shows that the carbon intensity of	See A-109		See comment SPM-142

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							energy changed significantly between 1973-1983, but that the change has not continued in the past two decades. U.S. Government (Government of U.S. Department of State)			(1)
SPM-19	1	B	1	12	1	12	Start the sentence with: "Currently, developped countries ..." (Government of Switzerland)	See A-145		See SPM-145 (1)
SPM-20	1	B	1	12	0	0	“Carbon intensity of energy did not change much” is a bit oversimplified. Figure SPM.2 shows that the carbon intensity of energy changed significantly between 1973-1983, but that the change has not continued in the past two decades. U.S. Government (Government of U.S. Department of State)	TIA in reformulating		See SPM-145 (1)
SPM-151	1	A	1	13	1	14	It would be useful to know whether the population and ghg emissions for developed countries are declining since 1970 and what projections are until 2010 - 2020. (John Drexhage, International Institute for Sustainable Development)	TIA; projections will be added to fig 1, , but no population data (too much detail)	1	Agree to check availability of data (Bill) (1)
SPM-152	1	A	1	13	1	14	From fuel combustion, the share by Annex I is 60% instead of 46% (IEA, 2005). Please indicate if the number includes only fuel combustion or both fuel combustion and agriculture (LULUCF). This comment applies to Figure 3 as well. (Government of China Meteorological Administration)	ACC, say “CO2 from all sources”		ACC (1)
SPM-153	1	A	1	13	1	13	for clarity please insert "now" before "hold", or specify year (Government of The Netherlands)	See A-145		See SPM-145 (1)
SPM-154	1	A	1	13	1	15	From the viewpoint of policy relevance, there is no good reason to present only a binary relationship between developed/developing countries emissions and population. Note that the previous sentence identified importance of a combination of other macro-metrics - including GDP size and carbon intensity. The third sentence of the paragraph (and Fig SPM.3) should be expanded to encompass all these primary macro factors; or else deleted. (Government of Australia)	ACC; add E/GDP info and additional figure 3b	1	ACC: develop a sentence that addresses concern (see also SPM-21/B) by referring to direction of change (relative direction w.r.t. to past base year - Bill)

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										(1)
SPM-155	1	A	1	13	1	13	Change "and account" to "nevertheless account" or "yet account". Insert "total" between "of" and "global" N. U.S. Government (Government of U.S. Department of State)	TIA: "yet account", but not "total"		TIA in redrafting (1)
SPM-21	1	B	1	13	1	15	Item A.1 of the SPM, in noting the growth of GHGs since 1970, explains that Annex I (i.e., FCCC developed) countries "hold a 20% share in world population and account for 46% of global GHG emissions (Figure SPM.3)." The source for this statement is Chapter 1.3 of the underlying assessment. However, that chapter also explains (p. 14) that "[i]n contrast, the 80% of people living" now "in developing countries (non-Annex I countries) account for 53.6% of GHG emissions (see Figure 1.4)" and that "[a]s the bulk of energy demand occurs in developing countries, the emissions growth accordingly is dominated by developing countries." This information about developing countries and their emissions is misleadingly omitted from the item. That should not be the case. It is important and equally relevant information that also provides contrast and balance to the item. U.S. Government (Government of U.S. Department of State)	REJ; superfluous to add 80%/ 54% AND ISSUE OF GROWING EMISSION OF DEVELOPING COUNTRIES is in para 2		~~See preceding comment (1)~~
SPM-22	1	B	1	13	1	13	Change "and account" to "nevertheless account" or "yet account". Insert "total" between "of" and "global" N. U.S. Government (Government of U.S. Department of State)	Identical A-155		TIA in redrafting (1)
SPM-156	1	A	1	14	0	15	Suggest clarification of the wording, since this sentence appears to contradict the theme of increasing GHG emissions (Stephen Sheppard, University of British Columbia)	TIA; will specify gases		TIA in redrafting (1)
SPM-157	1	A	1	14	1	14	It might be useful to add information how the share between Annex I and non-Annex I countries has changed between 1973 and 2005 (which is the period of change that this paragraph focuses on). A static snapshot about the present is much less informative. The information could be readily derived from the underlying data sources, but obviously would need to also be contained in the TS and underlying chapter 1.3 to be justified in the SPM. (Andy Reisinger, TSU IPCC Synthesis Report)	REJ; too detailed for SPM; consider in TS and ch 1 Ch 1 will propose a sentence	TS, 1	ACC: develop a sentence that addresses concern (see also SPM-21/B) by referring to direction of change (relative direction w.r.t.

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										to past base year - Bill) (1)
SPM-158	1	A	1	14	1	15	Add after "Montreal Protocol": "(such as CFCs and HCFCs)" (Government of European Community / European Commission)	ACC, see A-156		ACC
SPM-159	1	A	1	14	1	15	To make the topic easier to understand, we propose the following additions: "However, emissions of ozone depleting greenhouse gases, which are covered by the Montreal protocol, have declined significantly. (Government of Norwegian Pollution Control Authority)	TIA, see A158		TIA (1)
SPM-160	1	A	1	14	1	15	specify share of MP GHGs (Government of The Netherlands)	REJ; not for SPM	TS	Agree with TSU (1)
SPM-161	1	A	1	14	1	14	The authors should indicate what gases are covered by the Montreal Protocol. (Government of Australia)	See A-156		Agree with TSU (1)
SPM-162	1	A	1	14	1	14	The authors should add the year to which information relates - (i.e is it 2003?). (Government of Australia)	ACC; add that		ACC (1)
SPM-163	1	A	1	14	1	14	"…….for 46 % of global GHG emissions (Figure SPM.3)". Include "in 2003" after 'emissions'. (Government of India)	ACC		ACC (1)
SPM-164	1	A	1	14	1	14	For clarity, specify the GHG's that are covered by the Montreal Protocol via footnote. U.S. Government (Government of U.S. Department of State)	See A-158		Agree with TSU (1)
SPM-23	1	B	1	14	1	14	And end the sence with: "…GHG emissions (Figure SPM.3) but this trend is decresing." (Government of Switzerland)	REJ; not a correct statement		Agree with TSU (1)
SPM-24	1	B	1	14	1	14	For clarity, specify the GHG's that are covered by the Montreal Protocol via footnote. U.S. Government (Government of U.S. Department of State)	See A-158		Agree with TSU (1)
SPM-165	1	A	1	15	1	15	Mention which GHGs, otherwise it will be confusing. (Government of India)	See A-158		Agree with TSU (1)
SPM-166	1 F	A	2	0	2	0	Figure on GHG Emissions 1970 - 2004. The figure shows what appears to be some increase in the HFCs, PFCs and SF6 category	CHECK	1	Check (1)

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	1						over the 1990 - 2004 period. With the reductions achieved within the global aluminium industry in PFC emissions it is likely that this specific subcategory has actually decreased over that same period. (Jerry Marks, J Marks & Associates)			
SPM-167	1 F 1	A	2	0	2	0	Figure SPM1 - it is not clear what the numbered footnotes refer to. (Government of UK)	ACC; clarify	1	Agree with TSU (1)
SPM-168	1 F 1	A	2	0	2	0	Figure SPM.1 Y-axes in GtCO2 (as (most of) the text and other tables and graphs use GtCO2, MtCO2 and tCO2) (Government of European Community / European Commission)	ACC	1	Agree with TSU (1)
SPM-169	1 F 1	A	2	0	2	11	Fig SPM-1: There needs to be a place where Gt, Pg, C02-eq, etc. are defined for policymaker. (Government of Environment Canada)	ACC; glossary SPM	Gloss	Agree with TSU (1)
SPM-170	1 F 1	A	2	1	2	1	Fig. SPM 1. Need to add explanations for "CH4 other" and "N2O other" for this figure. Not clear what is included. Also are these numbers consistent with the numbers presented in all the sectoral chapters? Need to clarify and modify if needed for consistency. (Jean Bogner, Landfills +, Inc)	ACC; change footnotes	1	Agree with TSU (1)
SPM-171	1 F 1	A	2	1	0	0	Figure SPM.1: suggest repeating the y axis figures on the right side of the graph to simplify interpretations for 2004 (Stephen Sheppard, University of British Columbia)	ACC		ACC (1)
SPM-172	1 F 1	A	2	1	0	0	figure SPM.1 : on the ordinate axis, replace "Pg CO2-q." by "million kt" or "billion tons". (the policy makers are not necessarly scientists to figure out Pg !) (Faouzi Senhaji, I.A.V. Hassan II (GERERE))	ACC		ACC (1)
SPM-173	1 F 1	A	2	1	0	0	T. Bruulsema: Figure SPM.1: "Global Greenhouse gas emissions 1970-2004" should be identical to Figure TS.2 in the Technical summary but is apparently not. The SPM.1 appears to extend to 2004, showing an increasing slope, while TS.2 appears to be truncated at 2002 with a linear slope. (Ben Muirheid , International Fertilizer Industry Association (IFA))	ACC; make TS2 consistent	1,TS	ACC (1)
SPM-174	1 F 1	A	2	1	2	11	Figure SPM.1 is potentially misleading, as it lumps together HFCs, PFCs and SF6. While the upward curve may be justified by increasing HFC emissions, the trend for PFCs is reducing and PFC	See A-166	1	REJ: Too detailed – Possibly add in

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							reductions achieved by the aluminium industry should more than compensate for any short term increases in emissions from the electronics sector, who too have committed to reduce their PFC emissions. (Robert Chase, International Aluminium Institute)			caption that aggregation does allow for specific trends (BILL)
SPM-175	1 F 1	A	2	1	0	0	Fig. SPM1 seems to make light of SF6, but the case of Iceland suggests this may be unwise. (Michael Jefferson, World Renewable Energy Network & Congresses)	UNCLEAR		Noted (1)
SPM-176	1 F 1	A	2	1	1	11	In figure SPM.1, emissions from deforestation appear to be less than 10% of total anthropogenic emissions. This is lower than most of those usually cited in literature on this subject - eg Houghton has recently estimated 25%. (Government of UK)	CHECK	1,9	ACC (Bill) (1) SPM1 will chang
SPM-177	1 F 1	A	2	1	2	0	fig SPM 1: use 'subscripts' in the chemical formula within the figure and its legend (Government of Belgium)	ACC	1	ACC (1)
SPM-178	1 F 1	A	2	1	2	0	In terms of the overall trend of global greenhouse gas emissions, greenhouse gases which are not covered by the Kyoto Protocol, including CFCs, HCFCs and halons which are covered by the Montreal Protocol and have considerable contribution to global emissions, should be addressed and added to Figure SPM.1. This would aid in understanding the objective trend. With this revision, the sentence beginning with "Only CO2, CH4, N2O..." in the caption of Figure SPM.1 should be removed. (Government of Japan)	~~REJ; would be too confusing; add table in ch 1/TS~~ Try to include in Fig 1 and add table in TS	1,TS	Agree to investigate and if coherent data are available – subject to space limitations – will add most likely not to Fig SPM1 REJ: Suggested text revisions (1)
SPM-179	1 F 1	A	2	1	0	0	We propose that the denomination GtCO2-eq is written directly on the y-axis. (Government of Norwegian Pollution Control Authority)	ACC	1	ACC (1)
SPM-180	1 F	A	2	1	3	10	Figure SPM.1 and figure SPM.2 do not use consistent units. The authors should, if possible, use a common metric.	ACC	1	ACC (1)

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	1						(Government of Australia)			
SPM-181	1 F 1	A	2	1	2	0	Figure SPM 1 - Chart should clarify that the Montreal Protocol (MP) gases are not included. Chart does not need to include the MP gases. U.S. Government (Government of U.S. Department of State)	ACC	1	See comment SPM-178 (1)
SPM-25	1 F 1	B	2	1	2	0	The units on the ordinant of Figure SPM.1 should use of GtCO2-eq as more common unit. U.S. Government (Government of U.S. Department of State)	ACC	1	ACC (1)
SPM-26	1 F 1	B	2	1	2	0	Figure SPM.1 Move the y-axis label. It's in a confusing place. U.S. Government (Government of U.S. Department of State)	ACC	1	ACC (1)
SPM-27	1 F 1	B	2	1	2	0	Fig SPM 1 - Chart should clarify that the Montreal Protocol gases are not included. Chart does not need to include the MP gases. U.S. Government (Government of U.S. Department of State)	Identical A-181	1	ACC (1)
SPM-28	5 T 1	B	2	1	2	0	Explain what radiative forcing is. It is used extensively and importantly in Table SPM.1 and Figures SPM. 4 and SPM.5. Also define in glossary. U.S. Government (Government of U.S. Department of State)	TIA; radiative forcing will be dropped in fig SPM4 and 5, but not in table 1		Not applicable for Chapter 1 but should not be dropped (1)
SPM-182	1 F 1	A	2	3	2	3	Clarity: explain what "sustainable production" means. U.S. Government (Government of U.S. Department of State)	ACC; clarify fn	1	ACC (Rick/Niclas) (1)
SPM-29	1 F 1	B	2	3	2	3	Define "sustainable production." U.S. Government (Government of U.S. Department of State)	ACC; clarify fn	1	ACC (Rick/Niclas) (1)
SPM-183	1 F 1	A	2	4	2	5	The definitions of 2) and 3) should be interchanged (Government of France)	CHECK	1	ACC (1)
SPM-184	1 F 1	A	2	6	2	0	Fig. SPM 1; Footnote – 4 for figure – "include large-scale clearing by burning biomass". This is not necessarily true. In many countries timber is harvested for commercial export, leading to GHG emissions. (1.)can GHG emissions from deforestation be separated from	ACC; clarify fn 4	1	Check (Rick/Nicolas) (1)

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							biomass burning, etc. (Government of India)			
SPM-185	1 F 1	A	2	7	2	7	Do 100 year GWPs from the TAR differ much from the SAR? Where SAR GWPs are used, a footnote should be included to explain why (i.e., because SAR GWPs are used for reporting to the UNFCCC). U.S. Government (Government of U.S. Department of State)	ACC; explain that SAR values were used because of use by policy in light of UNFCCC	1	Check (Rick/Nicolas) (1)
SPM-30	1 F 1	B	2	7	2	7	Note just before caption of Fig SPM.1: GWPs from IPCC 1996 : why not 2001 or even 2007 when they are available ?. Justifying the choice of the 1996 guidelines by a reference to UNFCCC reporting guidelines may not be correct, as I believe the present SBSTA recommendation is to use the latest GWPs whenever as possible. It is true that the convention has been taken to stick to the 1996 guidelines for the first KP commitment period (2008-2012), but this is not relevant here, as the figure shows the trends in global emissions over 1970-2004. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-185		Check (Rick/Nicolas) (1)
SPM-31	1 F 1	B	2	7	2	7	Where SAR GWPs are used, a footnote should be included to explain why (i.e., because SAR GWPs are used for reporting to the UNFCCC) U.S. Government (Government of U.S. Department of State)	See A-185		Check (Rick/Nicolas) (1)
SPM-186	1 F 1	A	2	9	0	10	Delete or put in brackets the chemical symbols and add: "Only" gases covered by the Kyoto protocol "are included". (Government of Sweden)	~~ACC~~, REJ see confusion in text	1	ACC (1)
SPM-187	1 F 1	A	2	9	2	11	It would be helpful if the authors could provide the uncertainty range for the emissions from deforestation etc. that is mentioned in the chapeaux to the figure. (Government of Australia)	ACC	1	ACC (1)
SPM-32	1 F 1	B	2	9	2	11	Fig. SPM1 : Please make sure that "4" is printed lower than "CH" in CH4, Same for the 6 in SF6.. In line 11, the sentence starting with "Uncertainty" is a bit ambiguous, and probably a comma is needed after "agriculture" (Jean-Pascal van YPERSELE, Université catholique de Louvain	ACC	1	ACC (1)

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							(Belgium))			
SPM-33	1 F 1	B	2	9	2	9	We propose to add a figure with the preindustrial levels of GHG emissions and atmospheric concentrations of GHG. It would also be usefull to have a table withthe absolute data and the % changes of GHG emissions in the various sectors for the years 1970-2004 (Government of Switzerland)	REJ; too much for SPM		Agree with TSU (1)
SPM-188	1 F 1	A	2	10	2	12	The figure (SPM.1) is used appropriately here and illustrates the growth in Kyoto GHG well - but see comments on the Technical Summary and Chapter 1, below. In the context of the Summary, the important uncertainty is that of the overall increase in GHG and the current text concerning uncertainty serves only to confuse. The uncertainty in fossil fuel CO2 , although it is small relative to the emissions from fossil fuel combustion, would be much larger than the uncertainties cited currently. (Archie McCulloch, Marbury Technical Consulting)	ACC; reformulate uncertainty statement in caption	1	Noted but not understood (1)
SPM-189	1 F 1	A	2	10	2	11	Figure SPM.1. Title. 2nd line. Proposed rewording: "Uncertainty about emissions of CO2 from deforestation, of CH4 and N2O from agriculture, and of fluorinated gases is substantially higher than uncertainty about other emissions". The unit Pg is perhaps more "scientific" than the unit Gt, but the latter is very much more understandable by humans (public, policy makers); please use Gt, at least in SPM and TS (Aviel VERBRUGGEN, University of Antwerp)	TIA; See A-188	1	ACC (1)
SPM-190	1 F 1	A	2	10	2	11	Redraft to read 'Uncertainty in CO2 emissions from fossil fuel generally have lower uncertainty than other emissions.' [Waste related sources have high uncertainty and the uncertainty in process related HFC emissons may be relatively low. Suggested alternative text is a simpler than trying to design a list] (Government of UK)	TIA; See A-188	1	REJ : redundant (1)
SPM-191	1 F 1	A	2	10	2	10	Caption figure SPM.1: Replace "Uncertainty in CO2 emissions, …." by "Uncertainty in emission estimates for deforestation (CO2), agriculture (CH4 and N2O) and fluorinated gases is substantially higher than for other emission sources." (Government of European Community / European Commission)	TIA; See A-188	1	ACC (1)

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SPM-34	1 F 1	B	2	0	0	0	Figure SPM.1: On the vertical axis, please use Gt CO2-eq, and not Pg, as the units "tonnes" and "Gigatonnes" are better understood by policymakers. Keep Pg for chemists. The conversion note just above the caption should be reversed: 1 Gt = 1 Pg. A bigger question I have about this figure is: "Why are only the KP gases shown ?" The 2006 Special report on the ozone layer and climate showed the importance of emissions from banks of CFC, HFCs, ... and ignoring them here is misleading the policymakers. Another very important gas is tropospheric ozone, which is affected by a large uncertainty, but is also potentially responsible for 10-20% of the anthropogenic radiative forcing. If the WG3 report is about mitigation in the general sense, it should also show in this synthesis plot the relative importance of ALL anthropogenic GHG, including CFCs, HFCs, O3, etc. It would give an additional argument for the exploitation of the synergies between climate protection and air quality improvement (for O3), which are mentioned in paragraph 32 of the SPM. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC units REJ other suggestions, because we only do emission charts, no radiative forcing ones in SPM		Agree with TSU and in relation to radiative forcing, etc TIA regarding ODS (1)
SPM-192	1 F 2	A	3	0	3	0	Figure SPM2 is not of easy understanding. We suggest that it is replaced with Figure 1.5, providing the same information but in a more clear format. (,)	See A-26		Rej; Will improve Fig SPM2 (1)
SPM-193	1 F 3	A	3	0	3	0	Figure SPM.3. This is a very informative figure but also somewhat loaded. I suggest to delete the %-numbers shown after the country-group names in the coloured rectangles of the graph, because the area of the rectangles already reflects the %-shares and on the top of the diagram the aggregate shares of Annex I and Non Annex I countries are shown too. An editorial improvement could be to select the colours of the blocks better and to apply one basic colour per Annex I/ Non Annex I blowk with shadings for the country groups within that particular colour (perhaps match the colours with the ones of figure SPM.2, using the driving forces that are most prominent in the two blocks, e.g. wealth in Annex I and population	ACC	1	ACC (1)

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							in Non Annex I ?) (Aviel VERBRUGGEN, University of Antwerp)			
SPM-194	1 F 2	A	3	0	3	0	Figure SPM.2. Ordinate axis: here Gt while Pg rather than Gt in figure 1? Consistency needed. Also the meaning should be clear. In a separate wordfile "Figure SPM.2 version AV" I suggest another type of graph for representing the same information; please consider that proposal. (Aviel VERBRUGGEN, University of Antwerp)	See A-26		ACC (1)
SPM-195	1 F 2	A	3	0	3	10	Figure SPM.2: (1)the meaning of this figure should be more clarified, such as the explanations of color rectangle should be △CO2/(CO2/Energy), △CO2/(Energy/GDP(PPP)),△CO2/(GDP/POP),△CO2/POP,△CO2/(×Net change);(2) PPP should be deleted. The reason is one report should use one uniform measuring method and the World Bank and many government use officially exchange rate.(3) there is one doubt about the contribution of change of CO2/Engergy for CO2, why the value in 1993-2003 is so small compared to the previouse periods? Is it reasonable? This should be checked. (Government of China Meteorological Administration)	See A-26		ACC (1)
SPM-196	1 F 2	A	3	0	3	0	Figure SPM.2: This figure is important in illustrating the various drivers behind CO2 emission patterns. The graphical representation needs significant improvement, though. In order to build a link with Figure SPM.1, total emissions at the beginning and end of each decade could be shown, with in between the decomposition of the changes. (Government of European Community / European Commission)	See A-26		ACC (1)
SPM-197	1 F 2	A	3	0	3	0	Figure SPM.2: The net change of energy related CO2 emissions over 1 decade does NOT seem to be in line with the data presented in Figure SPM.1. (Government of European Community / European Commission)	See A-26		SPM 1 all emissions SPM2 is CO2 (1)
SPM-198	1 F 2	A	3	0	3	0	Figure SPM.2: The legend should be more self-explanatory, e.g. Carbon intensity, Energy intensity, Economic development, Population growth. The definition of these issues could be covered in the caption.	See A-26		ACC (1)

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							(Government of European Community / European Commission)			
SPM-199	1 F 2	A	3	0	3	0	Figure SPM 3, already included in the TS, is not useful in the SPM. Key message is in the text page 1, lines 12-14 and is diluted in the figure. (Government of France)	See A-26		REJ: SPM3 is useful (1)
SPM-200	1 F 2	A	3	0	3	0	Figure SPM 2 does not cary more essential information than the text page 1, lines 11-12 and could be displaced to the TS. Too detailed information confuses the main message given inthe text. (Government of France)	See A-26		REJ: SPM2 is useful – will try to improve (1)
SPM-201	1 F 2	A	3	0	0	0	Figure SPM.2 is complex and hard to understand. Change or delete the figure. It doesn't get the message through. (Government of Sweden)	See A-26		REJ: SPM2 is useful (1)
SPM-202	1 F 2	A	3	0	3	10	Figure SPM 2: The figure is hard to interpret, partly because of jargon, e.g.,"gross domestic product at purchasing power parity conversion factors"? (line 9). A simpler caption might also help, e.g., "Factors underlying energy-related CO2 emission growth at global scale". (Government of Environment Canada)	See A-26		REJ: SPM2 is useful – will try to improve (1)
SPM-203	1 F 2	A	3	1	0	0	Table SPM 2 --- My concerns about the meaning of this table (and its counterparts TS.19 and 11-3) are detailed in my "General Comments", specifically: the estimates of achievable mitigation (by 2030) presented in tables SPM-2, TS-19, and 11-3, may not in fact contribute to mitigation from baseline. The estimated achievable emission reductions may be absorbed by the energy-intensity reductions and decarbonization embedded in the SRES B2/WEO (2004) baselines. If in fact estimated mitigation possibilities can truly contribute beyond that which is already embedded in the baseline scenarios, then that should be demonstrated in detail, not simply assumed. (Christopher Green, McGill University)	See A-26		Not part of Chapter 1 – belongs to Chapter 3 (1)
SPM-204	1 F 2	A	3	1	0	0	Figure SPM2 - this is not immediately clear to me. Perhaps if the 0 line was darker it would be clearer that some are decreases (perhaps even arrows next to the colour blocks) (Ann Gardiner, AEA Technology)	See A-26		Will be improved (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-205	1 F 2	A	3	1	3	10	Figure SPM.2 is confusing and difficult to interpret and will not help policymakers get the main messages of the report. (Steve Sawyer, Greenpeace International)	See A-26		REJ: SPM2 is useful – will try to improve (1)
SPM-206	1 F 2	A	3	1	3	1	This figure is very hard to interpret. The caption needs to be made much clearer. (Paul Baer, EcoEquity)	See A-26		Will be improved (1)
SPM-207	1 F 2	A	3	1	0	0	figure SPM. 2: on the ordinate axis, replace "Gt CO2" by " million kt" or "billion tons". (for the same reason as above) (Faouzi Senhaji, I.A.V. Hassan II (GERERE))	See A-26		ACC (1)
SPM-208	1 F 2	A	3	1	0	0	Figure SPM.2: This is a very important and informative figure, but I suspect that many non-experts will struggle to extract and understand the information it contains. It would greatly benefit from the attention of a skilled graphic designer working with the relevant authors. The caption should be shorter, if possible, but needs to provide all necessary support for the figure. The current legend is incorrect: the figure does NOT show CO2/energy, let alone population, itself - what the legend should say is "CO2 emissions associated with changes in ...". The figure is important and valuable, and is likely to be used in other contexts. Its design, legend, and caption, deserve very serious attention to make it as clear, understandable, but also as correct as possible. (Andy Reisinger, TSU IPCC Synthesis Report)	See A-26		Will be improved (1)
SPM-209	1 F 2	A	3	1	3	10	Should the vertical axis on Figure SPM.2 be annual growth rate in %, rather than GtCO2? The appearance of population in this figure suggests so. (Michael Raupach, CSIRO Marine and Atmospheric Research)	See A-26		No but will be clarified (1)
SPM-210	1 F 2	A	3	1	3	10	This figure SPM 2 is not clear, and is quite misleading. Either it should be taken out or given a greater introduction as it is in Chapter 1. (Catherine Pearce, Friends of the Earth International)	See A-26		Will be improved (1)
SPM-211	1 F 3	A	3	1	3	20	In Figure SPM3 it would be useful to explain what the %ges are of i.e. that 46.4% is the %ge of GHG emissions. It would also be useful to show the %ges of world population i.e. mark that Annex	ACC; improve caption		Agree with TSU (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							is 20% of world population as explained on page 1. (Rachel Warren, University of East Anglia)			
SPM-212	1 F 2	A	3	1	3	2	Figure SPM.2 is unclear. It's not clear what y-axis scale is, a line graph showing each contribution as a function of year might be easier to read. Also clarify what purchasing power parity means in a note. (Government of UK)	See A-26		Will be improved (1)
SPM-213	1 F 2	A	3	1	3	1	figure SPM.2, comment: very unclear, suggest to redesign, see Annex NL-1; also suggest to change the naming of the factors "CO2/energy" to "shift to lower carbon fuels", "energy/GDP(PPP)" to "energy intensity improvement", "POP" to "population growth", and "GDP(PPP)/POP" to "wealth growth"; yet another better presentation can be found in the Climate Policy Evaluation Memorandum 2005, p. 32, available from http://international.vrom.nl/docs/internationaal/On%20the%20way%20to%20Kyoto.pdf (Government of The Netherlands)	See A-26		Will be improved (1)
SPM-214	1 F 2	A	3	1	3	15	Figure SPM 2 is particularly difficult to understand and may be confusing to the broader readership of the SPM. The authors should consider if the information can be more clearly presented in a different format (such as a table). (Government of Australia)	See A-26		Will be improved (1)
SPM-215	1 F 2	A	3	2	3	2	The main point of this figure and description is lost due to the overuse of acronyms. Energy intensity of the economy should be written as "Energy/GDP" instead of "Energy/GDP(PPP)" because for non economists PPP is difficult concept to understand although intensity is computed using GDP (PPP). However, in the footnote this can be explained. Accordingly, line 9 which says "GDP (PPP) is gross domestic product at .... " can be eliminated. (Government of Environment Canada)	See A-26		Will be improved (1)
SPM-216	1 F 2	A	3	3	0	10	In Figure SPM.2, the unit of vertical axis in not clear. This shows the annual change of CO2 emissions or total emission change for each period? (Toshihiko Masui, National Institute for Environmental Studies)	See A-26		Will be improved (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-217	1 F 2	A	3	3	3	0	Figure SPM 2: Is the unit of Y-axis correct? Should you change "GtCO2" to "% per year"? (also the same comment to Figure TS 4 and Figure 1.6) (Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE))	See A-26		Will be improved (1)
SPM-218	1 F 2	A	3	3	0	0	Figure SPM2 The text to the figure is too complicated. We guess the figure shows that the intensity of carbon in energy has contributed to emission reductions in the three periods, but almost nil in the last, the intensity of energy in GDP has contributed to emission reductions in all the three periods, and increasingly. Population growth and income growth have been the main contributors to emissions growth, while increased energy efficiency have contributed most to reduction of emissions although mainly in the first two periods. (Government of Norwegian Pollution Control Authority)	See A-26		Will be improved (1)
SPM-219	1 F 2	A	3	3	0	0	Figure SPM.2The figure is hard to understand but have an important message. We suggest that the lead autors consider an alternative layout/presentation of the figure. Please also check the denomination on the y-axis. (Government of Norwegian Pollution Control Authority)	See A-26		Will be improved (1)
SPM-220	1 F 2	A	3	3	3	4	TS page 3 line 22 states the "carbon intensity of energy supply ...was more or less constant". Here, that the carbon intensity energy USE has declined. Clarify consistency on "use" and "supply". Policymakers might be interested to know how the earlier reduction in the carbon intensity of energy use was achieved, and why it has now slowed. (Government of Environment Canada)	See A-26		Will be improved (1)
SPM-221	1 F 2	A	3	3	0	0	Fig SPM-2: The concept and inferences from Fig 2 are good, but figure itself is difficult to understand. Can the figure presentation be changed for user friendliness – TS-3 figure is clearer. (Government of India)	See A-26		Will be improved (1)
SPM-35	1 F 2	B	3	3	3	3	Fig. SPM2: … energy related CO2 emission …: what is exact meaning of "energy-related"? Is it "fossil fuel" combustion only, or does it include venting ? Please define terms used when ambiguous.	See A-26		Will be improved (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))			
SPM-36	1 F 2	B	3	3	3	0	Is Figure SPM.2 an attempt to use the Kaya Equation to illustrate the impact of each factor in the equation on the change in carbon emissions over 10 year periods? The ordinary policy maker reader will have much difficulty with Figure SPM.2. For the SPM, the figure is too complicated; point should be made in words with reference back to discussion & figure in Chap 1. U.S. Government (Government of U.S. Department of State)	See A-26		Will be improved (1)
SPM-37	1 F 2	B	3	3	3	3	Clarify. Unusual use of "[d]ecomposition" in relation to energy-related CO2 emission growth. Will lay readers understand this ? U.S. Government (Government of U.S. Department of State)	See A-26		Will be improved (1)
SPM-222	1 F 2	A	3	4	3	0	Clarify. Unusual use of "[d]ecomposition" in relation to energy-related CO2 emission growth. Will lay readers understand this? U.S. Government (Government of U.S. Department of State)	See A-26		Will be improved (1)
SPM-223	1 F 2	A	3	5	3	10	What does "relative importance" mean? Refers to reasons for reductions in C02 emisions: Should be "the relative contribution from reducing carbon intensity of...declined, while..." Footnotes to Figures and Charts should explain technical details not captured in the overall text. The description under SPM.2 needs to be better coordinated with the message in Page 1 lines 8-15. (Government of Environment Canada)	See A-26		Will be improved (1)
SPM-224	1 F 2	A	3	5	3	5	The authors should indicate what the reduction is relative to (e.g. BAU?). (Government of Australia)	See A-26		Will be improved (1)
SPM-225	1 F 2	A	3	5	3	6	Phrases such as the 'relative importance of reducing' and 'importance of reducing' are ambiguous - should they be interpreted in the past tense or the future tense? Context suggests the interpretation should be in the past tense. Could rephrase '…the relative contribution of carbon intensity of energy production declined...' (Government of Australia)	See A-26		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-38	1 F 2	B	3	6	3	0	The word "importance" here should be changed to something like "impact" or "effect". The carbon intensity had relatively little impact on emissions, because the intensity did not change; however, that is not to say that carbon intensity is not important. U.S. Government. (Government of U.S. Department of State)	See A-26		Will be improved (1)
SPM-39	1 F 2	B	3	6	0	0	The word "importance" here should be changed to something like "impact" or "effect". The carbon intensity had relatively little impact on emissions, because the intensity did not change; however, that is not to say that carbon intensity is not important. U.S. Government (Government of U.S. Department of State)	See A-26		Will be improved (1)
SPM-226	1 F 2	A	3	8	3	8	Increasing wealth but also poverty, also uneven distribution. Need to mention because sentence is not precise enough. (Juan F Llanes-Regueiro, Havana University)	See A-26		Will be improved (1)
SPM-227	1 F 2	A	3	9	3	9	Add "POP stands for population" (Government of France)	See A-26		ACC (1)
SPM-228	1 F 2	A	3	9	3	9	GDP/POP should be written as "GDP/Population" because "POP" seems an abbreviation of something similar to GDP which stands for gross domestic product. Same applies to the legend in Figure SPM.2. (Government of Environment Canada)	See A-26		ACC (1) Accepted. (8)
SPM-40	1 F 2	B	3	9	3	9	Fig. SPM2: Sources: Give the complete references in footnotes or at the end of the SPM (Comment valid for all references in SPM) (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-26		Will be improved (1)
SPM-229	1 F 3	A	3	10	0	0	Figure SPM.3, Data based on IEA instead of UNFCC data, why not used country submitted reports as far as feasible, definition of CO2eq emission not clear, CO2 land-use emissions included? (Hans Eerens, MNP)	REJ; country reports not complete		Agree wit TSU (1) Wrong line number – this appears in the forestry statement –

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										Chapter 9 (8)
SPM-230	1 F 3	A	3	10	3	11	Figure SPM.3 Clarify what is "centrally planned Asia" in a note or in the caption. (Government of UK)	DISCUSS; change into East-Asia or only present Asia as a whole	1	Will be improved by CH 1 (1) Defer to Bioenergy CCT group meeting (8)
SPM-231	1 F 3	A	3	10	3	20	Figure SPM.3: "Centrally Planned Asia" and "Other Asia" should not be seperated and need to be replaced by only "Asia". "Centrally Planned Asia" is an outdated word and is not suitable for current situation. IPCC report should evaluate the new scientific results but not out-of-date stuff. (Government of China Meteorological Administration)	See A-230	1	ACC Will be improved **(Dadi)** (1) Coming week, in coop. with Lynn Price.
SPM-232	1 F 2	A	3	10	3	11	Figure SPM.2: This figure is very informative. One of the most relevant information seems to be that the net change in global emissions over the decades shown is increasing. This means that the global emissions are increasing even with an increasing rate. However, this message is not reflected in the caption. Given the importance of that result it seems important to highlight it. (Government of Austria)	See A-26		Will be improved (1)
SPM-233	1 F 2	A	3	10	3	10	Abbreviations for country groups in Figure SPM.3 should be given in full in the figure caption. (Government of Environment Canada)	See A-26		ACC (1)
SPM-234	1 F 3	A	3	10	3	50	SPM Figure 3: The regional country groupings need to be explained, and for those groupings where it is not clear the authors should list the countries included (i.e. Centrally Planned Asia, Other Non-Annex 1). (Government of Australia)	ACC	1	ACC (1)
SPM-235	1 F 3	A	3	11	0	0	Figure SPM.3. The figure would be clearer if one added to the label "Non Annex I: 53.6% OF ANNUAL EMISSIONS". The share of hostirical cumulative emissions, e.g. from 1955 - 2005, calculated	ACC	1	ACC (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							ffrom the same sources, should be added for balance. (Harald Winkler, University of Cape Town)			
SPM-236	1 F 3	A	3	11	0	0	figure SPM.3:suggest to mention when the shift 50%-50% share of total emisions between Annex I and non Annex I countries occured. In the TAR, Annex I countries were emitting more than 50% of total emissions. (Faouzi Senhaji, I.A.V. Hassan II (GERERE))	REJ, too detailed for SPM	1	Agree with TSU (1)
SPM-237	1 F 3	A	3	11	0	0	figure SPM.3: add "of total emissions" to " 53.6%" (the percentage here is not clear) (Faouzi Senhaji, I.A.V. Hassan II (GERERE))	ACC	1	ACC (1)
SPM-238	1 F 3	A	3	11	0	12	About Figure SPM.3. What is "Annex I: 46.4% Non Annex I: 53.6%"? (Toshihiko Masui, National Institute for Environmental Studies)	See A-235, 237	1	Will be improved (1)
SPM-239	1 F 3	A	3	11	0	0	"JANZ" in Figure SPM.3 is not a commonly used term. Need clarification. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	ACC	1	Will be improved (1)
SPM-240	1 F 3	A	3	11	3	12	In figure SPM.3, do the per capita emissions given cover all greenhouse gas emissions, including those from deforestation, or are they just energy-related? Either way, the caption should make it explicit what they are. (Government of UK)	ACC; clarify caption	1	Will be improved (1)
SPM-241	1 F 3	A	3	11	3	12	SPM footnote: Per capita data can be misleading. It does not make the distinction between the emissions associated with actual per capita energy use, and the emissions associated with the energy supply service of one economy for the use of another. (Government of Environment Canada)	ACC; clarify in caption that these are “source based” data as used in UNFCCC, not consumption based	1	REJ: outside scope of Chapter 1 (1)
SPM-242	1 F 3	A	3	11	3	11	figure SPM.3, comment: this grouping suggests all annex I countries have per capita emissions higher than all non-annex I countries, which is misleading; also it does not distinguish between KP ratifyers and non-ratifiyers, which would be illustrative for the impact of policies; suggest to make the following groupings: usa/aus (annex II, non KP ratifyers), EU annex II, other annex II (jap/can/nor/nzl/ice), other annex I (EiTs: belarus/bul/croa/cze	REJ; too complicated and too sensitive. But modify wording in para 2.		Agree with TSU (1)

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							/est/hun/lat/lit/pol/rom/rus/slk/slv/turk/ukr), gulf states (s-arab/kuweit/uae/quatar/barein) and fast growing asia (thai/maleisia/sing/hk/s-korea/taiwan), latin america, china, india, other asia, africa (Government of The Netherlands)			
SPM-243	1 F 3	A	3	11	3	11	figure SPM.3, 3rd bar from the left: should "IT Annex I" read "EIT Annex I"? (Government of The Netherlands)	ACC	1	ACC: Will be checked (1)
SPM-244	1 F 3	A	3	11	3	11	Note the comment above that Fig SPM.3 should be reconstructed to encompass all the macro factors covered in second sentence of para 1. (Government of Australia)	TIA; create additional graph with E/GDP vs GDP Must be included	1	TIA, but needs more space (1)
SPM-245	1 F 3	A	3	11	0	0	Figure 3 - If this figure is included, a parallel figure showing distribution of emissions to gross production for the regions identified should also be included. Emissions/GDP provides information that is as relevant to policy makers as emissions/population. Highlighting one and not the other represents an implicit policy choice. U.S. Government (Government of U.S. Department of State)	See A-244		See SPM-244 (1)
SPM-41	1 F 3	B	3	11	3	11	Fig. SPM3: Annex I: 46.4% … Non Annex I: 53.6% : I believe it was Michael Grubb first idea to present these data with these axes (Please check with him). If that is confirmed, he should be credited in the caption. The list of GHGs included in the calculation should be given. Would it be possible to add CFCs, HFCs, O3, which are probably not included in this version ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	TIA; add which gases are included in caption; but no O3 etc.	1	Will be checked with M. Grubb REJ: O3 and Montreal gases not possible (1)
SPM-246	1 F 3	A	3	12	0	0	Re Fig SPM 3 - it would be good to have the global average line and number too. Also, given the uncertainty in emissions, the figures have completely false precision. (Paul Baer, EcoEquity)	ACC	1	Partially rejected: Uncertainty not possible (1)
SPM-42	1 F	B	3	14	3	14	Figure SPM.3: What countries are covered under the label "Centrally Planned Asia"? Proposal: name them explicitly in the	ACC; see A-230	1	ACC (1)

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	3						box (Government of Switzerland)			
SPM-247	1 F 3	A	3	15	3	0	fig SPM 3: what means JANZ, IT Annex I ? (missing in list abreviations) (Government of Belgium)	ACC, clarify	1	ACC (1)
SPM-248	1 F 3	A	3	15	0	0	Figure SPM.3. The meaning of "JANZ" and "IT Annex" is not clear in this figure. The acronyms are not reader-friendly and there are no references to this terminology elsewhere in the SPM. Additionally, the difference between "Centrally Planned Asia" and "Other Asia" is not explained. Including separate designations for major emissions emitting countries, particularly for Japan, is suggested. (Government of Japan)	ACC, clarify	1	ACC (1)
SPM-249	4	A	4	15	4	30	The main problem with using MERs rather than PPPs is with the 1990 baseline. Use of MERs underestimates the size of the economy of the developing world. With convergence assumptions this exaggerates economic growth assumptions. The authors need to be transparent about this and clearly note it in the SPM (Government of Australia)	REJ; that is not conclusion of ch 3		Agree with TSU (1)
SPM-43	1 F 3	B	3	15	3	0	Fig 3 - If this figure is included, a parallel figure showing distribution of emissions to gross production for the regions identified should also be included. Emissions/GDP provides information that is as relevant to policy makers as emissions/pop. Highlighting one and not the other represents an implicit policy choice. U.S. Government (Government of U.S. Department of State)	See A-244		See SPM-244 (1)
SPM-250	1 F 2	A	3	0	3	0	Figure SPM.2 This figure requires further explanation or simplication or deletion. The y-axis label does not apply to all bars (e.g., population; ratios of indicators). Not clear what the "X" for change is referring to... (,)	See A-26		See SPM-26 (1)
SPM-251	2	A	4	1	4	5	Not only will per capita emissions in developed countries still be higher, if the one fifth (or less) of global population accounts for 1/3 of total growth, each person in the developed countries will add nearly twice as much to their per capita emissions as will each	DISCUSS	1	REJ: Too much detail for a SPM (1) Will be

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							person in the developing countries. (e.g., if growth were 50%, and the population stayed the same (not a realistic assumption), per capita emissions in the Annex Countries would grow by 1.4tC annually, while per capita emissions in the Non-annex I countries would grow by only .7 tC annually. (Paul Baer, EcoEquity)			checked, ch 1
SPM-252	2	A	4	1	4	5	In point 2, it would be helpful to give absolute as well as relative emission increases for both developing and developed countries (with the absolute increases summing to the global increase from the 2000 emission). (Michael Raupach, CSIRO Marine and Atmospheric Research)	See A-251		Noted (1)
SPM-253	2	A	4	1	4	4	Suggest explain "higher" to mean "higher than in developing countries" as some people might think you mean higher than the pc emissions in developed countries now. (Rachel Warren, University of East Anglia)	ACC		ACC (1)
SPM-254	2	A	4	1	4	3	50~100% is a very large range compared with 1.3 in chapter 1. So this range should be corrected based on the corresponding original figures, 50~60% is reasonable. (Government of China Meteorological Administration)	TIA; reconcile with ch 1 figures	1	TIA, will be checked vs. Chapters 1 & 3 (1)
SPM-255	2	A	4	1	4	5	Textual: "Assuming THAT current policies remain unchanged, CO2 emissionS are to increase WITH 50 TO 100% by 2030 relative to 2000. TWO thirds of this increase ORIGINATES in …." (Government of European Community / European Commission)	ACC		TIA, will be checked vs. Chapters 1 & 3 (1)
SPM-256	2	A	4	1	4	15	One of the major changes compared tot TAR is the strong increase of crude oil prices and other energy prices. The 4th AR should indicate, be it tentatively, what the effect of increased oil prices could be on emissions and on the costs of emission reduction options. (Government of European Community / European Commission)	DISCUSS what can be said (in CH4?) about influence of higher oil prices on BaU and mitigation, based e.g on WEO 2006; then separate para in energy supply section and possibly a reference here	1,4,11	ACC – based on new text on price impacts on emissions in Chapter 1 (1) There will be a new section in ch1, but not necessarily in the SPM. For the report the oil

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										price change is only important if that changes the potentials. And hence ch4 would be the best place to discuss that.
SPM-257	2	A	4	1	4	15	In general, an assessment of the debate on oil scarcity (e.g. the so-called peak-oil hypothesio) would be useful, including a discussion of the interaction between oil availability/alternatives and greenhouse gas emissions. (Government of European Community / European Commission)	See A-256		See SPM-256 (1)
SPM-258	2	A	4	1	4	5	The big issue in future emission trends is the continued predominance of fossil fuels to at least 2030. The TS page 5 lines 12-15 capture this well and we feel those lines should be brought into the SPM. "Global energy use and supply- the main drivers of GHG emissions- is projected to continue to grow. In most energy use and supply projects fossils fuels will continue to provide the bulk of energy services throughout the 21st century with consequent implications for GHG emissions." (Government of Environment Canada)	See A-124		Noted (1)
SPM-259	2	A	4	1	4	5	A graph/chart showing the current and projected future distribution of GHG emissions would be useful here. (Government of Environment Canada)	TIA; add projection information to figure 1 Ch 1 will consider but unlikely to succeed	1, 3, 4	REJ: Adding future to SPM-1 Future emission scenarios important, question but which scenario, time frame, gases, etc. **More import impact of delay**

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										(1) Discuss with Ch.3 & 4
SPM-260	2	A	4	1	4	4	We suggest to add a short description of the emission projections for other GHGs than CO2 as given in Chapter 1 and 3. This would be in line with the description of past emission trends on page 1 which also covered all Kyoto GHGs and the GHGs covered by the Montreal Protocol. Suggestion: "3. Emissions of GHGs like CFCs which are also ozone depleting and are thus covered by the Montreal Protocol are assumed to further decline. On the contrary non-CO2-emissions covered by the Kyoto Protocol are assumed to increase significantly until 2050. E.g. for fluorinated gases which are partly used as substitutes for e.g. CFCs a nearly threefold increase compared to 2004 is expected." (Government of Germany)	DISCUSS; can this be done?	1	ACC – if we have a paragraph on projections (check with Lambert) (1)
SPM-44	2	B	4	1	4	5	In the case of Item A.2 of the SPM (p. 4), Chapter 1 states (p. 19) that developing countries "will notably overtake OECD" (Organization for Economic Cooperation and Development) countries "as the leading contributor to global emissions in the early 2020s," not as late as "2030" as mentioned in the SPM item. According to the latest data from EIA's International Energy Annual 2004 (preliminary data) and International Energy Outlook 2006, CO2 emissions from non-OECD countries are projected to exceed those of OECD nations in 2014. U.S. Government (Government of U.S. Department of State)	~~REJ; SPM is not saying that~~ Discuss		Concept will be picked up in the para on projections (1)
SPM-261	2	A	4	2	4	5	It is worth noting that having 20% of the world's population generate 33% of the projected increase in emissions means growing inequality in physical (tCO2eq) per-capita emissions (Iain MacGill, University of NSW)	See A-251		REJ: too much detail for SPM (1)
SPM-262	2	A	4	2	4	2	replace "Assuming" by "When" (Aviel VERBRUGGEN, University of Antwerp)	TIA; change to "if"		ACC: if (1)
SPM-263	2	A	4	2	0	0	Is this a statement about CO2 from fossil fuels, rather than CO2 as a whole (which would include deforestation)? - please clarify. (Government of UK)	ACC; to be corrected		ACC (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-264	2	A	4	2	4	2	Change the word "emission" to "missions" (Government of MALAWI)	ACC		ACC; emissions (1) Not relevant to Ch8 (8)
SPM-265	2	A	4	2	4	2	It is suggested to insert "global" before "CO2 emission" in order to add clarity (figure SPM.3 addresses regional emissions). (Government of Austria)	ACC		ACC (1) Chapter 4 text (8)
SPM-266	2	A	4	2	4	0	"Assuming current policies remain unchanged" sounds presumptive and could direct policy-making decisions (i.e. assuming policies remain unchanged, the reader could be persuaded to leave current policies as-is, creating a business-as-usual scenario). Replacing this statement with, "With current policies remaining unchanged..." or "In the even that current policies remain unchanged..." is suggested. (Government of Japan)	See A-262		ACC: If (1)
SPM-267	2	A	4	2	4	5	"Assuming current policies …". Replace "substantially higher (high confidence)" with the ratio by which these values will be higher (like two thirds or one-third). (Government of India)	DISCUSS if change in per capita emission in future (and also E/GDP) can be shown in a simple manner; if not then leave this for TS and chapter	1	Will be checked (1)
SPM-45	2	B	4	2	4	2	… unchanged, GLOBAL CO2 emissionS (Please add "global", and add "s" at the end of "emission". (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC		ACC (1)
SPM-268	2	A	4	3	0	0	It would be preferable to express these projected emission increases relative to 1990 levels, as in the Convention and Protocol, rather than relative to 2000. (Harald Winkler, University of Cape Town)	REJ; logic is: first increase from 1970 till now (historic), then projections for future		Agree with TSU (1)
SPM-269	2	A	4	4	4	5	Suggest change for clarity. End first sentence after countries and put a second sentence. Per capita emissions in developed countries will remain higher than in developing countries (Ann Gardiner, AEA Technology)	ACC		ACC (1)
SPM-	2	A	4	4	4	5	The last part of this sentence is somewhat confusing, because it	ACC		ACC

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
270							seems to compare per capita emissions in developed countries with an increase in absolute emissions in developing countries. Consider rephrasing this sentence to read "…, but average per capita emissions in developing countries will remain substantially lower than per capita emissions in developed countries." (Andy Reisinger, TSU IPCC Synthesis Report)			(1)
SPM-271	2	A	4	4	4	4	specify "substantially" e.g. "three to ten times" or "several times" (Aviel VERBRUGGEN, University of Antwerp)	See A-267		See SPM-267 (1)
SPM-272	2	A	4	4	4	5	This para repeats practice (see comments on para 1) of singling out only the per capita emission factor for attention of policy makers. In terms of a policy relevant report, there is no foundation for narrowing the focus in this way. In the same way proposed for the treatment of recent historic trends covered in para 1, the discussion of future trends in para 2 should deal with all the relevant macro factors dealt with in para 1. (Government of Australia)	ACC; add E/GDP sentence (with additional graph)	1	ACC: will be dealt with in Chapter 1 and then Chairs can decide if in SPM (1)
SPM-273	2	A	4	4	4	5	"……. will remain substantially higher..." – A range could be given by what magnitude, to highlight the large inequities. (Government of India)	See A-267		See SPM-267 (1)
SPM-274	3	A	4	8	0	0	We propose that the acronym "SRES" is explained may be in a footnote - possibly also with some explanation regarding the use of these scenarios in the rest of the SPM. (Government of Norwegian Pollution Control Authority)	ACC; glossary	Glos	ACC: glossary (1) Write SRES in full
SPM-275	2	A	4	5	4	5	Paragraph notes that two thirds of increase in emissions to 2030 will come from developing countries, but notes per capita emissions in developed countries will remain higher – should add a breakdown of percentage of total global emissions from developed and developing countries, not just per capita figures. (Government of Australia)	DISCUSS; can this be shown in simple manner in graph? Otherwise leave to TS/chapter	1	See SPM-267 (1)
SPM-276	2	A	4	5	4	5	Insert ", than in Developing Countries" to make the meaning of the last phrase of the sentence clearer. (Government of Australia)	ACC		Acc (1)
SPM-46	2	B	4	5	4	5	The concerns should be about the growth of emissions globally, not about whether some country or region has more or less emissions	REJ; distributional info is very relevant for policy makers		Agree with TSU (1)

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							per capita because of its economic status. U.S. Government (Government of U.S. Department of State)			
SPM-277	3	A	4	6	4	6	Redraft to read 'Greenhouse gas emissions ranges derived from long-term baseline…' (Government of UK)	ACC		ACC (1)
SPM-278	3	A	4	6	4	8	What does this statement actually tell us? a) The modelling community is small and nourishes its tools and baselines? b) SRES has set the standards? c) The range in SRES baselines is infinitely large, so every new baseline will fit in? See comment on whole paragraph. (Government of European Community / European Commission)	REJ; statement tells the relevant message that not much is changed compared to TAR		REJ: Agree with TSU (1)
SPM-279	3	A	4	6	4	15	This paragraph is written much too vague and defensively. What is understood by "long-term" in this context. Quantify the range. Why is the range so large? What can be said about some common denominators and key differences (contribution to global GHG emissions of sectors, countries/regions, and for instance energy supply technologies? (role of CCS, nuclear, renewables)) (Government of European Community / European Commission)	REJ; point here is to assess the SRES scenarios, not to explain them again		REJ: Paragraph on baseline (1)
SPM-280	3	A	4	6	4	15	A line on the "implications of higher oil prices of past 3 to 5 years" could be added if evidence exists in chapters (Government of India)	See A-256		TIA (1)
SPM-281	3	A	4	7	0	0	This passage addresses scenarios of greenhouse gas -- SRES – scenarios. But it does not mention impact scenarios, crucial for generating scenarios for costs. Working Group II in the FAR does include some of the potential non-linear changes in impacts that are becoming more plausible. Coral reefs, for example, could collapse in the coming decades, from bleaching, pollution, overfishing and disease. Forests in some areas – US West, in particular, are vulnerable to massive losses due to the combined factors described by Westerling et al. (2006) – earlier snowmelt, higher summer temperatures, longer season for fires and expansion of vulnerable areas in elevation. Then there is the added factor of tree deaths from pests and diseases (Burkett et al., 2005. Bark beetle infestations, for example, are affecting pines from Arizona to Alaska, also driven by	REJ; not the WG3 mandate		Requires a principal discussion where in Chapter damages will be dealt with (1)

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							warmer winters and tress weakened by recurrent droughts. The combination of climate factors and pests could produce non-linear changes in the scale of wildfires and forest losses. Burkett VR, Wilcox DA, Stottlemyer R, et al. Nonlinear dynamics in ecosystem response to climatic change: Case studies and policy implications. Ecological Complexity 2,357-394 (2005). Epstein, PR, Mills, E. (eds.). Climate Change Futures: Health, Ecological and Economic Dimensions, Center for Health and the Global Environment, Harvard medical School, Boston, MA [published with Swiss Re and the UNDP] (2005). Westerling, AL, Hidalgo, HG, Cayan, DR, Swetnam, TW. Climate change in the western United States has dramatically increased the number of large forest wild fires during the past 35 years. Science 313:940943 (2006). (Paul Epstein, Harvard)			
SPM-282	3	A	4	7	4	8	I repeat a comment on the FOD: Figure TS12 (which I recommend to move up to the SPM) does not support this statement, the range of post-TAR non-intervention CO2 emissions scenarios (incl. 5/95 percen tiles) has narrowed considerably. This does not suggest that we know more (although in line 18 of TS page 22 it is suggested for land-use emissions that experts agree more), but the statement as formulated is not correct. Reformulate, e.g. by something like: "post-TAR non-intervention GHG emissions scenarios all (or "generally"?) fall within the range of the SRES scenarios" or follow more closely the wording of the TS. (Rob Swart, MNP)	DISCUSS; problem with ch 3 is that is shows comparisons with TAR and pre-TAR, while the appropriate comparison is with SRES; so ch 3 has to change its analysis. Ch 3 will refer to SRES	3	ACC subject to checking and coordination with Chapter 3 (1) reject. Comparison made with SRES. (3)
SPM-283	3	A	4	7	4	9	This first sentence is very awkward. Maybe " The range of GHG emissions associated with a range of potential global futures (without….)" Also, need to clearly explain what the SRES are for those who don't know. (Government of Environment Canada)	See A-277		See SPM-277 (1)
SPM-284	3	A	4	8	0	0	The terms HM and HL are so subjective that they are useless. The people who are agreeing aren't specified and neither is "much" or "limited" evidence. This encourages the idea that the interpretation	DISCUSS	CG Uncertainty	Noted – see discussion CG (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							of scientific data is achieved by the voting of scientists to form a consensus. This sort of approach has proven wrong many times in the history of science. (David Jackson, McMaster University)			
SPM-285	3	A	4	8	4	19	if it would be possible to replace the HM/HL with confidence statements, at least within section A (on the past and present) there would be one terminology. (Rob Swart, MNP)	DISCUSS See Holger/Rob uncertainty group outcomes	CG Uncertainty	Noted – see discussion CG (1)
SPM-286	3	A	4	8	4	8	This comment covers 3 aspects. First: the opportunity of qualifying the authors' "confidence", "evidence", "agreement" level about particular statements in the SPM. Although the first impression is that such qualifications are fine and helpful, the second thought is "how does the reader qualify implicitly the statements in the text that got no qualification label by the authors?" It follows: qualification is fine when it is maintained all over the SPM, and the next question: is it feasible to sustain such qualifications overall?. Second: when qualification takes place, one should adopt a clear standardized convention. Some questions and suggestions (covering also footnote 1 and 2): what is the difference between HM and the statement in brackets "(high confidence)" as used on p.1 line 10 and p.4 lines 5/16/33-34? Also on p.14 line 8 and footnote 13 another type is added (LL) but with evidence and agreement in reverse order. More clarity and uniformity may mean an improvement.[PS: also chapter 2 is not fully clear about the qualification standard]. Third: the acronym-abbreviation letters choosen are perhaps not the best ones for a broad readership, because a (silent) convention accepted by many authors is the use of H=High, M=Medium, L=Low; in the SPM however M is used for Much. Is it possible to agree for the SPM on some standard, e.g. HaHe (High agreement, High evidence) for HM; HaLe (High agreement, Low evidence) for HL ; LaLe (Low agreement Low evidence) for LL (footnote 13); and analogously for all *a*e combinations with *=H,M,L. We also could include such a convention in the Abbreviations list. (Aviel VERBRUGGEN, University of Antwerp)	DISCUSS	CG Uncertainty	Noted – see discussion CG (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-287	3	A	4	8	4	0	While the explanations for the ratings [HM] and [HL] can be found in the IPCC 2005 Guidance Report and in Chapter 2, p. 29, including a definition of the terms in the SPM is suggested. Additionally, If there is a relationship between the two expressions (i.e. between agreement and confidence) then using the established standard IPCC terminology is suggested. If there is no relationship between the standard IPCC terminology and [HM]/[HL], then a brief description indicating the reason for using this terminology should be provided. (Government of Japan)	ACC; add annex on uncertainty	2	Noted – see discussion CG (1)
SPM-288	3	A	4	8	0	0	For readers not familiar with "SRES," please explain its significance. U.S. Government (Government of U.S. Department of State)	ACC, glossary		ACC (1)
SPM-47	3	B	4	8	0	0	There is no explanation of "SRES" and its significance. U.S. Government (Government of U.S. Department of State)	Identical A-288		ACC (1)
SPM-48	3	B	4	8	4	8	The reference to "high confidence, limited evidence" seems inherently contradictory, in what should be a review of the empirical literature. This new confidence-level category appears to be troubling in a document of this nature. On what basis would one have high confidence with limited evidence? Moreover, this statement is vague as to its time frame and what exactly it refers to: lower in the six years since the TAR? Does the statement refer to a linear trend? Please provide a list of the standard for these classifications and clarify their meaning and interpretation. Also, please be consistent wether those clarifications refer to "confidence" or "agreement" or "evidence". U.S. Government (Government of U.S. Department of State)	REJ; it is high AGREEMENT, limited evidence (annex would help)		Noted – see discussion CG (1)
SPM-49	3	B	4	8	4	8	Please provide a list of the standard for these classifications and clarify their meaning and interpretation. Also, please U.S. Government be consistent wether they refer to "confidence" or "agreement" or "evidence". (Government of U.S. Department of State)	See B-48		Noted – see discussion CG (1)
SPM-	3	A	4	10	4	12	The lack of impact of lower economic growth in most developing	ACC, reformulate		ACC (Bill)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
289							regions is presented as having no implications. While it may not affect global GDP or emissions much, it might well affect other drivers of baseline scenarios, such as equity of distribution and degree of regionalisation. Perhaps there is a way to rephrase this sentence to not give the impression that Africa, Latin America and the Middle East do not matter. (Harald Winkler, University of Cape Town)			(1)
SPM-290	3	A	4	10	4	10	consider inserting "overall" before "emission levels" to differentiate partial drivers from resulting overall emissions. (Andy Reisinger, TSU IPCC Synthesis Report)	ACC		ACC (Bill) (1)
SPM-291	3	A	4	10	4	10	Suggest add example of a driver that has increased to compensate for the lower population projections (Rachel Warren, University of East Anglia)	ACC		ACC (Bill) (1)
SPM-292	3	A	4	10	4	12	"Economic growth for …" Is this a key message to be reported in the SPM (including pre-TAR/TAR/post-TAR jargon)? (too defensive, don't try to satisfy the IPCC criticasters in the SPM) (Government of European Community / European Commission)	REJ; we need to assess the SRES criticism		ACC (Bill) (1). Wait for ch1 proposal
SPM-293	3	A	4	11	0	0	TAR should be spelled out the first time TAR is used. (Government of Norwegian Pollution Control Authority)	ACC; glossary		ACC (1)
SPM-294	3	A	4	13	4	13	insert "Aerosols globally have a significant nett cooling effect compared to the warming by emitted GHGs" (Government of The Netherlands)	TIA; add a few words		TIA (Bill) (1)
SPM-295	3	A	4	13	4	14	Penultimate sentence is confusing - does it mean the range between the upper bound and the lower bound have narrowed; or does it mean that for all/most scenarios these emissions are lower. (Government of Australia)	ACC reformulate		TIA (Bill) (1)
SPM-50	3	B	4	13	4	13	… precursor …: Please explain: do you mean aerosol precursors ? (a footnote would help in any case to explain "precursor". But precursor is also used for NOx and COV, precursors for O3, and I am not sure these emissions are also decreasing, as SOx does. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	~~See A 295~~ Add aerosol before precursor		TIA (Bill) (1)
SPM-51	3	B	4	13	4	15	Sentence does not seem to connect well with the ones before it. U.S. Government	TIA; last sentence to be reformulated, based on better	3	TIA (Bill) (1)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Government of U.S. Department of State)	assessment of literature by ch 3		Accept. Text to be revised. (3)
SPM-52	3	B	4	13	4	13	Explain/define "projected aerosols" and "precursor emissions" for the lay reader U.S. Government (Government of U.S. Department of State)	Glossary		Footnote (1)
SPM-53	3	B	4	13	4	13	Explain/define "projected aerosols" and "precursor emissions" for the lay reader U.S. Government (Government of U.S. Department of State)	Identical B52		Footnote (1)
SPM-296	3	A	4	14	4	15	This needs an explanation of why this assumption is important or remove sentence (Ann Gardiner, AEA Technology)	See B-51		TIA (Bill) (1)
SPM-297	3	A	4	14	4	15	This sentence does not make clear the significance of MER versus PPP estimates of GDP. It should be either removed or extended to make the implication clear. (Michael Raupach, CSIRO Marine and Atmospheric Research)	See B-51		TIA (Bill) (1)
SPM-298	3	A	4	14	4	15	what is the message for PMs of the last sentence of the §? This looks too technical for a SPM (Aviel VERBRUGGEN, University of Antwerp)	See B-51		TIA (Bill) (1)
SPM-299	3	A	4	14	4	15	"Most …" Is this a key message to be reported in the SPM? (too defensive, don't try to satisfy the IPCC criticasters in the SPM) (Government of European Community / European Commission)	See B-51		TIA (Bill)
SPM-300	3	A	4	14	4	15	MER/PPP issues are too technical for this SPM- leave it for underlying reports. (Government of Environment Canada)	See B-51		TIA (Bill)
SPM-54	3	B	4	14	4	15	Most … world regions : strange location for this sentence, which has little to do with rest of this para. Please find a better location. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See B-51		TIA (Bill) (1)
SPM-301	4	A	4	16	4	23	Very Important link made between climate change and energy policy. Somewhere in SPM, some description of "energy security" policies that could have an effect on GHG emissions (both positive and negative) , and the potential and challenges for their implementation, would be useful. (Note link to SPM Fig.7).	DISCUSS; energy security needs to get a better treatment in the chapters (4 or 11); then also to be reflected better in SPM (para 4 and 14?)	4,11	TAI (Rick) (1) See ch 4 proposal for para 14.

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							(Government of Environment Canada)			
SPM-302	4	A	4	17	4	24	The SPM's use of terms like "energy security" and sustainability are rather sloppy and not defined. For example, through out the numerous references to energy security, I can not understand if the authors of the SPM believe that heightened concern about energy security will lead to lower emissions or higher emissions of greenhouse gases. As this is supposed to be an assessment of the literature pertaining to climate change and how to address it, this is a significant omission. If countries with large coal deposits adopted large scale coal to liquids programs that would undoubtedly lead to higher emissions. Rather than throwing around terms like "energy security" please stick to what the literature tells us about how that might or might not impact mankind's ability to address climate change. (James Dooley, Battelle)	AA; add words that energy security can also be negative for emissions (coal!); see also A-301		TIA (Rick) (1)
SPM-303	4	A	4	17	4	19	replace "Policies related to climate change, energy security and supply, and sustainable development, has led to emissions lower than baseline projections in some regions, but this reduction is not large enough to significantly affact the global emissions trend" with "Climate outcomes are influenced not only by the climate specific policies, but also by the development pathways, witch are not simply the result of previous policies or decisions of governments, but are also influenced by the dispersed decisions and embedded practices at all levels of society" (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	REJ; too vague Maybe for 31/32?		TIA (Rick) (1)
SPM-304	4	A	4	17	4	23	This statement basically says that emissions in some regions may have been lower than estimated before and higher in others. Not very interesting. I propose to drop this statement. Or, if the authors are really sure that the lower numbers are due to policies and the higher numbers elsewhere can be explained because in those regions NO policies have been implemented, this latter point would	REJ; reductions are simply too small to show up in the global trend (it cannot be determined if there is a deviation from baseline, because the baseline is not defined)		TIA (Rick/Bill) – link to page p17 ff of Chapter 1 (1)

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							have to be made, e.g. by adding to the first sentence "because in many other regions where no policies have been implemented, emissions resulted to be higher than estimated before.". (Rob Swart, MNP)			
SPM-305	4	A	4	17	0	19	Add the acknowledgement that some of these policies may not yet have had enough time to result in significant effects on global emissions. (Stephen Sheppard, University of British Columbia)	ACC; reformulate		TIA (Rick/Bill) – link to page p17 ff of Chapter 1 (1)
SPM-306	4	A	4	17	4	19	Please correct the tenses and grammar in this sentence to improve clarity. I think it should read: "Policies related to climate change, energy security and supply, and sustainable development, have led to emissions lower than baseline projections in some regions, but these relative reductions have not been large enough to significantly affect the global emissions trend." (Andy Reisinger, TSU IPCC Synthesis Report)	ACC		TIA (Rick/Bill) – link to page p17 ff of Chapter 1 (1)
SPM-307	4	A	4	17	4	17	Is beautiful and tranquilizing but need references to be credible. (Juan F Llanes-Regueiro, Havana University)	No references in SPM; material is in ch 1 and 12		TIA (Rick/Bill) – link to page p17 ff of Chapter 1 (1)
SPM-308	4	A	4	17	4	20	Worth giving examples of which policies and which countries have led to savings compared with baselines? (Government of UK)	No space in SPM; make sure it is properly done in TS and ch 1 and 12	1,12,TS	TIA (Rick/Bill) (1)– link to page p17 ff of Chapter 1 (1)
SPM-309	4	A	4	17	4	18	It is suggested to delete "sustainable development" because the original sentence somewhat undervalue the importance of sustainable development. It is common sense that sustainable development is the most effective way to address climate change. (Government of China Meteorological Administration)	REJ; if it is well known to some, it is important to repeat it for others		TIA (Rick/Bill) – link to page p17 ff of Chapter 1 (1)
SPM-310	4	A	4	17	4	24	Suggest to move section 4 upwards above the current section 2: Section 1 describes historic trends, section 4 then describes deviations from baseline projections made in the past, section 2	DISCUSS; suggestion makes sense, but in light of bringing projections into figure 1 and	1,12	TIA (Rick/Bill) – link to page p17 ff of

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							then describes medium-term projections, and section 3 the long-term projections. (Government of European Community / European Commission)	deliion of section heading, para 1 and 2 may be merged.		Chapter 1 (1)
SPM-311	4	A	4	17	4	24	This paragraph contains two separate messages that have been mixed. For clarity please split paragraph: 1. Policies have led to emissions lower than baseline projections in some regions, but this reduction is not large enough to significantly affect the global emissions trend, 2. There are strong relationships between energy, climate change and sustainable development polices and decisions in thee domains are strongly intertwined. (Government of The Netherlands)	REJ; important to make clear it is climate and non-climate policies		TIA (Rick/Bill) – link to page p17 ff of Chapter 1 (1)
SPM-312	4	A	4	18	4	18	correct "has" to "have" (Government of The Netherlands)	ACC		ACC (1)
SPM-313	4	A	4	18	4	19	The authors should consider the possibility that emissions are lower than baseline projections in some regions because the economic and population growth assumptions are flawed, and discuss this possibility. (Government of Australia)	See A 304, CHECK ch 1 and 12	1,12	TIA (Rick/Bill) – link to page p17 ff of Chapter 1 (1)
SPM-314	4	A	4	18	4	18	The expression "…..emissions lower than baseline projections.…" is unclear. If this is meant to convey that the baseline projections do not include the national policies related to energy security and supply, and sustainable development, this should be made clear since CDM baselines have tended to consider these as a part of baseline and not additional such as the national energy efficiency and renewable programmes in India. (Government of India)	Rej. Do not mix with CDM discussion.	1,12	TIA (Rick/Bill) – link to page p17 ff of Chapter 1 (1)
SPM-55	4	B	4	18	4	18	development, have led to …(Please replace "has" by "have") (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC		ACC (1)
SPM-315	4	A	4	19	0	22	Para 4. The direct relationship between sink enhancement schemes and some successful GHG reduction initiatives (eg. landfill gas recovery schemes) and energy policy is not immediately clear. For this reason, lines 19-22 need to be clarified. (Government of Sweden)	TIA in reformulating to avoid misunderstanding. Text deleted.		TIA – Section needs redrafting to account for comments (1)

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SPM-316	4	A	4	19	4	23	for clarity please rephrase to: "There has been a substantial increase in formulating policies for emission reduction of GHGs and enhancement of sinks (many still to be implemented). Also the awareness of the strong relationship between energy policy and climate change mitigation has grown. Policy initiatives to address climate change within the broader sustainable development agenda have developed." (Government of The Netherlands)	REJ, see A-311, text deleted		TIA – Section needs redrafting to account for comments (1)
SPM-317	4	A	4	19	4	19	The statement: "…reduction is not large enough to significantly affect the global emissions trend." This is a contentious surmise since the reductions by national programmes (such as noted in the previous comment) are quite significant, especially if seen in the long term context of emissions saved due to avoidance of the lock-ins. (Government of India)	TIA, reformulate		TIA – Section needs redrafting to account for comments (1)
SPM-318	4	A	4	20	4	20	"…….increase in formulating…." The word "increase" is not the right word, it means quantitative – suggest "improvement". (Government of India)	REJ; we mean "more"		TIA – Section needs redrafting to account for comments (1)
SPM-319	4	A	4	21	4	21	The parenthesis ("many still need to be implemented") needs to be much more strongly emphasized. Suggestion: "While there have been substantial increases in formulation GHG emissions reduction and sink enhancement policies, in awareness of the strong relationship between energy and land use policy and climate change mitigation and in policy initiatives to address climate change within the broader sustainable development agenda, the fact remains that many of these policies have yet to be implemented with the result that greenhouse gas emissions continue to strongly grow globally." (John Drexhage, International Institute for Sustainable Development)	TIA in reformulating; suggested rewrite is too strong, tezt deleted.		TIA – Section needs redrafting to account for comments (1)
SPM-56	4	B	4	21	4	21	Substitute "most" for "many." U.S. Government (Government of U.S. Department of State)	REJ; not consistent with underlying chapters		TIA – Section needs redrafting to account for

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										comments (1)
SPM-57	4	B	4	22	4	22	… mitigation, and …(add a comma after "mitigation") (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC, text deleted		TIA – Section needs redrafting to account for comments (1)
SPM-320	4	A	4	23	4	24	"Decisions..…. intertwined'. A loose sentence could be deleted or explained more clearly. (Government of India)	TIA in reformulating, text deleted		TIA – Section needs redrafting to account for comments (1)
SPM-321	4	A	4	24	4	24	It might be worth adding at the end of the sentence: "… intertwined, making it difficult to separate the effect of explicit climate policies from the effect of broader energy and development policies on greenhouse gas emissions." (Andy Reisinger, TSU IPCC Synthesis Report)	TIA in reformulating, text deleted		TIA – Section needs redrafting to account for comments (1)
SPM-322	4	A	4	25	4	25	Please insert here a brief discussion of the likely effects of high oil prices on emission trends, for the information of policy makers. High oil prices foster energy efficiency improvements and make nuclear, renewable, but also non-conventional oil resources, and above all, coal, more profitable. Given the role the coal substitution rates they postulate in the power sector but also in the transport sector (thanks to coal to liquid technologies with very high upstream emission levels), various modelling exercises show (Cédric PHILIBERT, International Energy Agency)	REJ; not in this place, but see A-256		TIA – Section needs redrafting to account for comments (1)
SPM-323	5 heading	A	5	0	0	0	Footnote 3: Extend text in line 3 as follows: '…overshoot scenarios). Impacts from such scenarios will be greater than scenarios without overshoot, especially if the temporary excursion crosses one or more tipping points, and in general their feasibility of such scenarios depends on the future ability of the biosphere to remove carbon.' (,)	REJ; too technical		
SPM-	5	A	5	0	0	0	Note 3 in this page could be deleted	ACC; move to table		

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324	heading						(Government of Spain)			
SPM-325	5 heading	A	5	1	5	6	To be accurate, I believe that this should read, "…it is technically feasible to stabilise GHG concentrations in the atmosphere, even at levels below 450 ppmv CO2 eq, provided that…" I believe that a significant percentage of the 16 studies reviewed in this 'band' are scenarios for concentrations of less than 450 ppmv CO2eq. (Steve Sawyer, Greenpeace International)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-326	5 heading	A	5	1	0	5	This wording suggests that stabilisation below 450ppmv CO2-eq is not feasible; if so, this crucial constraint should be explicitly stated and defended here as well as in the body of the report. The wording also suggests that 450ppmv is "low": it is low only in relative terms when compared with a selected range of higher potential stabilisation levels; it is not low when compared with pre-industrial concentrations. The failure to mention lower stabilisation levels such as returning to pre-industrial levels represents an unexplained gap and potentially an artificially truncated range of policy options. (Stephen Sheppard, University of British Columbia)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-327	5 heading	A	5	1	5	4	For stabilization "as low as 450 ppm CO2-equivalent", emissions almost certainly need to peak much sooner than just "within the next few decades." (Paul Baer, EcoEquity)	TIA; heading text to be deleted, but wording to be used for merging with para 5, check with new table 1.		
SPM-328	5 heading	A	5	1	6	1	The statement that lower stabilisation requires earlier peaking of emissions is only correct if one assumes certain constraints on the stabilisation pathway. Theoretically, one could overshoot to 1000ppm and still stabilise at 400ppm equivalent a few hundred years later, eg through a widespread development of bioenergy plus CCS in the 22nd and 23rd centuries. Footnote 3 says that overshoot pathways are designed to keep global mean temperature below the eventual equilibrium level. This (subjective!) constraint on	TIA; heading text to be deleted, but wording to be used for merging with para 6 Suggestions to be taken up in TS and ch 3	TS, 3	accept. Text to be revised (3)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							stabilisation pathways may not be clear to many readers, and could easily be overlooked in this footnote. I think the text itself needs to explain more fully how overshoot pathways are defined and designed. The way overshoot scenarios are constructed should also be explained in more detail the TS in a stand-alone paragraph, and in the underlying chapter, so that readers can gain a fuller picture of the implicit risk management assumptions that are already contained in stabilisation pathways. Right now the text comes across as if there were only one logical way to stabilisation at any given level, which is not the case - it always depends on which particular impacts one would want to avoid, and what probabilities are assigned to those impacts. For example, for ice sheet melting, it might be possible to overshoot even the eventual stabilisation temperature for a limited period without triggering irreversible consequences, as long as the temperature comes down again to a lower stabilisation level. That's a question of natural science, not of mitigation pathways per se. Any text here in the WG3 report would only have to spell out that there are subjective assumptions built into the literature, WG3 does not have to assess the validity of those assumptions, because this would go beyond the WG3 mandate and expertise. The table on page 6 also does not make these subjective constraints on stabilisation very clear. (Andy Reisinger, TSU IPCC Synthesis Report)			
SPM-329	5 heading	A	5	1	5	6	"Technically feasible" is unclear. "Technical potential" is defined in TS, p.16. If "technically feasible" is the same meaning as the "technical potential" defined in TS, levels as low as 450 ppmv is no doubt to be achieved by installing large nuclear power, CCS and renewable energies, and levels below 350 ppmv can be also achieved. This sentence has no or misleading message, and therefore, should be deleted. (Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE))	TIA; heading text to be deleted, but wording to be used for merging with para 6 “technically feasible” in SPM glossary		
SPM-330	5 he	A	5	1	5	15	I quite agree with this pragraph that points out the great risk from climate change by rising above 450 ppmv CO2 eq because it is	REJ; policy prescriptive		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	ading						evaluated accurately from the viewpoint of current scientific knowledge. However I insist that you should add the sentense, that is, 'we need to mitigate GHGs emission by rising above 2 degree'. (Masatake Uezono, Citizens' Alliance for saving the Atmosphere and the Earth)			
SPM-331	5 heading	A	5	1	5	3	"technically feasible" needs to be clearly defined. Why is the specific level of 450ppmv picked up? Table SPM1 in page 6 says that 450ppm CO2-eq corresponds to 350-420 ppm CO2 level for CO2 only. The current level of CO2 concentration is 375 ppm. So how is it possible to stabilise at 450ppm CO2-eq? We may have already crossed the level or will inevitably cross it rather soon. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-332	5 heading	A	5	1	5	6	Doesn't this statement need to be qualified with an indication of the timing of the action. CO2 emissions are cummulative, so starting in 2075 isn't going to get you to your goal. I think this is misleading. The statement should say that modeling shows that action within a certain time frame makes reaching this goal technically feasible. (Katherine Casey Delhotal, Research Trinagle Institute)	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-333	5 heading	A	5	1	5	15	After 19 years of IPCC existence, a simple policy- and/ or decision maker of a vulnerable nation may ask him or herself: Beautiful text, many thousand pages report of IPCC-2007 and now: “What kind of mitigation technologies I should plan and implement in my country, or what should be planned and implemented for each nation, or for several physio-graphic, socio-economic grouped nations? I can not find easily an answer on such simple question in this IPCC-FAR-WG3-SPM. Of course simple questions are easily to be asked, but difficult to answer. So what is your answer, Bert? May I have overlooked the answer on these punctilious questions, which can easily be the case considering that the WG 3 report encompasses so many valuable pages, to be precise, more than 1350 pages? In that case I should	REJ; this is issue for section C		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							appreciate that you Bert Metz, guide me to that concerning text. You may argue that above mentioned question is not the domain of your work. I then do not agree with you, even if you have in good faith agreed with a limited, impact kind of assignment for your FAR-WG3, you should have had the freedom of exploring in a structured way the implementation and execution of no-regret measures reducing the GHG emissions. Such an structured analyses of no-regret measures for various grouped nations will hurt no body. The absence of such analyses is striking, but again, I may have overlooked that important section. I strongly advice you to take on board a structured scheme for implementation of different GHG emission reduction measures for each country, or at least for grouped nations, in cooperation with all and specifically with specific vulnerable nations. As we have done in the nineties for the coastal countries. At least an annotated outline on how to do, should be placed in the FAR and be announced for the IPCC-Fifth AR-2012. In present report you make clear how vulnerable nations can contribute to diminish their emissions. That is the least that could be done after 18 IPCC years I assume. We have done similar exercises within IPCC for the coast, starting in 1992, adopted by IPCC , according to a common methodology which we had developed (IPCC, 1992: " Vulnerability Assessments Methodology; IPPC 1994: …….). Such practical exercises can also be undertaken now as well. Having been the Technical Secretary of the IPCC-SubGroup Coastal Zone Management (1989-1994), I realise very well the constraints of working within an intergovernmental organisation, but I also realise that you in your position can make things true, meaning that you are able to guide, to direct persons, countries in a way that indeed sustainable development, climate change mitigation and adaptation will be upfront in the countries policies, through your big smile, Bert!! (Robbert Misdorp, Ministry of Transport and Public Works)			

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-334	5 heading	A	5	1	5	5	This paragraph seems to recommend a stabilization level around 450 ppmv CO2 eq.However, the literature indicate that greenhouse gas concentrations have to be stabilized in the long term at a level lower than 450 ppmv CO2 eq. (400 CO2 alone) to ensure with some certainty not to breach the 2 C threshold and cause severe impacts on biodiversity and social systems. The lower level of 400 ppmv CO2 eq. would allow for more margin of error. In addition, Table SPM1 indicates that stabilization levels as low as 375 have been considered considered. We suggest to replace the current text with the following: 'Scenario studies suggest it is technically feasible to stabilise GHG concentrations in the atmosphere, even at levels as low as around 375 ppmv CO2eq'. (Giulio Volpi, WWF International)	TIA; heading text to be deleted, but wording to be used for merging with para 5 DISCUSS if "below 450 ppm …" is justified based on available studies	3	Rejected. Text to be revised to be consistent with SPM-328. (3)
SPM-335	5 heading	A	5	1	5	6	The message of Paragraph B is potentially seriously misleading. Ammend second sentence, "For achieving such levels, policies should lead to peaking of global emissions within the next few decades, which would involve a reduction in ghg emission trends by major emitting countries that heretofore has not been experienced." (John Drexhage, International Institute for Sustainable Development)	REJ; not relevant here that such reduction have historicall not happened		
SPM-336	5 heading	A	5	1	5	15	Present text is unclear and vague, it does not give any indication of when reduction of emissions should start by and what the consequences of delays in taking action are. (Government of UK)	REJ is in table 1, ACC consequence of delay.		
SPM-337	5 heading	A	5	1	5	15	It would be helpful to quantify current levels of greenhouse gases in the atmosphere and the increase that has occurred since pre-industrail times. (Government of UK)	ACC in footnote table 1		
SPM-338	5 head	A	5	1	5	6	Extend text to read: '…implemented in association with the necessary investment'. This key point, referred to in para 6 that follows, needs to be brought out in the section heading	TIA; heading text to be deleted, but wording to be used for merging with para 6		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	ing						(Government of UK)			
SPM-339	5 heading	A	5	1	5	1	It is good to learn that it is technically feasible to stabilise GHG concentrations in the atmosphere, even at levels as low as around 450 ppmv CO2eq. However, it would be very relevant to inform the reader also whether such scenario would still be economically feasible or not. It is suggested to insert "and economically feasible from a global perspective" after "technically feasible". This is to indicate that such scenario might need imply significant changes at the regional or local scale or for some sectors. However, it is noted that there seems to be little evidence for such statement (see para 7 of SPM on page 8). A solution could be to link this statement to those CO2-levels for which such statement can be made (concentration in the range of 550 ppm) and to indicate that stabilisation at 450 seems technically feasible (and not indicating that it is also economically feasible). It might be useful to indicate also the potential of the need of overshooting because the potential of substitution of fossil fuels by biomass seems to be uncertain as indicated in para 23 on page 14 of the SPM. (Government of Austria)	REJ; economically feasible" would be a value judgement that IPCC cannot give		
SPM-340	5 heading	A	5	1	5	2	Indicate what the relevance is of the 450 ppmv CO2-eq stabilisation level for the layman (e.g. compared to pre-industrialized levels) (Government of European Community / European Commission)	ACC footnote		
SPM-341	5 heading	A	5	1	5	2	Add "in the long-term" or "by 2xxx" after "in the atmosphere". (Government of European Community / European Commission)	REJ; superfluous		
SPM-342	5 head in	A	5	1	5	6	The definition of "technically feasible" is vague. In Section B it seems that GHG concentrations in the atmosphere can be stabilized solely by mitigation technology. However, in reality, GHG mitigation is realized through both technological and non-	TIA; heading text to be deleted, but wording to be used for merging with para 6		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	g						technological measures (i.e. lifestyle changes, the 3R's, modal shifts, city planning, etc). Therefore, this sentence should be revised to "Scenario studies suggest it is feasible both in technological and non-technological manners to stabilise GHG concentrations in the atmosphere, even at levels as low as around 450 ppmv CO2-eq3, provided that a range of mitigation technologies is further developed and implemented." (Government of Japan)			
SPM-343	5 heading	A	5	1	5	6	This text about scenario studies is a very important finding in the WG III report and should be kept as a key finding in bold text. In the second sentence we propose the following change: "For achieving such levels policies should lead a decline in global emissions within the next decades." (Government of Norwegian Pollution Control Authority)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-344	5 heading	A	5	1	5	5	Here the report is discussing technical feasibility. There seems to be considerable new information about the magnitude of reductions that can be achieved with existing technologies and instruments. This section should identify what stabilization levels could be attained with existing tools in addition to the included statement on what levels would require development of something new. The International Energy Agency's Alternative future Scenarios from their WEO 2005 report and the recent June 2006 release of the seminal IEA "Energy Technology Perspectives: Strategies and Scenarios to 2050" are important references. (Government of Environment Canada)	DISCUSS; this is an issue for para 6; Para 6 to be reworded carefully.	3	Rejected. Concepts of existing technologies and instruments undefined. (3)
SPM-345	5 heading	A	5	1	5	1	Delete "scenario". So many references to scenarios it is getting confusing and not needed here. Add "still" before "technically feasible". (Government of Environment Canada)	REJ; nothing wrong with scenario studies; “still” cannot be deleted		
SPM-346	5 heading	A	5	1	5	4	450ppmv is considered a very low concentration target. What about lower ones? They are not given much consideration in the SPM. Table SPM1 class A covers a huge range of concentration levels, including some below 450. Reformulate ..'at levels as low as round	TIA; heading text to be deleted, but wording to be used for merging with para 6. REJ: is around ..is necessary.		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	g						450 ppmv'... to 'at low levels, such as 450 ppmv'. (Government of Germany)			
SPM-58	5 heading	B	5	1	5	4	This statement is likely to be misleading to a general reader. It would be technically feasible to stabilize at levels below 400 ppm, though draconian as an economic proposition. This statement should be deleted unless it is linked to statements about costs. The authors should potentially clarify the statement of B.5. The key point is that is that emissions must peak and decline to meet any long-term concentration level and that the lower the level the more quickly this peak and decline must occur. The discussion could be improved to provide greater clarity, more information, more linkage to the material in Table SPM.1, and more context within which to interpret the information (e.g., why 450 ppmv, overshoot issues). U.S. Government (Government of U.S. Department of State)	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-59	5 heading	B	5	1	5	6	The paragraph as drafted is either very misleading or totally meaningless. Once the notion of stabilizing "from above" is admitted without reference to a particular timeframe, the statement that stabilization at a particular level is technically feasible has little meaning. For example, does stabilization at 450 include going to 600, then back to 450 over several centuries? Clearly, if that is within scope, then the statement "For achieving such levels policies should lead to should lead to peaking of global emissions within the next few decades" is not valid. And it is not even clear what "such levels" refers to, since "around 450" is really one level. A more accurate statement would be as follows: "Scenario studies suggest that it is technically feasible to to stabilize CO2 concentrations in the atmosphere provided that a range of mitigation technologies is further developed and implemented. The lower the stabilization level, the higher the costs and the uncertainty. A stabilization level in the neighborhood of 450-ppmv CO2-eq is technically feasible only in an overshoot scenario where concentrations go above the stabilization level and then decline. Achieving such a stabilization level on a trajectory that would keep the global mean temperature	TIA; heading text to be deleted, but wording to be used for merging with para 5		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							below the equilibrium level corresponding to 450-ppmv CO2-eq stabliziation would require policies that lead to peaking of global emissions within the next few decades. The authors should potentially clarify the statement of B.5. The key point is that is that emissions must peak and decline to meet any long-term concentration level and that the lower the level the more quickly this peak and decline must occur. The discussion could be improved to provide greater clarity, more information, more linkage to the material in Table SPM.1, and more context within which to interpret the information (e.g., why 450 ppmv, overshoot issues). U.S. Government (Government of U.S. Department of State)			
SPM-60	5 heading	B	5	1	5	6	The authors need to clarify the statement of B.5. The key point is that is that emissions must peak and decline to meet any long-term concentration level and that the lower the level the more quickly this peak and decline must occur. The discussion could be improved to provide greater clarity, more information, more linkage to the material in Table SPM.1, and more context within which to interpret the information (e.g., why 450 ppmv, overshoot issues). U.S. Government (Government of U.S. Department of State)	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-347	5 heading	A	5	2	5	6	The data in Table SPM1 does not support the assertion that global emissions need to peak in the next couple of decades. 2080 and 2100 do not connote the next couple of decades. The authors need to be more careful in making sweeping statements like this. If the goal here is to do an unbiased survey of the literature, one needs to be clear that the peak date and therefore what actions need to take place today is highly dependent upon the stabilization level and key assumptions about climate sensitivity. If the point is simply to focus on 450 and 550 cases, then it is true that dramatic change needs to happen soon. But if that is the goal then the SPM should drop the pretense of looking at a wide range of stabilization scenarios. (James Dooley, Battelle)	TIA; heading text to be deleted, but wording to be used for merging with para 5		

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SPM-348	5 heading	A	5	2	5	6	It is not clear why only 450ppmv is presented here and it may give the wrong impression that 450ppmv CO2-eq is a globally agreed target. Need modification. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-349	5 heading	A	5	2	0	0	Either remove the words "even" and "as low as", or take out 450 for a lower figure. 450ppmv is not regarded by everyone as 'low'. (Catherine Pearce, Friends of the Earth International)	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-350	5 heading	A	5	2	5	2	replace "even at levels as low as" by "also at levels" because the present wording includes a normative flavour (Aviel VERBRUGGEN, University of Antwerp)	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-351	5 heading	A	5	2	5	4	This sentence requires further justification. There is a time lag for development and implementation of technologies. Also, there is a lock-in effect of existing technologies. Furthermore, new technologies are normally more expensive and they are normally not employed immetiately at full scale, in particular in developing countries. Therefore, it is suggested at the end of the sentence to add "Low stablization scenarios may look highly optimistic, if not unrealistic, taken into factors such as time-lag, innertia and cost involved with respect to the development and employment technologies." (Government of China Meteorological Administration)	REJ; time lags and inertia have been included in studies assessed (CHECK); costs are presented separately Para to be reworded, see also A-344.	3	Noted. Text to be revised in accordance with comment SPM-328 (3)
SPM-352	5 heading	A	5	2	0	0	To facilitate reading, a footnote about the level on pre-industrial GHG concentrations may be helpful. A similar reference to WGII about stabilisation levels and impacts may also be considered. (Government of Norwegian Pollution Control Authority)	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-353	5 head	A	5	2	5	3	The authors should explain when stabilisation occurs for these levels. It should also be explained what this means in this in terms of global ghg CO2-e emission levels, (i.e Pg of global CO2-e	TIA; heading text to be deleted, but wording to be used for merging with para 5		

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	ing						emissions). (Government of Australia)			
SPM-354	heading	A	5	2	5	2	Need a justification of why stabilisation rate of 450ppmv is used. Are other scenarios considered? (Government of Australia)	TIA; heading text to be deleted, but wording to be used for merging with para 6. In table?		
SPM-355	heading	A	5	2	5	2	replace "as low as around" with "around or below" since a number of scenarios assessed in ch. 3 show stabilisation lower than 450 ppm eq. (Government of Germany)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-61	heading	B	5	2	5	2	… as low as … : This is very subjective ! It gives the impression that 450 ppmv CO2-eq is the lowest stabilization level one could dream of. May I remind you that the SRES scenarios were designed with a "no climate policy" mandate, which means that many people erroneously think SRES B1 or B2 are the lowest imaginable scenarios. I suggest to say simply "even at levels around 450…". Please amend Note 3 accordingly. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-356	heading	A	5	3	5	3	replace "a range of" by "many" or "an important number" (Aviel VERBRUGGEN, University of Antwerp)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-62	heading	B	5	3	5	3	… provided that a range of mitigaton technologies is developed … : does it mean it is not possible at all with existing technologies ? Mixing "further development" and "further implementation" in the same sentence might give the wrong message to policy-makers that a lot of technical development is needed to obtain this "technical feasibility", when what is mostly needed is probably implementation of the already existing techniques. In addition, this paragraph starts with "It is technically feasible to ...", which echoes	TIA; heading text to be deleted, but wording to be used for merging with para 6		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							the notion of "Technical potential". This expression is defined in the Glossary in reference to technologies that have "already been demonstrated", which contradicts the clause "provided that a range of mitigation technologies is further developed". Please clarify. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))			
SPM-63	5 heading	B	5	3	5	6	Strike clause “provided a range of….implimented” or alternatively include a more detailed discussion of cost. U.S. Government. (Government of U.S. Department of State)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-64	5 heading	B	5	3	5	6	Delete reference to “uncertainty” on line 6. U.S. Government (Government of U.S. Department of State)	TIA; heading text to be deleted, but wording to be used for merging with para 7		
SPM-357	5 heading	A	5	4	5	5	This sentence should refer to peaking and subsequent dropping of emissiosn, not only peaking. (Harald Winkler, University of Cape Town)	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-358	5 heading	A	5	4	5	4	Add after "implemented", "by enhancing policies and measusres, associated with proper demand control." Reason:Thoughout this WGIII Report, it is well recognized that techonological solution only is not at all the panacea but needs strong policy to implement. And many scenarios indroduced here such as SRES-B1clearly show some kind of social system change is far more effective than the techno-fixed society. SPM should be more careful not to over enphasize the techno fix solutions. (Shuzo Nishioka, National Institute for Environmental Studies)	REJ; too detailed		
SPM-359	5 head in	A	5	4	0	0	suggest to add to "implemented", "and also that a change in consumption patterns occurs." (Faouzi Senhaji, I.A.V. Hassan II (GERERE))	REJ; not needed		

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	g									
SPM-360	5 heading	A	5	4	5	4	replace "such levels" by "around 450 ppmv CO2-eq levels" (Aviel VERBRUGGEN, University of Antwerp)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-361	5 heading	A	5	4	5	4	replace "lead to peaking" by "strive for passing the peak" (Aviel VERBRUGGEN, University of Antwerp)	TIA; heading text to be deleted, but wording to be used for merging with para 5		
SPM-362	5 heading	A	5	4	5	4	Insert comma after "levels" (Government of MALAWI)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-363	5 heading	A	5	4	5	5	This sentence is awkward and unclear. Proposed rewording:"To achieve such levels, policies should result in a peaking of global emissions within the next few decades." (Government of Environment Canada)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-364	5 heading	A	5	4	5	5	"For achieving ……few decades". It is suggested to add after this as follows...."However, given the very high inertia of the energy system (Ref. point no. 6, page 7 of the SPM), the long timeframe for the R&D investments to yield results, the high social and institutional inertia causing the time lags between the policy formulation and implementation and the uncertainty in the estimates of climate sensitivity; the investments in the initiatives for achieving the peaking of global emissions should start immediately if the overall costs and risks from the climate change is to be minimized." (Government of India)	TIA; heading text to be deleted, but wording to be used for merging with para 6/7		
SPM-65	5 he	B	5	4	5	4	To what does "such levels" refer? 450 ppm? The text should be clearer about the relationship between stabilization pathways and	TIA; heading text to be deleted, but wording to be used for		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	ading						concentration levels. The authors should potentially clarify the statement of B.5. The key point is that is that emissions must peak and decline to meet any long-term concentration level and that the lower the level the more quickly this peak and decline must occur. The discussion could be improved to provide greater clarity, more information, more linkage to the material in Table SPM.1, and more context within which to interpret the information (e.g., why 450 ppmv, overshoot issues). U.S. Government (Government of U.S. Department of State)	merging with para 6		
SPM-66	5 heading	B	5	4	5	5	Clarify. Sentence is unclear. "For achieving … should lead to peaking" is awkward/confusing. U.S. Government (Government of U.S. Department of State)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-67	5 heading	B	5	4	5	5	Clarify. Sentence is unclear. "For achieving … should lead to peaking" is awkward/confusing. U.S. Government (Government of U.S. Department of State)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-68	5 heading	B	5	4	0	0	"…implemented…When? Timeframe?" The authors should potentially clarify the statement of B.5. The key point is that is that emissions must peak and decline to meet any long-term concentration level and that the lower the level the more quickly this peak and decline must occur. The discussion could be improved to provide greater clarity, more information, more linkage to the material in Table SPM.1, and more context within which to interpret the information (e.g., why 450 ppmv, overshoot issues). U.S. Government (Government of U.S. Department of State)	TIA; heading text to be deleted, but wording to be used for merging with para 6		
SPM-365	5 heading	A	5	5	0	6	specify what uncertainty is meant here: uncertainty about the costs, uncertainty about the likelyhood to reach the stabilisation level (Ronald Hutjes, Alterra)	TIA; heading text to be deleted, but wording to be considered for para 7		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-366	5 heading	A	5	5	5	6	The last sentence of the paragraph misleads the actual situation because there is some literature that afirms so, but other authors assure that the ancillary benefits obtained when lower levels are met, could outweigh the "overcosts" of doing so. I think that IPCC must offer more balanced views. If in fact, humankind surviving is challenged, avoiding that risk would be cost-effective, no matter how much it would be the cost. But besides, developed countries could balance their responsibility to the "original accummulation of GHG", paying now those overcosts in order to attain lower stabilisation levels and help preserving society. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-367	5 heading	A	5	5	0	6	The reference to costs and uncertainty needs to be substantially modified to make it clear that these are short-term costs/uncertainties due to mitigation measures and that they must be offset against the potentially much larger costs, impacts, and uncertainties of higher levels of climate change. As it stands, this brief sentence could be very misleading to policy-makers. (Stephen Sheppard, University of British Columbia)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-368	5 heading	A	5	5	5	6	I assume this means "uncertainty in costs", but that should probably be specified (Paul Baer, EcoEquity)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-369	5 heading	A	5	5	5	6	This sentence might be confusing. Please make clear that only "abatement costs" are considered. The message about uncertainty is even less clear. Presumably, it was intentded to mean "uncertainty about abatement costs". However, the following paragraph 5 only mentions uncertainty in the estimates of climate sensitivity. It seems thus unappropriate to speak about cost uncertainty in the higher-level text B. (Cédric PHILIBERT, International Energy Agency)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-370	5 he	A	5	5	5	6	This phrase is misleading, and suggests with lower stabilisation level the less certainty which is not the case.	TIA; heading text to be deleted, but wording to be considered for		

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	ading						(Catherine Pearce, Friends of the Earth International)	para 7		
SPM-371	5 heading	A	5	5	5	6	"the lower the stabilization level….." Is the sentence needed? Why, What's the contribution to the paragraph? P? References? (Juan F Llanes-Regueiro, Havana University)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-372	5 heading	A	5	5	5	6	This looks a strange statement; the whole meaning of IPCC is in trying to bring costs and uncertainties down by urging policy makers to act in due time. Here it seems we argue the reverse. At least replace "the costs and the uncertainty" by "the nearby costs and uncertainties", but a fuller reconsideration of this short statement is recommended. It also seems to conflict with the statement on line 12-14 in the following § (Aviel VERBRUGGEN, University of Antwerp)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-373	5 heading	A	5	5	5	5	The text "The lower the stabilisation level, the higher the costs and uncertainty." is unclear. Does the uncertainties refer to the costs, the emission level or the feasibility? Please clarify. (Government of Finland)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-374	5 heading	A	5	5	5	6	Which costs are higher? Does this statement refer only to costs of developing and implementing mitigation technologies at the required pace to reach a specific reduction target or does it balance these costs against expected abatement cost related to climate change impacts, which will probably increase with higher stabilization levels. (Government of Germany)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-375	5 heading	A	5	5	5	6	Uncertainty about what? Uncertainty about which level of CO2 will reach which temperature levels or uncertainty about the effectiveness of the policies or uncertainty about whether the investments made will really reach the desired stabilitzation level? (Government of Germany)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-	5	A	5	5	5	6	Costs in the sentence refers to mitigation costs only. Thus, should	TIA; heading text to be deleted,		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
376	heading						say '... The higher the mitigation costs...'. However, avoided damages are higher with lower stabilisation levels. This needs to be mentioned here to give a balanced picture. (Government of Germany)	but wording to be considered for para 7		
SPM-69	5 heading	B	5	5	5	10	The costs should also depend on when the stabilization target is to be met., i.e. the timing, as well as whether overshoot is postulated/allowed. U.S. Government (Government of U.S. Department of State)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-377	5 heading	A	5	6	0	0	Specify which costs and which uncertainty are meant: costs of policy measures; uncertainty about costs (Michael Kohlhaas, German Institute for Economic Research)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-378	5 heading	A	5	6	0	0	This is mitigation costs and the uncertainty in these costs (Iain MacGill, University of NSW)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-379	5 heading	A	5	6	0	0	uncertainty about what? Costs? Timely availability of technology? The carbon cycle? (Rob Swart, MNP)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-380	5 heading	A	5	6	5	6	The increase of oil and gas prices due to production shortage (resulting from the proximity of "peak oil" or from other political or technico-economic factors, such as lack in investments) may also help to achieve the goal of mitigation. (VARET jacques, French Geological Survey)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-381	5 heading	A	5	6	5	6	It is not clear what is meant by the last phrase "… and the uncertainty". Uncertainty of what? Perhaps rephrase: "The lower the stabilisation level, the higher the cost of achieving it and the greater the uncertainty in costs and socio-economic feasibility". The authors should reconfirm that there is no significant uncertainty	TIA; heading text to be deleted, but wording to be considered for para 7		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							about technological feasibility of all the stabilisation scenarios (check statement on page 7 line 8-11). Otherwise "technical feasibility" would also need to be added to this statement. (Andy Reisinger, TSU IPCC Synthesis Report)			
SPM-382	5 heading	A	5	6	0	0	What kind of "uncertainty" means here? Policy or reduction? (Toshihiko Masui, National Institute for Environmental Studies)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-383	5 heading	A	5	6	5	6	"the higher the costs and the lower the uncertainty" …. Replace with "costs of mitigation and the higher the uncertainty in …." ..uncertainty in what? Suggest add also "and the lower the adaptation costs and/or residual damages" (Rachel Warren, University of East Anglia)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-384	5 heading	A	5	6	5	6	It is not clear from the next to what uncertainty relates. Is it to costs? If so, the follwoing wording might help: "the higher the costs and their uncertainty". (Government of Austria)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-385	5 heading	A	5	6	5	6	Uncertainty of what? (Government of European Community / European Commission)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-386	5 heading	A	5	6	5	6	Define Uncertainty: uncertainty of these cost? (Government of European Community / European Commission)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-387	5 heading	A	5	6	0	0	Adding some words at the end of the sentence “The lower the stabilisation level, the higher the costs and the uncertainty” regarding what uncertainties are referred to would make the message clearer. (Government of Sweden)	TIA; heading text to be deleted, but wording to be considered for para 7		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-388	5 heading	A	5	6	5	6	What uncertainity is referred to? Uncertainty around climate sensitivity is the same regardless of stabilization level. Uncertainty in the probabilty that a certain stabilization level will result in staying below a certain temperature increase is actually LESS for lower stabilization levels. Need clarification. (Government of Environment Canada)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-389	5	A	5	6	5	9	replace "start declining" by "stop growing", delete "and to be strongly reduced thereafter", after "... peaking of emissions" add "and/or strong emission reductions thereafter" (Government of The Netherlands)			
SPM-390	5 heading	A	5	6	5	6	The authors should explain what the "uncertainty" relates to. (Government of Australia)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-391	5 heading	A	5	6	5	6	delete "and the uncertainty". While uncertainty of lower stabilisation scenarios with regard to feasibility might be increasing, other scenarios with higher stabilisation levels have higher uncertainties with regard to climate risks and possible need for very drastic reductions in emissions due to unexpected climate change from higher ghg-concentrations. Pointing to only one part of uncertainties for lower stabilisation levels seems thus an unbalanced representation of evidence. (Government of Germany)	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-70	5 heading	B	5	6	5	6	… , the higher the costs OF MITIGATION and the uncertainty: Please add "of mitigation" to clarify. In addition, it would be useful to add as well : "and the lower the costs of impacts" at the end of the sentence. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	TIA; heading text to be deleted, but wording to be considered for para 7		
SPM-71	5 head in	B	5	6	5	6	"The use of uncertainty at the end of the sentence is unclear. Uncertainty of what? Recommend 'uncertainty of achieving the intended stabilization goal.'" The authors should potentially clarify the statement of B.5. The key point is that is that emissions must	TIA; heading text to be deleted, but wording to be considered for para 7		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	g						peak and decline to meet any long-term concentration level and that the lower the level the more quickly this peak and decline must occur. The discussion could be improved to provide greater clarity, more information, more linkage to the material in Table SPM.1, and more context within which to interpret the information (e.g., why 450 ppmv, overshoot issues). U.S. Government (Government of U.S. Department of State)			
SPM-392	5	A	5	7	5	9	We suggest to include the following sentence to further develop the issue of urgency: 'To ensure stabilization of emissions around 400 to 450 ppm CO2eq global emission levels will have to peak around 2015. Thereafter, emissions will have to decline substantially'. (,)	TIA when merging heading text with para 5		
SPM-393	5	A	5	7	5	7	That paragraph should state "Global emissions need to start declining as soon as possible and to be strongly reduced thereafter" instead of the current ["Global emissions need to start declining at some time in the future…"] the reason for that change is very simple: it has to do with the fact that the longer we wait to reduce emissions the higher the impacts; therefore, the summary and related chapters need to provide clear direction from the data at hand instead of providing a weak and misleading statement (Jose Etcheverry, David Suzuki Foundation)	TIA; suggested text policy prescriptive, but first sentence can be reordered and second sentence can focus on low level stabilization; consider in context of merging heading with para 5		
SPM-394	5	A	5	7	5	15	The paragraph lacks two critical compenents: clarity ("sometime in the future"? When in the future is the critical quesiton. And misleading information - while peaking dates may be later than indicated in the TAR, this statement should be made in the context of making it clear that this does not mean delay in taking actions now, regardless of the peaking date. In other words, a statement addressing the issue of stock turnover and mitigiation is critical to get a complete picture of the message being relayed here. (John Drexhage, International Institute for Sustainable Development)	TIA when merging heading text with para 5		
SPM-395	5	A	5	7	5	8	at some time in the future': very vague (Government of Belgium)	TIA when merging heading text with para 5		
SPM-	5	A	5	7	0	0	Paragraph 5: ”Some time in the future” is too vague and doesn’t	TIA when merging heading text		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
396							really say anything – there is a need to be more precise. It is suggested to give an exact number (5,10,20…) or express a range. (Government of Sweden)	with para 5		
SPM-397	5	A	5	7	5	0	With regard to "Global emissions need to start declining at some time in the future", "some time in the future" is too broad a statement and lacks any sense of urgency. While it is understood that it is difficult to pinpoint a specific time frame, revising this statement to make it less ambiguous is suggested. (Government of Japan)	TIA when merging heading text with para 5		
SPM-398	5	A	5	7	5	7	"...at some time in the future" is not very specific and thus not especially helpful to decision makers. (Government of Environment Canada)	TIA when merging heading text with para 5		
SPM-399	5	A	5	7	5	15	The message in this paragraph needs to be drawn out or summarised more clearly (e.g. does this mean that relative to TAR, emissions peak can occur later, however, that the mitigation level must be greater to achieve stabilisation?). (Government of Australia)	TIA when merging heading text with para 5		
SPM-400	5	A	5	7	5	15	"Global emission need to start declining at some ……. ". A very general statement. (a) Whole of para- 5; is full of general statements, could be deleted, or (b) Page – 5 could be used to describe the valuable information given in Table SPM-1. (Government of India)	TIA when merging heading text with para 5		
SPM-401	5	A	5	8	5	8	The presentation by saying .."at some time in future" is too vague for policy makers. Time line needs to be mentioned and if nit availble at all in the literature then needs to be mentioned. (Joyashree Roy, Jadavpur University)	TIA when merging heading text with para 5		
SPM-402	5	A	5	9	5	12	Peak later? Studies may show that peaking can be later, but together with new estimates of likely ranges of climate sensitivity, is the message not 'peak eaerlier'? (Harald Winkler, University of Cape Town)	TIA when merging heading text with para 5		
SPM-403	5	A	5	9	5	11	add explicitly that the later peaking is due to the inclusion of non-CO2 abatement measures (the words multi-gas reduction strategies are insufficient to understand that this is the main reason) and faster CO2 emissions reductions due to new technologies such as	TIA when merging heading text with para 5. Text dropped because of confusion.		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							biological CCS, NOT to new understanding of the C-cycle. This would avoid a possibly perceived conflict with the last sentence about the need for more stringent mitigation. (Rob Swart, MNP)			
SPM-404	5	A	5	9	5	11	The sentence about later peaking of CO2 is somewhat misleading, because it neglects to emphasise that this is because if you have more gases to play with, and hence the peaking of any single gas can be delayed to achieve the same overall outcome (whereas the TAR stabilisation scenarios only ever considered stabilisation of CO2 only). Suggested rephrase: "Recent studies since the TAR, using multi-gas reduction strategies, show that peaking dates for CO2, for a given stabilisation level, can be later if several gases are considered than if stabilisation has to be achieved by reductions of CO2 only." (Andy Reisinger, TSU IPCC Synthesis Report)	TIA when merging heading text with para 5. Text dropped because of confusion.		
SPM-405	5	A	5	9	5	9	replace "peaking" by "passing the peak" (Aviel VERBRUGGEN, University of Antwerp)	REJ; bad English		
SPM-406	5	A	5	9	5	9	earlier': very vague (Government of Belgium)	TIA when merging heading text with para 5		
SPM-407	5	A	5	9	5	15	In this text we would prefer the term start "to decline" rather than "peaking dates". The comparison with the results from TAR could be better explained. Is it possible to say something more qantitative e.g. for an example with 450 ppm?.erpk aagenerally looks rather wage, and appears more like a general introduction to Table SPM-1. Since the table contains much interesting information, we propose that some key messages that can be deducted from table SPM 1 or the main report are presented in the text. (Government of Norwegian Pollution Control Authority)	TIA when merging heading text with para 5		
SPM-408	5	A	5	10	5	11	For "…a given stabilisation level, can be later than indicated in the TAR." Is it possible to quantify how much later? (Government of Environment Canada)	TIA when merging heading text with para 5. Text dropped because of confusion.		
SPM-409	5	A	5	10	5	11	But what does a later peak imply for rate of reductions needed thereafter? Clarify. (Government of Environment Canada)	REJ; info is in table 1		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-72	5	B	5	10	5	11	This statement that "the CO2 peaking can be later than the TAR said" should be put into perspective. As it is expressed, it is wrong, because the TAR only considered CO2 stabilization, and not multigas scenarios. Therefore please add "CO2-eq" between "given" and "stabilization" in line after "TAR": ", because the TAR considered CO2 alone". Otherwise, you give the misleading message that recent knowledge in the carbon cycle allows one to be more relaxed about the fate of CO2, which is plainly wrong. Please also add "However," before "Uncertainty…" and rearrange the rest of paragraph so that the "peaking can be later" message is well put into perspective. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	TIA when merging heading text with para 5. Text dropped because of confusion.		
SPM-73	5	B	5	10	0	0	Rephrase. The authors should potentially clarify the statement of B.5. The key point is that is that emissions must peak and decline to meet any long-term concentration level and that the lower the level the more quickly this peak and decline must occur. The discussion could be improved to provide greater clarity, more information, more linkage to the material in Table SPM.1, and more context within which to interpret the information (e.g., why 450 ppmv, overshoot issues). U.S. Government (Government of U.S. Department of State)	TIA when merging heading text with para 5		
SPM-410	5	A	5	11	5	15	Start new paragraph at the word "Uncertainty" since this is introducing a new subject (first message in paragraph deals with emission paths in order to achieve stabilisation and second message is about undertainty in estimating temperature increase for various stabilisation levels). (Government of The Netherlands)	REJ; this is all about messages from table 1		
SPM-74	5	B	5	11	5	15	Please refer to specific elements of WG1 from which this statement is derived. U.S. Government (Government of U.S. Department of State)	ACC		
SPM-411	5	A	5	12	5	12	The range of probability estimates applies not only at stabilisation, but also in the transient climate response (and probably more reliably so because uncertainties are better constrained). You might	REJ: too comples, because this information is not in the table..		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							wish to rephrase this sentence to read: "Uncertainty in climate sensitivity leads to a range of probabilities for global mean warming in 2100 and at equilibrium for any given stabilisation level." In square brackets, you might wish to explicitly reference the WG1 SPM, which contains information both about transient warming probabilities as well as climate sensitivity. (Andy Reisinger, TSU IPCC Synthesis Report)			
SPM-412	5	A	5	12	5	14	Does the statement "the latest insights …" mean that the Table SPM1 does not reflect these latest insights or that it does? Or are they two independent assessments? Need to be clear whether Table SPM1 includes uncertainty in the C cycle feedback and if not what is assumed about this - suggest add footnote to Table SPM1 to explain this e.g. may be that unc in C cycle feedback may mean that figures e.g. last column of Table SPM1 may be optimistic case with no C cycle feedback? Which columns of Table SPM1 would be affected by the onset of strong C cycle feedback? In words as well as "more stringent mitigation ...than in TAR" do we also mean "more stringent mitigation than in Table SPM1"? And Table SPM1 is itself more stringent than the TAR? (Rachel Warren, University of East Anglia)	DISCUSS; Some models iuse climate feedbacks, other do not. Ch 3 to reformulate sentence.	3	Noted. Section being revised (3) Add footnote?
SPM-413	5	A	5	12	5	15	Sentence unclear. Does it mean more stringent long-term mitigation compared to what was concluded in TAR? May need to be rephrased. (Government of Germany)	See A-414		
SPM-414	5	A	5	14	5	14	It is a bit of a stretch to refer to "given climate risks relative to the TAR", since it sounds as if those risks had been clearly identified and quantified in the TAR. It would be more robust and defensible here to stick to concentrations and global mean temperature as a measure for climate change, and say "... more stringent mitigation to achieve any given stabilisation target, or to limit global mean warming to any given level." (Andy Reisinger, TSU IPCC Synthesis Report)	ACC the latter suggestion (“global mean temperature increase”)		
SPM-415	5	A	5	14	5	14	Add "is necessary" following "mitigation". (Government of Environment Canada)	TIA when merging heading text with para 5		

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SPM-416	5	A	5	0	0	0	Section B discusses potentials, but not barriers to implementing and applying existing technologies and policy instruments is not well discussed in the SPM. (Government of Environment Canada)	REJ; section B (LT) does not lend itself to meaningful discussions on implementation barriers		
SPM-417	5	A	5	0	6	0	For a discussion on mitigation options unclear why there is a section on projected temperature increases at different stabilisation levels – this should be dealt with in other sections – perhaps “The Scientific Basis” (Government of Australia)	REJ; “mitigation in the light of avoided damages” is in the approved outline for the WG3 report; then this information is relevant and necessary		
SPM-75	5heading	B	5	0	5	0	Note 3: "such LOW levels": this is very subjective: 450 ppm CO2-eq is more than 150 ppmv above the pre-industrial value (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; avoid the word “low”; footnote to be moved to table 1		
SPM-418	5 T 1	A	6	0	6	0	Table SPM.1: To avoid dangerous climate change, a good point of departure is the 2 degree target which certainly in Europe at least is taken quite seriously. The question then reduces to what GHG stabilization levels are necessary to achieve this. It would seem to me that the Class A in the table is much too broad, including both stabilization levels “unlikely” to “ very likely“ to reach the 2 degree target. Can it not be split up into two, with one class for the levels in the “likely+” (which would be the aim of policymakers) and one for the rest? Second point: include reference to probabilities of staying below 1.5 degrees warming, if available. While a majority (in Europe) now supports a 2 degree target, there is growing concern that even that may not be sufficient to avoid dangerous climate change and a 1.5 degree target will be more ‘safe’. (Donald Pols, Friends of the Earth Netherlands/Milieudefensie)	DISCUSS; see also A-445 that discusses to use table TS-6; problem is that this adds information to an already overloaded table; maybe use the colour coding of table TS6 in SPM table 1 Will depend on redoing the calculation in line with WGI material.	3	Noted. Table being revised to deal with categories issue. (3)
SPM-419	5 T 1	A	6	0	6	0	Table SPM1 should include a column with the likely impacts on ecosystems and human communities so that the different emission stabilization levels are linked to potential environmental and socio-economic impacts. See paper by Hare and Meinshausen, 2005 (Giulio Volpi, WWF International)	REJ. such a table is present in section 3.5; problem is that table is already overloaded ; table would have to be split, which would be too much.	3	Rejected. Issue for WGII. (3)
SPM-420	5 T	A	6	0	6	0	Table SPM 1: please find a suggestion of another editing of the table in a separate wordfile "AV Proposal SPM Table 1.doc"	UNCLEAR		

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	1						(Aviel VERBRUGGEN, University of Antwerp)			
SPM-421	5 T 1	A	6	0	6	0	Table SPM.1:(1) column7, row 1, the "best" should be changed to "most".reason: there are large uncertainties in the future projection by climate models, therefore the ensemble result should be used instead of some unique result called "best";(2) column7, the range of temperature at different CO2 stabilisation levels should be some ranges with crossed parts among them based on series climate models, so please check and correct them;(3) delete column 8 and column 9.Because according to column 7, one can easily get conclusions. (Government of China Meteorological Administration)	(1) REJ: “best guess”is a WG I term (2) CHECK chapter 3 (3) REJ; given manyn references inliteraure to 2 degrees it is useful to mpresent the material this way; see also A-446	3	Noted. Table being revised in cooperation with WGI. (3)
SPM-422	5 T 1	A	6	0	0	0	Table SPM1: It is proposed to indicate (in another footnote?) that stabilisation at lower concentrations assumes some overshooting of CO2 concentrations and deployment of technologies that allow to reduce atmospheric CO2 concentrations at a later stage (e.g. BECCS). (Government of Austria)	ACC; footnote to be improved		
SPM-423	5 T 1	A	6	0	0	0	Table SPM1: It is proposed to add a comma between 2 and 3 and 4 and 5 in order to link to the correct footnotes. (Government of Austria)	ACC		
SPM-424	5 T 1	A	6	0	6	0	Please add a figure with emission corridors to make this complex table more comprehensible. This table has the answer to one of the most policy relevant message of the AR4: When and at what level have global emissions to peak and decline to stabilize the climate at a certain level? This should be underlined with an easy understandable figure. (Government of European Community / European Commission)	DISCUSS; can such a figure be simple enough to be readable?	3	Noted, See comment SPM-421. (3)
SPM-425	5 T 1	A	6	0	6	0	One aspect is missing here to cover the full cause effect chain: temperature <- concentrations <- global emissions <- regional emissions (missing). Chapter 13 has some values on the regional emission levels necessary to meet the stabilization goals. This could be included here. (Government of European Community / European Commission)	REJ; regional numbers depend on so many assumptions that it would be impossible to present it in a table		
SPM-	5	A	6	0	6	0	Table SPM1: Some information could be easily presented with a	See A-424 and A-421		

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426	T 1						chart e.g., global mean temperature increase above pre-industrial vs. multigas concentration stabilisation level. The two columns, probability of staying below 2 (and 3) degrees C above pre-industrial at equilibrium, do not provide any additional value and are very confusing. Related footnotes (2,3,4,5, and 7) are too short for professionals and are too complicated for policy makers. It may be useful to discuss what is the correct temperature for the planet. (Government of Environment Canada)	ACC expanding footnotes		
SPM-427	5 T 1	A	6	0	6	0	Table SPM1. For Class E, "Peaking level for CO2 emissions", the end year of 2090 seems out of place (ie should be later) compared with the end year for the other classes. (Government of Environment Canada)	DISCUSS; this should reflect the literature assessed		
SPM-428	5 T 1	A	6	0	0	0	table SPM.1, suggest to invert rows 2-6 and change classes to be coherent with the proposed changes in figure SPM.5 (Government of The Netherlands)	UNCLEAR		
SPM-429	5 T 1	A	6	0	0	0	table SPM.1, columns 2 and 3, rows 2 and 6: it is unclear why the top respectively bottom radiative forcings are given for a stabilisation range, where a radiative forcing range is given for the other stabilisation ranges in rows 3-5; this seems to be inconsistent with table TS.4 (Government of The Netherlands)	DISCUSS; W/m2 column to be dropped (to simplify); ranges should reflect literature (see also A-427) See A-418	3	Noted. See comment SPM-421. (3)
SPM-430	5 T 1	A	6	0	0	0	table SPM.1, column 8, rows 6: shouldn't this read "exeptionally unlikely"; collumn 10, rows 5 and 6: it seems not logic that peaking for 930 ppme would need to occur before 2090, while peaking for 785 ppme could be postponed untill 2100 (Government of The Netherlands)	DISCUSS; this is caused by the literature; chapter 3 to consider if more selective use of studies is justified to get a more meaningful result	3	Noted. See comment SPM-421. (3)
SPM-431	5 T 1	A	6	0	6	0	Table SPM 1, column 9. The descriptions are unclear, please clarify. E.g. what is the meaning of "Likely to as likely as not", or of "About as likely as not to unlikely". (Government of Finland)	REJ; this is standard IPCC terminology; uncertainty annes to be added		
SPM-432	5 T 1	A	6	0	0	0	Table SPM 1: It should be made clear here and throughout the SPM whether the multigas stabilisation scenarios as well as the anthropogenic addition to radiative forcing include only long lived / well mixed GHG (as covered by the Kyoto Protocol) or if short	ACC		

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							lived substances such as aerosols are included. (Government of Germany)			
SPM-433	5 T 1	A	6	0	0	0	Table SPM 1: in Column 10 (peaking year for CO2 emissions) it should read "2000-2030" for Category A Scenarios as described in CH. 3, page 54, line 16 (Government of Germany)	CHECK	3	Noted. See comment SPM-421. (3)
SPM-434	5 T 1	A	6	0	0	0	Table SPM 1: For policymakers, category A is too broad as it includes scenarios ranging from "very likely to unlikely" to stay below 2 C (see column 8 and FN 7). It is suggested to split this category into a new Cat A, that includes scenarios at least likely to stay below 2 C. The remaining scenarios should form a new Category B. The former categories B to E should become new categories C to F accordingly. The number of scenarios in this category (16 scenarios, see column 6) seems sufficient to allow for a split. (Government of Germany)	DISCUSS; try to subdivide category A Will be done by Ch 3	3	Noted. See comment SPM-421. (3)
SPM-435	5 T 1	A	6	0	0	0	Table SPM 1: Class A covers a huge range of concentration levels which dillutes any insights that can be gained from it with respect to probability of staying below 2 C or change in global emissions in 2050. Should be split into at least two subcategories with 450 as breaking point. What about stabilisation levels below 375 ppmv CO2-eq. They should be added as well Class 0. Add reference to Table 3.12 p. 109 (Government of Germany)	See A-434		
SPM-436	5 T 1	A	6	1	0	0	Table SPM 1: In an overall very useful table, the ranges of stabilisation levels at the low end (Class A) is so wide that the results are not helpful. A probabiity of "very likely to unlikely" does not give very useful information to policymakers. I woudl suggest disaggregating the first row (Class A) into two categories. (Harald Winkler, University of Cape Town)	See A-434		
SPM-437	5 T 1	A	6	1	0	0	category E, 10th column: add note that range smaller than D is caused by smaller number of studies? (Rob Swart, MNP)	ACC		
SPM-	5	A	6	1	0	0	Table SPM 1: I think it would be helpful to divide the broad range	See A-434		

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438	T 1						of Class A (stabilisation levels from 375 - 510ppm) in two subclasses A1 (from 375-450) and A2 (from 450-510) because that is a range with much focus from policy makers and the public and they should understand the differences implied. (Manfred Treber, Germanwatch)			
SPM-439	5 T 1	A	6	1	6	10	In line with the comment immediately above, I believe band 'A' needs to be broken down, i.e., into those scenarios which posit a 450 ppmv CO2eq stabilisation concentration and above; and those which are below 450 ppm. This will be critically policy relevant, particularly in relation to the only major grouping of countries to have adopted a temperature target - <2degC for the European Union. Otherwise, this whole range is a very very broad church when it comes to policymaking considerations at present and in the immediate future...most critically in the internal discussions in the EU as well as the current discussions in the UNFCCC/Kyoto context regarding the future of the regime. Decisionmakers need to know where these borders are more precisely, within the limits of current science to tell them. Also, an extra line should be included in this graph to include the range of cost estimates for each of the scenario bands...and it should be made clear that the percentage of GDP that is being talked about is TOTAL cost over the period...rather than a annual 'deduction' from each country's annual GDP growth rate...this is what most politicians think when you say that the cost is .5% of GDP, or 1% of GDP...I know because I spend a lot of time explaining to them that this is not a 'per annum' calculation. I know it is in note 9 on p. 11, but it should be more up front. (Steve Sawyer, Greenpeace International)	See A-434 REJ cost column because table already overloaded (figure 5 will be changed so that concentration levels are recognisable)		
SPM-440	5 T 1	A	6	1	0	0	Table SPM1: the label of the likelyhood class 33-66%: "as likely as not" is hard to understrand for non-native english readers, especially in combination with other labels: e.g. "about as likely as not to unlikely". A better label would improve the readability of such statements a lot. This applys to all table where such a classification is being used	REJ; we use standard IPCC terminology		

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							(Ronald Hutjes, Alterra)			
SPM-441	5 T 1	A	6	1	0	0	Table SPM-1: It is not clear why there are no results for stabilisation levels below 375/450ppmv CO2-eq; if such levels are considered infeasible, there should be a note saying so and why; if no such studies addressing this level, this too should be indicated, especially since the probability of staying below 2 C above pre-industrial temperatures ranges so widely. (Stephen Sheppard, University of British Columbia)	REJ; these are all studies available		
SPM-442	5 T 1	A	6	1	0	0	Table SPM-1: It would be very instructive for policy-makers and the public to know, as a comparative baseline in the table, what the stabilisation level would be in the hypothetical case of zero future GHG emissions after 2005 or 2006, in order to articulate clearly the amount of cliamte change that is expected from historic emisisons (ie. non-discretionary climate change), as distinct from that which we theoretically have some opportunity to influence (ie. "discretionary" climate change). Without a firmer lowest feasible level of stabilisation (whichn would be dependent on many social and technical conditions), such a baseline would permit a more robustly anchored comparison of scenario classes, and also clarify confusion in the mind of policy-makers and their constituencies in terms of what is technically avoidable and what is not. The potential or impossibility of returning to 0 C above pre-industrial temperatures in the future should be clarified. (Stephen Sheppard, University of British Columbia)	REJ; that can be found in the WG I report		
SPM-443	5 T 1	A	6	1	0	0	The combination of all the low stabilization scenarios into one bin hides a great deal of information; I would suggest dividing it in half, so at least one can tell the difference between stabilization scenarios which are very likely to stay below 2ºC from those which are unlikely to do so. Given the importance of this policy target, it seems silly not to make this distinction. (Paul Baer, EcoEquity)	See A-434		
SPM-444	5 T 1	A	6	1	0	0	Table SPM.1 characterizes the categories of mitigation scenarios differently than Tables TS.4 and TS.5, though all are talking about the set of 117 scenarios. The three tables should be made	ACC; tables to be made fully consistent	TS, 3	

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							consistent. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)			
SPM-445	5 T 1	A	6	1	0	0	Table SPM.1: This table contains a lot of information, some of which is critical to policymakers, some of which is more of a technical supporting nature. On balance, I feel this table is overloaded with information that distracts from the main message. I would suggest replacing this table with Table TS.6, which contains all the key information and uses both graphical and text elements and is much more accessible to non-experts. (Andy Reisinger, TSU IPCC Synthesis Report)	DISCUSS, see also a-418		Suggested to keep table SPM 1
SPM-446	5 T 1	A	6	1	0	0	Table SPM.1, footnote 4: Please consult with WG1 about the consistent treatment of uncertainty in deriving the specific information in this table, and ensure that this trickles down to the TS and chapter level. I'm not sure the translation of "likely" into an 80% log-normal confidence interval is necessarily the best way. Please contact experts from WG1 to ensure consistency across IPCC WG reports. (Andy Reisinger, TSU IPCC Synthesis Report)	DISCUSS; FULL CONSISTENCY NEEDED	3,1	Noted. See comment SPM-421. (3)
SPM-447	5 T 1	A	6	1	0	0	Table SPM 1: stabilisation level CO2, quoted 350-420 ppm in first row for category A, compare TS page 25: "attainability of very low targets of 350 ppmv CO2 and below (category A)", TS suggest concentration levels below 350 can be needed, SPM gives from 350 onwards, contradiction. This results also in unrealistic targets for non CO2 GHGs (range 375-510), e.g. leaving 375-350=25 CO2eq for the non CO2 GHGs) (Hans Eerens, MNP)	ACC; ranges to accurately reflect what studies are available; TS and chapter to be consistent with SPM	3	Noted. See comment SPM-421. (3)
SPM-448	5 T 1	A	6	1	6	1	Table SPM1 is a very valuable and powerful tool. It would be very good to add the year at which the equilibrium temperature is reached and express the probability of staying below a given temperature by indicating the associated probability in numbers. Furthermore references to emissions peaking in 2000 seem irrelevant (as it is already 2006) and should be updated. It would also be helpful to include or comment on the probability of exceeding 2/3ºC at any time, not just at equilibrium. A sustained	TIA; consider info on equilibrium timeframe REJ addition of %/yr information (much too detailed) REJ adding probability at any time (too detailed and for most studies not relevant)		

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							period of higher temperature rise, albeit temporary, would have significant impacts for e.g. ecosystems. Finally It would be also helpful to give an indicative % emissions reduction per year as well as the change in global emission in 2050, as this is a more widely used variable (Government of UK)			
SPM-449	5 T 1	A	6	1	6	0	Table SPM 1 This table contain important information, but the results in the last column is hard to understand and the intervals is very big partly because the studies differ and because there are differences in peaking year. Is it possible to use some kind of average value or to divide the studies in studies using 2000-20025 as peaking year and studies using 2025-2050 as peaking year? An other option is to explain the results better in the text or in the Table text. (Government of Norwegian Pollution Control Authority)	DISCUSS; more selective use of studies possible? Ch 3 will look into this	3	Noted. See comment SPM-421. (3)
SPM-450	5 T 1	A	6	1	6	30	Table SPM 1: The authors should include a column for the likely temperature for each stabilisation level in 2100. The authors also need to provide further explanation of the drivers of the emission pathway uncertainties. (Government of Australia)	REJ; too much for a table like this		
SPM-76	5 T 1	B	6	1	6	0	Table SPM.1 characterizes the categories of mitigation scenarios differently than Tables TS.4 and TS.5, though all are talking about the set of 117 scenarios. The three tables should be made consistent. Also refer to Chptr 3 for consideration. U.S. Government (Government of U.S. Department of State)	ACC; tables to be fully consistent, but merging TS4/5 is acceptable for SPM		
SPM-77	5 T 1	B	6	1	6	1	Table SPM 1. Use bold text font for title phrase lead in to Table SPM 1. Label first cell something like "Class (Level of Stabilization)" Footnote 4. This is very technical for a lay reader. Would it help/is it possible to explain what this means in more lay terms ? U.S. Government. (Government of U.S. Department of State)	TIA		

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SPM-78	5 T 1	B	6	1	6	1	Table SPM 1. Consider using bold text font for title phrase lead in to Table SPM 1. Consider labeling first cell something like "Class (Level of Stabilization)" Footnote 4. This is very technical for a lay reader. Would it help/is it possible to explain what this means in more lay terms ? U.S. Government (Government of U.S. Department of State)	Identical B-77		
SPM-79	5 T 1	B	6	1	0	0	Footnote 2 of Table SPM 1—replace "is different from" with "is ___% to ___% above". Rationale: "Different" is not informative to policymakers – it does not say whether realized temperatures in 2100 is higher or lower than equilibrium temperature. It is much better to provide real information using the confidence band approach based on WG1 information relating projected realized temperature change in 2100 to equilibrium temperature change for each stabilization level. Perhaps a rephrase such as "Note that global mean temperature may not actually reach equilibrium until well after concentrations stabilize." U.S. Government (Government of U.S. Department of State)	ACC "is higher"; TIA suggested rewording, but retaining current notion		
SPM-80	5 T 1	B	6	1	6	0	Authors should consider whether there are clearer ways to communicate the uncertainty. U.S. Government (Government of U.S. Department of State)	UNCLEAR		
SPM-451	6	A	7	3	0	0	The IEA's estimate of $16 trillion was not only for energy supply in the narrow sense, but includes substantial investment in infrastructure for distributing energy as well. Suggest adding: "energy supply AND DISTRIBUTION till 2030 …" (Harald Winkler, University of Cape Town)	ACC		
SPM-81	5 T 1	B	6	15	6	0	Perhaps a rephrase such as "Note that global mean temperature may not actually reach equilibrium until well after concentrations stabilize." U.S. Government (Government of U.S. Department of State)	See B-79		
SPM-452	5 T 1	A	6	0	0	0	Table SPM 1: last column will be misinterpreted by policy makers. The large range in changes in emissions is not self-explaining. To prevent a feeling of „nothing needs to be done, no urgency" it is necessary to divide the too large range of multigas concentration stabilisation levels into e.g. sub-levels A1 and A2, with eg 375-450	See A-434		

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							and 450-510 (Gabriela Von Goerne, Greenpeace)			
SPM-453	5 T 1	A	6	0	0	0	Table SPM-1: Is it possible to add a column on global mean temperarure at 2100? (Government of Environment Canada)	REJ; table already overloaded		
SPM-454	5 T 1	A	6	0	0	0	SPM 1: The EU has set the target of a maximum of 2 C global temperature increase. Meeting this target for sure would require a stablization level of probably below 450ppmv. But with 450ppmv there seem to be already a median probability of more than 50% to overshoot this target. Are there scenarios quantifying the parameters of this table for a stabilization level consistent with a maximum of 2 C. (Government of Germany)	REJ; this is the best we can do		
SPM-82	5 T 1	B	6	0	6	0	Table SPM1: This table is very important for the SPM. Some more precision is however needed. For example, in Column 2: (W/m2) : the title of this column does not seem coherent with the definition of radiative forcing in the glossary: radiative forcing is defined there as a change, which suggests that the word "addition" is wrong here. Moreover, the reference year should be given. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	TIA; W/m2 column will be deleted		
SPM-83	5 T 1	B	6	0	6	0	Table SPM1: note 7: … wide range in class A : this results in giving a ridiculous "very likely to unlikely" confidence level, which is totally useless for policy making. It would therefore be more appropriate to divide the A class in smaller categories, so that the range in confidence could also be narrowed down. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; category A to be split		
SPM-84	5 T 1	B	6	0	6	0	Table SPM1: note 5: Add "IPCC" before "definition" at beginning of sentence (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC		
SPM-85	5 T	B	6	0	6	0	Table SPM1: note 4: …why is the 80% confidence interval used in one part of note 4, and 90% in another. Hard to compare then.	ACC elaborate note		

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	1						Justification ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))			
SPM-86	5 T 1	B	6	0	6	0	Table SPM1: note 2. : avoid using "different" when you can give the sign of the difference. I suggest saying "slighly higher" instead of "different" (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; “higher”		
SPM-87	5 T 1	B	6	0	6	0	Table SPM1: last Column: Please give 2030 and 2100 as well, and consider using 1990 as a reference, since this is a common reference year (UNFCCC, KP, …) (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	REJ; table already overloaded; will consider adding graph with reduction trajectories; 2000 reference good enough		
SPM-88	5 T 1	B	6	0	6	0	Table SPM1: Column 9: line A: 2000-2040: is it really so different from the TAR? (is the statement page 5 line 11 so justified in this case ?) I believe it is not, since the TAR did not look at CO-eq stabilization.. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-449		
SPM-89	5 T 1	B	6	0	6	0	Table SPM1: Column 7: … sensitivity 23: Where is Note 23 ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; should be “2,3”		
SPM-90	5 T 1	B	6	0	6	0	Table SPM1: Column 4: line A: 450: the average of 375 and 510 is 442.5, which is closer to 440 than to 450 ! (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	CHECK range of available studies	3	Noted. See comment SPM-421. (3)
SPM-91	5 T 1	B	6	0	6	0	Table SPM1: Column 3: The notion of "Multigas" is nowhere defined. Does it include O3? What about SO2 and aerosols ? Assumptions about these matter a lot. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; glossary		
SPM-92	5 T	B	6	0	6	0	Table SPM1: Colum 8: … equilibrium 45: Where is Note 45 ? NB: it is very good to look at +2 C and +3 C above pre-industrial,	ACC; should be “4,5”		

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	1						given the policy-relevance of thse numbers. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))			
SPM-455	6 F 4	A	7	0	0	0	Delete Figure SPM.4 because it is misleading to the wrong conclusion that renewables would play a minor part in mitigation between 2000 and 2100 as this figure shows only the additional mitigation potential compared to a baseline scenario with an already high share of renewable energy resources (up to 55% of primary energy in the baseline of MESSAGE). This fact must be explained in detail in chapter 3. Due to its misleading content, the figure has to be deleted from the TS and SPM. Instead, we suggest to use the numbers given in Table 4.4.4, column 3, for a new figure. (,)	DISCUSS; problem is that only two models are given; try to add 2 more models (with comparable portfolio of options) to give wider spread in shares of particular options; modelling results are much better than raw numbers from ch 4 because of leaswt cost and overlap aspects	3	Noted. Figure being revised to include additional models (3), and will also try 2030 figure.
SPM-456	6 F 4	A	7	0	7	0	Figure SPM.4 : is the unit on the abscissa GtCarbon rather than Gt CO2-eq. as everywhere else in the SPM? This will confuse PMs. (Aviel VERBRUGGEN, University of Antwerp)	ACC; to be changed into GtCO2eq		
SPM-457	6 F 4	A	7	0	0	0	Fig SPM4. Is line 3 correctly labled as Biofuels or is it Bioenergy(ie including heat and other uses) (Government of UK)	ACC; change to “bioenergy””		
SPM-458	6 F 4	A	7	0	0	0	Figure SPM.4: It might be helpful to indicate the specific character of "biofuels (incl. CCS)" by extending the x-axis to negative values. This would clarify the issue of "overshooting" scenarios as well. (Government of Austria)	REJ; these are emission reductions; are always positive		
SPM-459	6 F 4	A	7	0	7	0	Figure SPM 4, included in the TS, could be referred, but not included in the SPM. The quantitative information given in the figure is a mere example, not a consensus, deserving approval. (Government of France)	See A-454		
SPM-460	6 F 4	A	7	0	0	0	SPM 4: Please explain the assumptions which lead to the conclusions about the contribution of nuclear energy to cummulative emmissions reduction, relative to renewables. Are the figures for the relative contribution of nuclear energy presented in the SPM based on the SRES scenarios or do they consider scenarios by IEA and IAEA made in the meantime? Or put differently: are the scenarios based on the SRES assumptions about energy system	DISCUSS; explain (in caption and text) that these results are based on least cost optimisation; deviation is possible, but that costs more Ch 3,4 to consider new literature	3,4	Noted. Underlying text in Ch3 to be revised. (3)

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							optimization plus potential contributions given future expansion of and large scale investment into nuclear power or do the calculations assume "real world conditions" consider the numerous programmes to fade out nuclear energy and the currently low chances to revert to an unequivocally positive global investment climate for nuclear energy? The OECD International Energy Agency (IEA) "World Energy Outlook 2002" suggests that under status quo conditions with nuclear energy continuing to decline and no new stations built beyond those 30 or so already planned, its share of world electricity production would drop from currently about 16% to 12% by 2030. Consequentially, the relative contribution to fighting global warming would also decline. Also the IAEA analysis of the SRES scenarios suggest that its figures related to nuclear energy increase are based on assumptions which do not sufficiently represent the current political and investment climate. According to IAEA nuclear power currently presents more of an investment risk in the relatively liberalized markets of Western Europe and North America particularly relative to new natural gas fired capacity, as recent investments in these regions have steered away from nuclear and most often toward natural gas. Furthermore, IAEA communications consistently suggest that any increase in avoidance of GHG emissions through nuclear energy would only be realistic if calculated with a very long term economic perspective and under the condition that there is a global revision in political thinking back to supporting nuclear energy. Currently, the public and political opinion in many parts of the world is still dominated by the perception of "high relative costs; perceived adverse safety, environmental, and health effects; potential security risks stemming from proliferation; and unresolved challenges in long-term management of nuclear wastes" (MIT 2002). For Reference: (1) International Energy Agency (IEA), World Energy Outlook 2002, IEA, Paris, 2002. (2) Alan McDonald, Keywan Riahi, and Hans-Holger Rogner, “Elaborating SRES Scenarios for Nuclear Energy,” Risø International Energy Conference on Energy Technologies for			

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							post Kyoto Targets in the Medium Term, Risø National Laboratory, Roskilde, Denmark, May 19-21 2003. (3) For further interpretation through IAEA please refer to: Hans-Holger Rogner,"Nuclear Power and Climate Change", Paper prepared for the World Climate Change Conference in Moscow, 2003. http://www.iaea.org/OurWork/ST/NE/Pess/assets/03-01708_Rognerspeech.pdf. (Government of Germany)			
SPM-461	6	A	7	1	7	20	The outline of the Synthesis Report requires some text on lock-in effects.It would be useful if this would also be in the WG3 SPM, e.g. from Chapter 3: "The “lock-in” effects of infrastructure, technology and product design choices made by industrialized countries in the post-world wars period of low energy prices are responsible for the major increase of world GHG emissions (confidence statement). As high carbon infrastructure and technological choices develop, these “lock-in” effects make it increasingly difficult for developing countries to shift towards low carbon development paths. On the other hand, in developing countries, as a major part of the needed infrastructure to meet development needs is still to be built, the spectrum of future options is considerably wider than in industrialized countries." (Rob Swart, MNP)	ACC; add short text		
SPM-462	6	A	7	1	7	8	The figure of US$ 16 trillion till 2030 implies around US$ 640 billion each year in that period; but subsidies involve huge quantities which could reduce that investment, if a serious effort is going to be done in infrastructure modernization and technology renovation. Maybe IPCC could estimate the contribution of redirecting subsidies to fossils and nuclear electricity, to modernization and renovation, in order to reduce the need of money for those actions devoted to the penetration of low carbon technologies. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)	TIA; misunderstanding; 16 trillion is not for mitigation; reformulate to avoid misunderstanding Text will be modified, but text on subsidy unclear.		Good comment. Try to include the amount of subsidy already quantified in Chapter 4 in the SPM text. (4) Para 6 is the place to mention the importance of investments. Need to check

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										how chapters deal with the 16/20 trillion investment and work that into the SPM.
SPM-463	6	A	7	1	7	7	The point could be made more strongly by reordering the paragraph along these lines: "Projected investment in expansion and renewal of energy supply till 2030 of at least US$ 16 trillion is critical for the penetration of low carbon technologies (high confidence). Due to long life-times of energy and other infrastructure capital stock, widespread diffusion of low-carbon technologies may take many decades.Stabilisation scenario studies show that both investments in low-carbon technologies as well as technology improvements through public and private R&D are needed for achieving stabilization targets as well as cost reduction (HM)." (Government of UK)	REJ; not logical There may be a lay-out problem: some non-bold text follows immediately the bold text; other non-bold text comes later; maybe better to have all non-bold text in bullet form\DISCUSS	All	Accepted (4) See ch4 proposals
SPM-464	6	A	7	1	7	2	It is suggested to add "as fast as possible, especially in developing countries, is very critical while" before "may take many decades". The sentsence is read "Due to long life-times of energy and other infrastructure capital stock, widespread diffusion of low-carbon technologies as fast as possible, especially in developing countries, is very critical while may take many decades". We think widespread diffusion of low-carbon technologies as fast as possible is very important for addressing climate change. (Government of China Meteorological Administration)	REJ; policy prescriptive		Rejected. We understand this message should not discriminated countries. It applies to all. (4)
SPM-465	6	A	7	1	8	2	This section (section 6) needs to clearly explain the implications of the projected predominance of fossil fuels (oil, coal) to 2030 on the technology and investments needed to achieving emissions reductions in the near-medium term and on stabilization scenarios. (Government of Environment Canada)	See A-461		Accepted and the new text includes the statement that present adoption path will not come close to fulfil Article 2

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										from UNFCCC. (4)
SPM-466	6	A	7	1	7	1	Final sentence seems more general than the bolded sentence. U.S. Government (Government of U.S. Department of State)	ACC; para to be reordered; see also A-463		Rejected. But the last sentence was maintened and amplified. (4) See ch 4 proposals
SPM-467	6	A	7	2	7	4	What does the phrase "the use of the projected investment" mean here? Was this supposed to say "the wise use of the projected investment"? It seems as if there is a word or an idea missing here. (James Dooley, Battelle)	TIA in reformulating		Accepted. We replaced projected by effective. (4)
SPM-468	6	A	7	2	0	0	Don't think the second sentence necessarily follows on from the first - remove therefore? (Ann Gardiner, AEA Technology)	TIA in reformulating		Noted and the full paragraph will be redrafted. (4)
SPM-469	6	A	7	2	7	4	The sentence starting 'Therefore the use of…' is a bit confusing. It could be rewritten eg "Therefore, how the $16 trillion, projected to be needed for BAU energy supply and infrastructure till 2030, is invested is critical if there is to be significant penetration of low carbon technologies." or it may need split in two. (Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)	TIA in reformulating		Accepted and the full paragraph will be redrafted. (4)
SPM-470	6	A	7	2	7	5	To avoid any possible confusion, I would suggest cutting this sentence in two parts: "Investment… is projected…; taking advantage of such a capital stock turn-over is critical for the penetration, etc…" (Cédric PHILIBERT, International Energy Agency)	TIA in reformulating		Accepted. See comment SPM 467A (4)
SPM-471	6	A	7	2	7	4	The sentences in bold are very important and should be kept here with some adjustments. However "energy supply" in the sentence starting with "Therefore the use" seems very broad telling nothing about the carbon-intensity and nothing about the use of energy and	REJ; this applies to energy supply in general		Rejected. The 16 trillion value is the BAU investment and

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							efficiency. Should the reference here be to "expansion and supply and renewal of low-carbon energy supply and energy efficient technologies" Rather than just "energy supply"? If energy efficiency is not included in the 16 trillion estimate we suggest a new additional sentence about this: "Improved energy efficiency will have to play a key role for all regions and timescales." Rationale: Figure SPM4 shows that energy conservation and efficiency has a key role. (Government of Norwegian Pollution Control Authority)			there is no guarantee that it would be used for low-carbon technologies. Nevertheless, we refer to this issue in other part of paragraph 6. (4)
SPM-472	6	A	7	2	7	4	How is this investment figure derived. It is not obvious if this is total investment required to meet new demand and replace depleted stock. Is this a global figure? (Government of Australia)	REJ; It is form IEA (actually 17 trillion), see chapter 4		Noted. Try to add the word “global” before “energy supply”. (4)
SPM-473	6	A	7	2	7	5	As currently drafted this sentence is confusing suggest redrafting to make the point clearer. (Government of Australia)	TIA in reformulating		Accepted. . See comment SPM 467A (4)
SPM-474	6	A	7	2	7	4	"Therefore the use of the projected investment……low carbon technologies (high confidence)". This statement is unclear. Firstly, the term “the use of” is not clear. Secondly, is this the projection of investment in the global energy system till 2030 or is it the minimum investment needed (i.e. critical) for the low carbon technologies have to penetrate. If it is the former, there is no mention of what climate stabilization level is assumed. In case if this statement is retained with any modification, clarification of the above as well as the following is needed: i) how much of this penetration is expected in developing countries? ii) what policies and measures are assumed for transfer of the technology and the payment of full incremental cost to developing countries? (Government of India)	TIA in reformulating		Noted. Try to add the word “global” before “energy supply”. (4)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-475	6	A	7	2	7	6	This sentence is unclear. Are the authors saying: "It is critical to achieve a high penetration rate for low-carbon technologies in the $16 trillion in energy intrastructure investment [note: now $17 tr according to IEA 2005] projected through 2030?" If this is the case, then use of the term "it is critical" implies a specific stabilization pathway, implicitly not policy-neutral. U.S. Government (Government of U.S. Department of State)	REJ; it just says that how you spend the 17 trillion will influence the penetration of low carbon technology		Noted. Try to write in a less policy prescriptive way, e.g., replace "will" by "may be". (4)
SPM-476	6	A	7	2	7	4	Sentence could be clearer. U.S. Government (Government of U.S. Department of State)	TIA in reformulating		Accepted. The sentence will be modified. (4)
SPM-477	6	A	7	2	7	4	"Therefore, the use of the projected investment in the expansion and renewal of energy supply till 2030 of at least US$ 16 trillion is critical for the penetration of low carbon technologies (high confidence)." Such a large cost number is difficult to understand without some points of reference. Suggest that $16 trillion also be expressed either as a cost per person figure, and/or as a percent of world economic output. U.S. Government (Government of U.S. Department of State)	DISCUSS; what is an appropriate comparison? (% of all investment?; % of cumulative World GDP?)	4	Accepted. Should read as ""of at least US$16 trillions (equivalent to an annual disbursement of 1% of global GDP". (4)
SPM-93	6	B	7	2	7	2	Please add "appropriate" before "use of" … (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	TIA in reformulating		Accepted and sentence will be redrafted. (4)
SPM-94	6	B	7	2	7	6	This sentence is unclear. Are the authors saying: "It is critical to achieve a high penetration rate for low-carbon technologies in the $16 trillion in energy intrastructure investment [note: now $17 tr according to IEA 2005] projected through 2030?" If this is the case, then use of the term "it is critical" implies a specific stabilization pathway, implicitly not policy-neutral. U.S. Government (Government of U.S. Department of State)	Identical A-475		The same as SPM 475A. (4)
SPM-95	6	B	7	2	7	4	"Therefore the use of the projected investment in the expansion and	REJ; not needed here		The same as

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							renewal of energy supply till 2030 of at least US$ 16 trillion is critical for the penetration of low carbon technologies (high confidence)." Such a large cost number is difficult to understand without some points of reference. Suggest that $16 trillion also be expressed either as a cost per person figure, and/or as a percent of world economic output. U.S. Government (Government of U.S. Department of State)			SPM 477A. (4)
SPM-478	6	A	7	3	7	3	Who has projected the investment and for what? Why not just begin the sentence with "investment in …"? If the projected-ness is important please explain what is meant here. (Rachel Warren, University of East Anglia)	TIA in reformulating		The source is IEA and we want to keep such information. (4)
SPM-479	6	A	7	4	0	0	this is the only "confidence" statement in Section B, replacement by a qualitative statement (HM?) would lead to consistent terminology in section B about the future. (Rob Swart, MNP)	ACC	CG Uncertinty	Noted. Qualification will be added. In most statements. (4)
SPM-96	6	B	7	4	7	4	US$ 16 trillions : 10**12?? Please clarify definition of trillion. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; glossary		Accepted. (4)
SPM-480	6	A	7	5	7	8	This is potentially confusing because investment and deployment of existing low-carbon technologies will drive considerable technology improvements in itself (Iain MacGill, University of NSW)			Rejected. It is important to start investment in existing technologies. (4)
SPM-481	6	A	7	5	0	7	The role of consumer and corporate behaviour change (eg. energy conservation) and political will in achieving stabilisation targets should also be noted. (Stephen Sheppard, University of British Columbia)	REJ; not important here		Correct. But this may be understood as a subset of "effective use" which is the

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										final text format. (4)
SPM-97	6	B	7	5	7	7	Changes in behaviour are also important, and should be mentioned here as well. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	REJ; this is a technology paragraph 1) behaviouiral options require some attention 2) see ch 4 text proposals		Correct. But this may be understood as a subset of "effective use" which is the final text format. (4)
SPM-482	6	A	7	7	7	7	replace "cost" with "mitigation cost" (Rachel Warren, University of East Anglia)	ACC		Rejected. Here we are talking about the total cost of energy supply at world level. (4)
SPM-483	6	A	7	7	7	9	"the expansion and renewal of energy supply" - this sentence needs to make clearer the issue is making the transition to low-carbon economy. How can that investment be "used"? What are the challenges? (Government of Environment Canada)	TIA in reformulating, see ch 4 text proposal		Rejected. The first and second sentences together suggest transition to low-carbon economy. (4)
SPM-484	6	A	7	7	0	0	Need to be more specific with respect to what cost refers to: '... as well as technology cost reduction.' or 'as well as mitigation cost reduction'. What does (HM) refer to? (Government of Germany)	TIA in reformulating Uncertainty description in annex		Noted. Try to add the word "global" before "energy". (4)
SPM-485	6	A	7	8	7	9	Add after "stabilization levels assessed can be delivered by a portfolio of ", "policies and measures to implement technologies".	REJ; the policy argument is made elsewhere		Accepted. Sentence will be

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							Reason: this simple description may cause misunderstanding that no pilicies and measures to enhance those technologies are necessary. (Shuzo Nishioka, National Institute for Environmental Studies)	see ch 4 text proposal		redrafted to include "policies and incentives". (4)
SPM-486	0	A	9	8	14	27	Statements 9-25 about sectoral options are all assumed to focus on the period up to 2030, statement 6 on technologies for the longer term uses the terms "are either on the market or will be in coming decades". The SYR team has agreed to distinguish between short- to medium term (<2030) and long-term (>2030). In the SPM, there is not yet a comprehensive picture of which technologies are typical for the post-2030 period (e.g. hydrogen fuel-cell cars, BCC, etc.?). It would be helpful to make this distinction as well in the SPM and include some longer term options, inter alia to explain what is meant by "in coming decades" and to link the long-term statements with the 2030 statements. (Rob Swart, MNP)	ch 3 will produce figure for 2030		Accepted. Check the possibility to include long-term options in the text. (4)
SPM-487	6	A	7	8	7	10	By no means does all the literature agree that that "the range of atmospheric stabilization levels assessed can be delivered by a portfolio of technologies that are either on the market or will be in the coming decades…" A counter example is Hoffert, et al, (2002) Science, 298:981-987, which shows that stabilization depends on many unproven technologies and the uncertain scalability of proven ones. (Christopher Green, McGill University)	DISCUSS; there has been a misunderstanding about "available technology" in the past: Hoffert et al put emphasis on the need to further develop technologies, both getting technology from the demonstration phase to commercial full scale as well as for further reducing cost. That is not inconsistent with the modelling results that chapter 3 reports on and which are the basis for this statements. The current wording tries to describe it in such a way as to avoid this misunderstanding. Maybe more	3	Noted. Wording to be revised to make meaning clearer (3) Rejected. In our literature assessment most authors agree that present available technologies once further improved may allow appropriate carbon

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
								explanation is needed Ch 3 to –propose new wording		mitigation measures to be implemented. (4)
SPM-488	6	A	7	8	0	0	remove "According to literature" and start with "The range of atmospheric ……." (Ronald Hutjes, Alterra)	ACC		Accepted. (4)
SPM-489	6	A	7	8	7	12	Bearing in mind this is for policy makers, this point could benefit from greater emphasis.Without coherent polices and measures from Governments, there will be insufficient incentives to switch inverstment from high carbon to low carbon technologies. The link with the sentence around lines 23-24 on the need for a strong Govt role would help. (Government of UK)	TIA; maybe move line 23-24 up see ch 4 text proposal		Noted. We will keep the sentence about "strong government role" at the end but will emphasize the importance of policies incentive in the upper paragraph. (4)
SPM-490	6	A	7	8	7	9	The statement "can be delivered by a portfolio of technologies" gives the impression that GHG emissions can be reduced by technological intervention alone. Therefore this statement should be revised to "can be delivered by a portfolio of policies and measures. (Government of Japan)	REJ, but see A-489		Accepted. (4)
SPM-491	6	A	7	8	7	12	Not sure this para does justice to the barriers issue. Related to para above, is the projected investment sufficient to deliver the number of new installations required? (Government of Environment Canada)	See A-489; for LT not much more can be said		Noted. We will keep the sentence about "strong government role" at the end but will emphasize the

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										importance of policies incentive in the upper paragraph. (4)
SPM-492	6	A	7	8	7	23	The mitigation option discussed throughout the entire SPM have a strong bias towards technological options and market based incentives for the reduction of carbon emissions from mainstraem economic research. There is little reference to what we have learned from social-ecological research and ecological economics about behavioural aspects, processes of social learning and institutionalization of sustainability and about how these relate to processes of intra-organisational learning and innovation. Examplary references: (1) Social Learning Group (William C. Clark, Jill Jaeger, Josee van Eijndhoven, and Nancy Dickson). Learning to Manage Global Environmental Risks - Vol. 1: A Comparative History of Social Responses to Climate Change, Ozone Depletion, and Acid Rain. Vol. 2: A Functional Analysis of Social Responses to Climate Change, Ozone Depletion, and Acid Rain. Cambridge, Mass.: The MIT Press, June 2001. (2) Bernd Siebenhüner and Jessica Suplie: Implementing the access and benefit-sharing provisions of the CBD: A case for institutional learning. Ecological Economics, Volume 53, Issue 4, 1 June 2005, Pages 507-522. (3) Jouni Paavola and W. Neil Adger: Institutional ecological economics. Ecological Economics, Volume 53, Issue 3, 15 May 2005, Pages 353-368. (Government of Germany)	DISCUSS, see B-97	3,11,13	Rejected. Ch3 has reviewed available scenario literature. (3) Noted. We will keep the sentence about "strong government role" at the end but will emphasize the importance of policies incentive in the upper paragraph. (4)
SPM-98	6	B	7	8	7	10	By no means does all the literature agree that that "the range of atmospheric stabilization levels assessed can be delivered by a portfolio of technologies that are either on the market or will be in the coming decades…" A counter example is Hoffert, et al, (2002) Science, 298:981-987, which shows that stabilization depends on	See A-487		The same as SPM 487A. (4)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							many unproven technologies and the uncertain scalability of proven ones. The text needs to be clarified and made more specific, and important counter-opinions should be acknowledged. U.S. Government (Government of U.S. Department of State)			
SPM-99	6	B	7	8	7	10	By no means does all the literature agree that that "the range of atmospheric stabilization levels assessed can be delivered by a portfolio of technologies that are either on the market or will be in the coming decades…" A counter example is Hoffert, et al, (2002) Science, 298:981-987, which shows that stabilization depends on many unproven technologies and the uncertain scalability of proven ones. The text needs to be clarified and made more specific, and important counter-opinions should be acknowledged. U.S. Government (Government of U.S. Department of State)	Identical B-98		The same as SPM 487A. (4)
SPM-493	6	A	7	9	7	9	Delete "will be" and replace with "are projected to be" unless the authors are sure of this prediction of the development of new technologies. (Government of Australia)	ACC		Accepted. Will be changed to "could be". (4)
SPM-100	6	B	7	9	0	0	Change "on" to "in" for consistency. U.S. Government (Government of U.S. Department of State)	CHECK		Accepted. (4)
SPM-101	6	B	7	9	7	0	"change "on" to "in" U.S. Government (Government of U.S. Department of State)	Identical B-100		Accepted. (4)
SPM-494	6	A	7	10	7	12	The authors need to explain what they mean by "implementation" (i.e. implementation of what?). (Government of Australia)	ACC; change to "of low-level stabilisation .." replace by "investments"		Rejected. It is very clear. (4)
SPM-102	6	B	7	10	7	10	insert the words:"… provided that the necessary policies and incentives are in place ..." (Government of Switzerland)	REJ; current text emphasises development and implementation see ch 4 text proposal		Accepted and already included in the text. (4)
SPM-495	6	A	7	11	7	11	Need to add a qualifier to the sentence e.g. "However, widespread implementation implies that large numbers of new low-emission…" the absence of a qualifier (such as "widespread") reduces clarity in that draft sentence	See A-494		Accepted. (4)

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							(Jose Etcheverry, David Suzuki Foundation)			
SPM-496	6	A	7	11	7	12	It would be helpful to provide a more precise indication of the 'relatively short period.' (Government of UK)	REJ; leave details to chapter/TS	3,4,TS	Accepted. Text to be revised (3) Accepted. (4)
SPM-497	6	A	7	11	7	11	The following wording is proposed: However, scenarios imply that large numbers of new low-emission installations, … (Government of Austria)	See A-494 (better)		Accepted and added "widespread implementation". (4)
SPM-498	6	A	7	13	7	21	Again, how feasible are the carbon intensities improvements needed to reach lower stabilization levels? (Government of Environment Canada)	REJ; not more can be said		Rejected. It requires a long text. But it is discussed in Chapter 4. (4)
SPM-499	6	A	7	14	7	15	Inappropriate tense. Proposed rewording:"Energy efficiency plays a key role for all regions and timescales." (Government of Environment Canada)	ACC		Accepted. (4)
SPM-500	6 F 4	A	7	15	0	0	Figure SPM.4: This is a very useful figure. It would be even more useful to a wider audience and outside the WG3 SPM if the figure in the SPM referred to ppm CO2eq stabilisation levels rather than W/m2. The translation between those two units could be done in the TS to provide a link between the original studies and their presentation in a format relevant to policy-makers. (Andy Reisinger, TSU IPCC Synthesis Report)	ACC		Accepted. Figure is being revised by Chapter 3 team. (4)
SPM-501	6	A	7	15	7	15	Delete "in scenarios". (Government of Environment Canada)	ACC, but we need to make clear this is a least-cost context Ch 4 comment not to the point.		Rejected. We are sure that more scenarios are considering these changes. Nevertheless,

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										the use isn't yet fully diffused. (4)
SPM-502	6	A	7	16	7	17	Replace "and CO2 capture and storage (CCS), also in combination with bioenergy" with the more precise text: "and CO2 capture and storage (CCS) in combination with fossil energy or bioenergy" since CCS is not an energy source. (,)	ACC		Accepted, but sentence was fully redrafted. (4)
SPM-503	6	A	7	16	7	16	showcasing low nuclear option as a "low carbon" energy source reflects only half the story. The associated health hazard in the longer run, especially in countries with weak waste disposal rules how much violated the sustainble development goals needs to be equally reflected to provide the policy makers with full information. (Joyashree Roy, Jadavpur University)	REJ; in this context not relevant; we don not give all the pro's and cons of all mitigation options here.		Rejected These issues related to nuclear power are discussed in Ch4 (4)
SPM-504	6	A	7	16	7	17	I quite agree that we need to develop and to spread renewable energy. However "Nuclear power" and "Carbon capture and storage" are unsafety and uncompleted technology. They should be deleted from SPM. (Masatake Uezono, Citizens' Alliance for saving the Atmosphere and the Earth)	REJ, see A-503		Rejected Broad portfolio of alternative energy technologies is included in the scenarios (4)
SPM-505	6	A	7	16	0	0	The outstanding importance of renewables already today for GHG mitigation is not reflected in the list of options. Suggestion: "Already today, renewable energy contributes essentially to GHG mitigation. The ambitious targets of many nations world wide will lead to a further increasing importance of renewable energy systems. The role of carbon capture and storage depends on the proof-of-concept, further technological development, cost reduction, and the evidence that local environmental impacts, risks, and leakage are within acceptable guard rails. (Government of Germany)	REJ; we cannot single out renewables and CCS is beyond proff of concept (see SRCCS); but maturity issue needs to be better presented (see A-3) We need to reflect Total use (baseline + mitigation).		Accepted The text will be revised to emphasize that many of the required technologies are already economically competitive to be implemented.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										(4)
SPM-506	6	A	7	17	7	17	What means "also in combination with bioenergy"? If this relates to CCS, this addition makes little sense; CCS is as valuable in combination with fossil fuel use as with bioenergy. Also the sentence is technically correct it gives the reader the impression that CCS is preferable with biomass, which is not the case. A better place to mention that CCS could be used with biomass is (Cédric PHILIBERT, International Energy Agency)	REJ; this is in conformity with SRCCS		Accepted. Sentence will be redrafted. (4)
SPM-507	6	A	7	17	0	0	Nowhere in the SOD is there any indication that CCS has been discussed since the early 1970s (Nakicenovic can give more precise information on this). Nowhere is there any indication that global scenario building blocks, with the exception of global climatic change risks, have scarcely changed since the early/mid-1970s. Is it not important to mention the enormous inertia in our systems? Surely this is an important element in the SPM? (Michael Jefferson, World Renewable Energy Network & Congresses)	REJ; see SRCCS DISCUSSake a reference to SRCCS, because many readers are not familiar apparently see ch 4 text proposal	4	Partially accepted. A sentence stating that present path will not fulfil Article 2 of UNFCCC will be added. (4)
SPM-508	6	A	7	17	7	17	Please delete "…also in combination with bioenergy". Because bioenerby is a kind of renewable energy. (Government of China Meteorological Administration)	Rej; see SRCCS		Rejected. We are telling that CCS should be used with biomass. (4)
SPM-509	6	A	7	17	0	18	We propose that the text is changed as follows: " For lower stabilisation levels carbon intensity improvements need to be much higher than historic IMPROVEMENTS:" (Government of Norwegian Pollution Control Authority)	ACC ch 4 proposal not justified		Rejected. It is also true that the historical improvements on carbon intensity were quite insufficient to mitigate climate change. (4)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-510	6	A	7	17	7	17	Instead of "...also in combination with bioenergy" suggest "...as well as biofuels" to be consistent with terminology in Figure SPM4. (Government of Environment Canada)	REJ; we will use “Bio-energy” everywhere		Rejected. The purpose of the sentence is to say that CCS will be used also for biomass. (4)
SPM-103	6	B	7	17	7	17	Clarify or define: “bioenergy”. U.S. Government (Government of U.S. Department of State)	ACC; glossary		Noted. See glossary. (4)
SPM-511	6	A	7	18	7	20	It should be noted that including land-use and forestry mitigation options in policy frameworks intended to achieve particular stabilisation levels may reduce costs but also increases risks of not actually obtaining the target - CO2 sequestered as fossil-fuels has demonstrated very secure abatement over tens of milliions of years; ecosystem sequestration is far less secure. (Iain MacGill, University of NSW)	UNCLEAR		Rejected. We are adding one more option for carbon emission mitigation. Also, forests planted in several different regions minimize the risk pointed in the comment. (4)
SPM-512	6	A	7	18	0	0	How much higher (approximately) ? (Ann Gardiner, AEA Technology)	~~ACC; specify~~		Rejected. The amount is scenario sensitive and can’t be discussed in the SPM. Values are presented in the Report. (4)
SPM-	6	A	7	18	7	18	"Faster" might be more appropriate than "higher"	ACC		Rejected.

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513							(Cédric PHILIBERT, International Energy Agency)			Carbon intensity improvements is occurring but at low rate. We need a faster improvement over time. (4)
SPM-514	6	A	7	18	7	18	replace "carbon intensity improvements need to be much higher" by "carbon intensity reductions need to be much bigger" (Aviel VERBRUGGEN, University of Antwerp)	Prefer A-513		Rejected. Carbon intensity improvements is occurring but at low rate. We need a faster improvement over time. (4)
SPM-515	6	A	7	18	7	18	Do you mean that C intensity improvements need to have a lower endpoint than historically, or do you mean that the rate of C intensity reduction over time needs to be greater than historically? (Rachel Warren, University of East Anglia)	The latter, see A-513		Rejected. Carbon intensity improvements is occurring but at low rate. We need a faster improvement over time. (4)
SPM-104	6	B	7	18	7	18	… much higher: you probably mean "much faster"? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC		See comment SPM 513A. (4)
SPM-516	6	A	7	19	7	19	replace "(both non-CO2 and CO2)" by "(targeting CO2 and non-CO2 GHG)" (Aviel VERBRUGGEN, University of Antwerp)	ACC		Accepted. (4)
SPM-517	6	A	7	19	7	19	Add to "forestry mitigation options" "and avoided deforestation" (Rachel Warren, University of East Anglia)	REJ; that is already included in forestry mitigation		Rejected. That is already

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										included in forestry mitigation (4)
SPM-105	6	B	7	19	7	19	Might be useful to define 'non-CO2 and CO2 land-use and forestry mitigation options' for policy makers. U.S. Government (Government of U.S. Department of State)	Glossary		Noted. Will be in glossary. (4)
SPM-106	6	B	7	19	7	19	Might be useful to define 'non-CO2 and CO2 land-use and forestry mitigation options' for policy makers. U.S. Government (Government of U.S. Department of State)	Identical B-105		See comment SPM 105B. (4)
SPM-518	6	A	7	20	7	21	The use of biomass is unclear: does it include forest (and agriculture) sinks, or only biomass use for energy purposes? Please specify (Cédric PHILIBERT, International Energy Agency)	Glossary; we will use bioenergy		Noted. This chapter deals with Energy Supply. Thus, it is biomass for energy purpose. (4)
SPM-519	6	A	7	20	0	0	Not just biomass, active and passive solar too! (Michael Jefferson, World Renewable Energy Network & Congresses)	REJ; not consistent with literature		REJ; not consistent with literature (4)
SPM-520	6	A	7	20	0	0	Sentence starting "Biomass could ..." is unclear how can be related to Fig. SPM-4 for a non-expert reader. It should be more explicative or use similar terms than in the figure. (Government of Spain)	ACC; reformulate (in fig 4 bio energy and renewables will be combined)		Accepted. Biomass will be replaced by modern bioenergy. (4)
SPM-521	6	A	7	20	7	20	after "effectiveness" please add "as would taking measures in sectors currently not addressed in the Kyoto Protocol" (Government of The Netherlands)	REJ; this is about technology and not about sectors. Aviation can use renewable fuel		REJ; this is about technology and not about sectors. Aviation can use renewable

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										fuel (4)
SPM-522	6	A	7	20	7	20	Term 'biomass' is unclear - for categories of mitigation measures in Fig SPM.4, which of terms 'biofuels' and 'forest sinks' does it relate to? Caveats need to be added on biomass – is this referring to biomass co-generation? / with CCS? Needs to be more detailed discussion of pros and cons of biomass in chapter proper. (Government of Australia)	We need a bio energy paragraph, see A-1		Accepted. Biomass will be replaced by modern bioenergy. (4)
SPM-523	6	A	7	20	7	21	"Biomass could contribute substantially to achieving stabilization targets (for illustrative examples see figure SPM.4)." Following this statement, it is critical to provide the estimate of how much the substantial biomass use exacerbate the food security and explain if, to what extent and how the modeling studies included the food security in the analysis to arrive at the projections of the bio-fuels supply. (Government of India)	See A-522		Noted. Regarding competition between food and fuel SPM claims that this isn't an issue at global level. Nevertheless it is critical in several regions. This is discussed elsewhere. (4)
SPM-524	6 F 4	A	7	20	0	0	The message of this figure seems questionable; this figure should be deleted. Other studies indicate much higher contributions of renewables compared to CCS. Especially, the low fraction of "other renewables" does not seem plausible given the very high potential of technologies such as wind, solar, geothermal. Therefore, the limited set of models leads to a bias towards CCS. It is recommended to delete this figure as long as it is not embedded in a critical discussion of the underlying parameters (very pessimistic for renewables, very optimistic regarding CCS). The high CO2 mitigation potential of fossil CCS is questioned by other authors for a number of reasons, amongst others time frame of technological	See A-455		Accepted. The figure will be modified. (4)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							availability, high additional costs which move CCS to a similar cost performance as the mix of renewables, local impacts and risks, and leakage which lowers the CO2 reduction depending on the upper time integration boundary (time frame 100 years? 1000 years?) etc. (Government of Germany)			
SPM-525	6 F 4	A	7	21	7	25	Figure SPM4 needs footnote explaining what is CCS and what is biofuels with CCS. Add footnote explaining that "fossil fuel switch" means switching from e.g. coal to oil and not switching from fossil to renewables (Rachel Warren, University of East Anglia)	ACC; change wording		Accepted. Add explanations on the figure. (4)
SPM-526		A	7	22	0	0	It would be interesting to have this same Figure for 2030 (from intermediate model results which should be available in the same database as the one used for this Figure, possibly also for Chapter 11 and the TS), and to compare the result with the Table of potentials from the sectoral Chapters. This emerged from a discussion in the SYR team that has to distinguish the short to medium term (up to 2030) from the longer term (beyond 2030), but would also be very relevant for the main WG3 report! Particularly, it would be interesting to know which technologies are relevant for the shorter term and which ones are only suggested to become important after 2030 (e.g. hydrogen fuel cell cars, other?). (Rob Swart, MNP)	DISCUSS; try develop similar figure for 2030 (see also A-455)	3,11	Noted. Figure being revised. (3) Are the data available for this? Can the model results be provided for 2030. (11) Accepted. The modified figure will include results for 2030. (4)
SPM-527	6 F 4	A	7	22	7	25	Figure SPM.4 needs an indication (perhaps in the caption) of the 2100 baseline emission with respect to which these emissions are calculated, to provide information on whether the reductions are modest or large. Alternatively, the figure could present percentage rather than absolute emissions reductions. (Michael Raupach, CSIRO Marine and Atmospheric Research)	ACC; use %; see also A-455		Accepted. Figure will be redrafted. (4)
SPM-	6	A	7	22	7	22	Sentence would be more useful and less controversial if it more	TIA in reformulating		Strong policy

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528							specifically stated: "Governments providing strong policy direction in the management of…." (John Drexhage, International Institute for Sustainable Development)	see ch 4 and 11 text proposals		direction from government is important in the management of long term technology transitions though approaches may differ. (11) Rejected. Other comments enjoyed the sentence. (4)
SPM-529	6	A	7	22	7	23	comment: possible inconsistencies with SPM P14/L39-40 and P15/L29-31, Ch1/P21/L12-15, Ch2/P76/L22-23, Ch4 P96/L26-30 and P97/L5-9, Ch5/P74/L4-9, Ch7 P4/L19-23, P55/L42-44, P56/L16-26 and P56/L45-48, Ch8/P56/L38-39, and Ch9/P74/L23 (Government of The Netherlands)	CHECK	2,3,4,5,7, 8,9	issue does not appear to relate to ch3. (3) Noted. It will be checked. (4)
SPM-530	6	A	7	22	7	22	Unclear where the basis for their needing to be a "a strong government role" in promoting tech transfer is. This assumption would appear to be policy prescriptive and does not highlight the role of the private sector, market forces etc. (Government of Australia)	TIA in reformulating		Acceped. Check text. (4)
SPM-531	6	A	7	22	7	23	What does a strong government role mean/imply? U.S. Government (Government of U.S. Department of State)	TIA in reformulating		Accepted. Check text. (4)
SPM-107	6	B	7	22	7	22	Write: "A strong government role in mangement of long-term no- and less-greenhouse gas technology development and deployment is important ..."	REJ; that is not what is meant; see also A-530, 531		REJ; that is not what is meant; see also A-530,

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Government of Switzerland)			531 (4)
SPM-108	6	B	7	22	7	23	What does a strong government role mean/imply? U.S. Government (Government of U.S. Department of State)	Identical A-531		See SPM 531A (4)
SPM-532	6 F 4	A	7	23	0	0	Figure SPM-4 (TS-16) raises two questions to me: the relatively low contribution of conservation and efficiency in MESSAGE (5th largest contribution) compared to IMAGE (1st largest contribution), and the apparent large difference in total required reductions between MESSAGE and IMAGE. I suggest to address these questions at least in the TS. (Rob Swart, MNP)	See A-527		Accepted. Figure will include more models.. (4)
SPM-533		A	7	23	7	24	what is the meaning of this statement? (Aviel VERBRUGGEN, University of Antwerp)	See A-530,531		See A-530,531 (4)
SPM-534	6 F 4	A	7	24	7	24	In Figure SPM.4 suggest changing “Biofuels” to “Bioenergy” which is more inclusive. Many would interpret biofuels to mean transportation fuels whereas much of the potential is for electricity from biomass. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	ACC		Accepted. (4)
SPM-535	6 F 4	A	7	24	7	25	Reword: A strong government role in management of long-term technology transitions is important, though approaches may differ. (Government of UK)	See A-530, 531		See A-530, 531 (4)
SPM-536	6 F 4	A	7	24	7	24	It is unclear to what the "Non-CO2" category in Figure SPM.4 refers. Please provide a more complete label. (Government of Environment Canada)	ACC; add in caption		Accepted. Add in caption. (4)
SPM-109	6 F 4	B	7	24	7	27	Consider moving text beginning at Line 25 to the top of Figure SPM.4 or giving it a title. Is this the first use in the document of “W/m2” ? If so, for lay reader may wish to footnote or explain briefly as a measure of radiative forcing. Ditto the term “radiative forcing”. Clarify or explain “SRES B2” when first used. U.S. Government	Identical B-110		See SPM 110B (4)

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							(Government of U.S. Department of State)			
SPM-110	6 F 4	B	7	24	7	27	Consider moving text beginning at Line 25 to the top of Figure SPM.4 or giving it a title. Is this the first use in the document of "W/m2" ? If so, for lay reader may wish to footnote or explain briefly as a measure of radiative forcing. Ditto the term "radiative forcing". Clarify or explain "SRES B2" when first used. U.S. Government (Government of U.S. Department of State)	REJ; W/m2 will be deleted; caption for figures always below. Will be deleted on fig 4, but retained in table 1.		Rejected. W/m2 will be deleted; caption for figures always below (4)
SPM-537	6 F 4	A	7	25	0	0	Figure SPM 4: This figure is based on only two models, but it potentially conveys messages about a relative assessment of energy technologies. This is appropriately noted in chapter 3, but lost here. Standing alone, the figure shows very different results from the IMAGE and MESSAGE models, e.g. concering the relative contribution of nuclear and other renewables. Different categories also would deliver different results, if for example all CCS were combined, and biofuels without CCS combined with other renewables. To provide a clear message to policy-maker on teh relative contributions of different energy technologies, a much wider assessment is needed than the figure can capture. My suggestion would be not to use this figure in the SPM, but to leave it in chapter 3 where the limitations are more carefully explained. (Harald Winkler, University of Cape Town)	See A-434; combine bioenergy with other renewables; combine all CCS Needs to be discussed with ch 3.		Noted. More models will be added. (4)
SPM-538	6 F 4	A	7	25	0	0	Figure SPM.4: this figure is misleading since it gives the feeling that there is a high level of agreement between the potential of different mitigation options. Specifically the fact that the role of "other renewables" small in the time frame until 2100 is questionable. In (http://www.wbgu.de/wbgu_jg2003_engl.html, figure 1) you find a scenario with a very different view. (Robert Pitz-Paal, German Aerospace Centre (DLR))	See A-434		See comment SPM 434 A (4)
SPM-539	6 F 4	A	7	25	0	0	Modelling scenarios 100 years into the future is unlikely to be of much value in policy formulation. (Iain MacGill, University of NSW)	REJ; disagree		Rejected. Many literature works with this approach. (4)

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SPM-540	6 F 4	A	7	25	0	0	Fig SPM.4: When looking at the small contribution from other renewables (especially in the MESSAGE model), I doubt if the applied models can calculate with the stimulating effects on employment from renewable energy use, with their positive effects on the local economy (see also my comment in chapter 3, page 60, Fig 3.27) It seems that the numbers and data from SPM.4 are not from a scenario but fit to a special case without any entitlement for general validity. (Manfred Treber, Germanwatch)	See A-434; models are cost mimimisation models		Noted. More models will be added. (4)
SPM-541	6 F 4	A	7	25	0	0	Fig SPM 4: please change the first explanation to "Energy efficiency & conservation" as efficiency has more effects than energy conservation (Manfred Treber, Germanwatch)	REJ; is ok		Rejected. It is clear enough. (4)
SPM-542	6 F 4	A	7	25	0	0	Figure SPM 4 this appeared to be controversial and is linked to particular scenarios - not sure it is needed to illustrate the point (Ann Gardiner, AEA Technology)	See A-434		See comment SPM 434 A. (4)
SPM-543	6 F 4	A	7	25	0	0	Fig SPM-4. The baseline from which these reductions are made isn't specified. (Paul Baer, EcoEquity)	ACC; add to caption		Accepted. Add to caption. (4)
SPM-544	6 F 4	A	7	25	7	25	Figure SPM.4: It is straining credulity that over the next 100 years the mitigation potential of 'other' renewables (solar, wind, geothermal, etc) is so marginal that we're seemingly better off planting trees than changing our energy supply to renewables, and I object to this figure which policy makers will surely interpret as we might as well not develop renewable energy technologies at all. I note that the figure builds on unpublished research (in press, as of September still unpublished). What assurance can we have that the figure reflects scientific consensus when the scientific community has not had any opportunity to reflect on it? Perhaps there are good reasons why the mitigation potential may be so low, but it seems to me to contradict the volumes of research showing very large technical potentials for renewables (see below). Contrast this with AR4 chapter four, specifically Table 4.4.2 which shows a technical potential of hundreds of thousands of EJ for solar, wind, and	See A-434 and 537		See SPM 434 A and SPM 537 A. (4)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							geothermal energy to 2050 (greatly exceeding cumulative world energy consumption in that period, whereas in SPM.4 (in twice the timeframe!) the mitigation potential of these technologies is a trivially small fraction of the total mitigation effort. (Donald Pols, Friends of the Earth Netherlands/Milieudefensie)			
SPM-545	6 F 4	A	7	25	0	0	Figure SPM.4: This figure expresses a vision from two models only, which rely on questionable assumptions. It seems based on the hypothesis of important technical improvements in the production of biofuels while taking all other renewable technologies at their current level of development. The literature is very diverse from this point of view, and other renewable energy technologies are as likely to play an important role in this century as biofuels. In particular, the three main solar technologies, thermal solar for heat, concentrated solar power and possibly even PV could each invidually provide as much emission reductions than biofuels - and the three together are likely to provide more. The use of the term "biofuel" is itself misleading if the category, as the precision "incl. CCS" suggests, include various forms of biomass, including for power production. For most readers biofuels means liquid fuels from biomass, and will more likely all go to transportation. Moreover, attributing to biomass the emission reductions that would come from the use of CCS in conjunction with biomass burning is analytically flawed. There is no fundamental difference between capturing CO2 from fossil fuel or biomass burning and the challenge about storage are similar. It would be clearer to have a category "biomass" on one hand, and a category CCS (for all fuels) on the other. (Cédric PHILIBERT, International Energy Agency)	See A-434 and 537		See comment SPM 434 A and 537 A. (4)
SPM-546	6 F 4	A	7	25	7	25	Figure SPM.4 should also include other scenarios aiming at stabilization levels as low as 375 ppmv CO2eq. If this is not possible, this figure should be deleted because it seems to recommend a stabilization levels of 500 and 650 ppmv CO2 eq., which would not guarantee not to breach the 2 C threshold. (Giulio Volpi, WWF International)	REJ; this is to illustrate the portfolio of technologies needed in a least cost framework; it should be mentioned that there is choice, but at a price		Rejected. This is to illustrate the portfolio of technologies needed in a least cost framework;

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										it should be mentioned that there is choice, but at a price (4)
SPM-547	6 F 4	A	7	25	8	1	figure SPM.4 title: replace first 3 lines by "Emission reductions cumulative over 2000-2100 for alternative mitigation measures, assessed by the models IMAGE (upper bars) and MESSAGE (lower bars). Black ...etc. (Aviel VERBRUGGEN, University of Antwerp)	ACC		Accepted, but figure will be changed. (4)
SPM-548	6 F 4	A	7	25	7	25	Fig SMP.4 Achieving a lower forcing function would require more investment in low carbon technologies but it is not clear from the figure or discussion how the respective carbon savings from each technology compare with what is happening today; or what investment is needed in each technology to achieve these savings. It would be helpful to policy makers to put this in the wider context so they have an idea of the scale of the challenge and hence the need for some quite strong policy instruments to create investment critical mass. (Government of UK)	DICUSS if investment data can be given	3, 11,4	noted. However data unavailable (ch3) Accepted. Try to include investment. (4)
SPM-549	6 F 4	A	7	25	7	25	Figure SPM.4: Change "Biofuels(incl.CCS)" to "Biofuels". Reason:Biofuels should be one part of renewalbe energy. And it is not necessary to emphsize CCS here. (Government of China Meteorological Administration)	ACC, see A-537		See comment SPM 537 A. (4)
SPM-550	6 F 4	A	7	25	0	0	Fig. SPM 4 We propose that ppmv CO2-eq is used as the primary unit when reference is made to stabilisation. The figure and text should, if feasible, be rewritten to reflect this. Furtehrmore, we propose to use "bioenergy" in stead of "biofuel" (fuel will often be taken as liquid fuel) and "reduscions in other emissions than CO2" instead of "Non-CO2". (Government of Norwegian Pollution Control Authority)	ACC drop W/m2 and use bioenergy		Accepted. Drop W/m2 and use bioenergy (4)
SPM-551	6 F 4	A	7	25	7	25	Fig SPM-4: The w/m2 will not be clear to most people. The point that reductions required to go to lower stabilization levels (i.e. from 650 to 500ppm (grey bars)) will be significant, and that the role of	ACC, see A-550		See SPM comment 550 A (4)

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							approaches such as energy efficiency and CCS become more important when striving for the lower levels is not clear enough! (Government of Environment Canada)			
SPM-552	6 F 4	A	7	25	7	25	Fig SPM-4: Explain the difference between the IMAGE and the MESSAGE models. Reader does not know why the scenarios are significantly different as the models are not described. (Government of Environment Canada)	ACC; add sentence to caption or para 6		Accepted. Add sentence to caption or para 6. (4)
SPM-553	6 F 4	A	7	25	7	25	after "(2000-2100" add ")" (Government of The Netherlands)	ACC		Accepted. (4)
SPM-554	6 F 4	A	7	25	0	0	Figure SPM 4: Separate biofuels and CCS (combining apples and oranges), biofuels are too important. (Government of India)	ACC, see A-537		Rejected. We are talking about CCS with bioenergy. (4)
SPM-111	6 F 4	B	7	25	7	27	Figure SPM.4 Replace "Cumulative emissions" by "Cumulative global greenhouse gas emissions". (Government of European Community / European Commission)	ACC		Accepted. (4)
SPM-112	6 F 4	B	7	25	7	27	Figure SPM.4 Express x-axes unit in GtCO2-eq (consistency with text and other graphs in SPM) (Government of European Community / European Commission)	ACC		Accepted. (4)
SPM-555	6 F 4	A	7	26	7	26	delete "(" before "MESSAGE" (Government of The Netherlands)	ACC		Accepted. (4)
SPM-556	6 F 4	A	7	26	7	26	The starting bracket before MESSAGE may be deleted. (Government of Pakistan)	ACC		Accepted. (4)
SPM-113	6 F 4	B	7	26	7	26	Figure SPM4: IMAGE and MESSAGE: why only 2 models ? Other senarios are available, for example the NOE scenarios developed by Benjamin Dessus in France ("Energie, un enjeu planétaire", 1999, Belin) (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; add more models with comparable portfolios DISCUSS	3	Noted. Figure being revised to include additional models. (3)

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										Accepted (4)
SPM-114	6 F 4	B	7	27	8	0	Number 550 in the calculations, but 500 in the graph. Can same number used? The authors should verify that the correct numbers were used. U.S. Government (Government of U.S. Department of State)	ACC; change W/m2 into conc		Accepted but W/m2 will be deleted. (4)
SPM-557	6 F 4	A	7	0	0	0	The information on energy supply options in Figure SPM.4 from the IMAGE and MESSAGE models does not appear to be consistent with the mitigation costs and potential of energy supply in Chapter 4 (section 4.4 p. 72). In addition, as stated in my comments above on Section 4.4, I believe the potential emission reductions from "other renewables" significantly underestimates the what is technically and economically achievable. Wind and solar have the potential to make much greater contributions than both fossil CCS and nuclear from both a technical and economic standpoint through 2100. Studies the National Renewable Energy Laboratory and US DOE illustrate a much greater potential for these technologies through 2050 that are more cost-effective than fossil with CCS or nuclear. Advanced renewable energy technologies such as offshore wind, geothermal hot dry rock, ocean thermal and wave energy, and nanotechnology for solar could also make a major contribution that I doubt are included in the IPCC analysis (Steve Clemmer, Union of Concerned Scientists)	REJ; ch 4 is on period to 2030; this is 2000-2100		Accepted. Figure will be modified. (4) three more models to be added in the figure.
SPM-558	6 F 4	A	7	0	0	0	Figure SPM 4. The following points remain unclear: 1) The Figure presents the results of four different data sets: two models [IMAGE] and [MESSAGE] as well as two different levels of radiative forcing (4.5W/m2 and 3W/m2). The colors used to represent the two models should be more distinct in order to distinguish between [IMAGE] and [MESSAGE]. 2) Within the Figure, it should be noted that 500ppmvCO2-eq and 650ppmvCO2-eq correspond with 3W/m2 and 4.5Wm/m2, respectively. Furthermore, it is felt that information based on only two models is insufficient and in addition to the above revisions, analyses by other	See A-434; improve lay-out		See SPM 434 A. (4)

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							models should be added. (Government of Japan)			
SPM-559	7	A	8	0	8	0	footnote 5: when the end-loss is compared to an average annual rate, does one not have to specify the period over which the average is spread? (Aviel VERBRUGGEN, University of Antwerp)	ACC; modify footnote; we will also add the annual rate reduction in brackets in the main text		ACC; modify footnote; we will also add the annual rate reduction in brackets in the main text (4)
SPM-560	7 F 5	A	8	0	8	0	Figure SPM.5: the label on the abscissa should be more complete as "Radiative forcing stabilization level (W/m²)"; the label on the ordinate perhaps as "Mitigation costs as a % of global GDP in 2050"? (Aviel VERBRUGGEN, University of Antwerp)	TIA; we will drop W/m2 and replace with conc		Accepted. Figure will be modified. (4)
SPM-561	6 F 4	A	8	1	0	0	SPM.4 figure legend repeats information already included in an inset within the figure. Therefore, sentence "Black bars reduction..., grey bars .." can be deleted. (Government of Spain)	TIA		Accepted. Figure will be modified. (4)
SPM-115	6 F 4	B	8	1	8	1	… reductions : which baseline is used ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; add info to caption		ACC; add info to caption (4)
SPM-562	7	A	8	3	8	8	p. 8, lines 3-8 and n 5; and p.11, lines 19-23 and n 9 --- The stabilization costs indicated in the SPM are (highly) suspect because they are assessed against baselines that already include large reductions in emissions attributable to technological change, the adoption of which has not been considered in the mitigation cost analysis (or has simply been treated as involving zero cost). Moreover, many cost estimates are based on models that assume a carbon-free “backstop” energy technology(ies) that may (does) not yet exist, a technology that is often identified as “generic”. The “backstop” technology assumption can substantially reduce mitigation costs. (Christopher Green, McGill University)	REJ; they are calculated indeed against (a wide range of) baselines, but that is standard practice		

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SPM-563	7	A	8	3	8	12	These GDP results cannot stand alone. The least one can do to improve these informations is to explain how important assumptions made are to the results, especially assumptions about capital mobility, use of credits from Joint Implementation and Clean Development Mechanism and oil prices. Depending on these assumptions the GDP impact will vary greatly. This can among other studies be seen from the study made by the EU Commissions research unit IPTS (Analysis of Post-2012 Climate Policy Scenarios with Limited Participation, June 2005. Study is included) and the study made by COWI for UNICE (Competitiveness and EU Climate Change Policy, october 2004. Study is included in the email). (Helle Juhler-Kristoffersen, Confederation of Danish Industries)	DISCUSS if something can be said on the effects of limited participation, because most (all?) studies have assumed full participation and full trade Wait for proposals ch 3	3	Accept. Text to be revised to give greater qualification to statement (3)
SPM-564	7	A	8	3	8	12	These GDP results cannot stand alone. The least one can do to improve this information is to explain how important assumptions made are to the results, especially assumptions about capital mobility, use of credits from Joint Implementation and Clean Development Mechanism and oil prices. Depending on these assumptions the GDP impact will vary greatly. This can among other studies be seen from the study made by the EU Commission research unit IPTS (Analysis of Post-2012 Climate Policy Scenarios with Limited Participation, June 2005. Study is included) and the study made by COWI for UNICE (Competitiveness and EU Climate Change Policy, October 2004). (,)	Identical A-563		
SPM-565	7	A	8	3	8	4	Insert new SPM Fig = Fig 3.28 (Relationship between cumulative emissions reductions and GDP loss, Chapter 3, p.62) and new reference to this new chart at end of first sentence in line 4. This new figure is easier to understand, covers two different timeperiods, and is less intimidating for those readers who do not know the various model runs charted in the exisiting Figure SPM.5. It also re-inforces the central message of this section. Existing Fig.5 should, however be retained, together with its reference. (Pat Finnegan, Grian)	REJ; problem with fig 3.28 is that results are all over the place and no reasonable conclusions can be drwn from it; the reason being that studies with vary different assumptions are thrown together		

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SPM-566	7	A	8	3	8	21	All those paragraphs and the Figure SPM.5 are only descriptive and "neutral" approaches to the very important issue of reductions to GDP caused by global mitigation measures. I think that, if the problem is to be approached, it needs much more clarification regarding the differences between positive and negative impacts, and also between global and local or regional outcomes, because as it is now presented at SPM, I believe that policy makers would receive very little help, or maybe would be more confused with the information here described. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)	REJ; no space to present regional data and too dependent on distributional assumptions		
SPM-567	7	A	8	3	8	12	It is important to comment on important assumptions made and their consequences to the results, especially assumptions about capital mobility, use of credits from Joint Implementation and Clean Development Mechanism and oil prices. Depending on these assumptions the GDP impact can vary greatly. This can be seen, for instance, from the study made by the EU Commission research unit IPTS (Analysis of Post-2012 Climate Policy Scenarios with Limited Participation, June 2005. Study is included) and the study made by COWI for UNICE (Competitiveness and EU Climate Change Policy, October 2004). (Jean-Yves CANEILL, EDF)	Identical A-563		
SPM-568	7	A	8	3	8	12	point 7:Costs should be put into a clear perspective (as argued in Azar & Schneider, "Are the economic costs of stabilising the atmosphere prohibitive?" Ecological economics, 2002), by adding: Though estimates vary, the costs of even very low stabilization levels are comfortably compatible with continued economic growth. And, specifying: Stabilization at lower levels would cost a few per cent of GDP in 2050 [fig. SPM.5) compared to an expected economic growth of 100-200 % [?] over the same period. Now it is somewhat cryptically explained in a footnote, but it should be made more explicit.Setting it off against the total GDP growth over the period makes the figures more easy to grasp. (Donald Pols, Friends of the Earth Netherlands/Milieudefensie)	ACC; add annual GDP growth impact between brackets		

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SPM-569	7	A	8	3	8	10	It is vital to state first the situation for the stabilization at levels of 450 ppm CO2eq. or below which are necessary in order to limit the worst consequences of climate change. Here, as elsewhere, the 650 ppm CO2 eq. is the point of departure, as if assuming that would be sufficient solution to avoid dangerous climate change. I also urge to give some estimates of the GDP costs of the necessary low stabilization levels, properly qualified as need be due to the small number of studies. (Donald Pols, Friends of the Earth Netherlands/Milieudefensie)	REJ; there is no ranking in the current text		
SPM-570	7	A	8	3	8	12	It would be interesting to have a bit more detail in this section not just about economic issues, but about structural issues. At what stabilisation level are we beginning to talk about premature retirement of infrastructure? Where do we move from simply spending more money on the latest and best technology to having to make structural adjustements? The way the information is currently presented leaves a very diffuse picture, as if stabilisation at any level is almost equally possible, which does not really gel with the perspective one gets from a regional and sectoral bottom-up perspective, and things would seem to get quite significantly progressively harder as we move to lower stabilisation levels. It would also be helpful if the TS brought out more information on this. (Andy Reisinger, TSU IPCC Synthesis Report)	DISCUSS if the issue of premature retirement of capital stock can be clarified; UNCLEAR what is meant with structural adjustments and the point about stabilisation at any level looking equally easy.		1. models deal with that differently, explain in TS. 2. check text on unclarity.
SPM-571	7	A	8	3	8	6	The cost estimates should be expressed in the same way, for example, "below x %" or "from x% to y %). Otherwise Para 7 could imply that the costs for 650ppmv can be higher than 550ppmv. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	REJ; cost ranges do overlap, unfortunaytely		
SPM-572	7	A	8	3	8	12	The GDP losses here (to 2050) do not seem consistent with those cited on page 11, paragraph 10 (to 2030). Why not give a look at the projected costs for a range of stabilization levels. What affects the different costs in different regions? (Government of Environment Canada)	DISCUSS; these results are for 2050; in para 10 it is 2030; however the analysis underlying para 10 is not the same as that for para 7 (different scrutiny of	3	Noted. Time periods differ and consultation occurring with ch11.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
								studies to use) and outcomes may change if full joint analysis is done; also probably a good idea to present 2030 outcomes together with 2050 in figure 5b		(3)
SPM-116	7	B	8	3	8	4	The statement in bold is rather trivial as a summary for this paragraph: make this more specific. What is the range of costs (as % of GDP) for various stabilisation levels. Then the sensitivities can be explained in non-bold text. (Government of European Community / European Commission)	REJ; this is a general summary; details follow; point on participation effect to be added		
SPM-117	7	B	8	3	8	8	The SPM should include a discussion clarifying the important modeling assumptions that drive costs. U.S. Government (Government of U.S. Department of State)	REJ; leave that to chapter/TS, see also A-563		
SPM-118	7	B	8	3	8	8	P. 8, lines 3-8 and n 5; and p.11, lines 19-23 and n 9 --- The stabilization costs indicated in the SPM are (highly) suspect because those costs are assessed against baselines that already include large reductions in emissions attributable to technological change, the adoption of which has not been considered in the mitigation cost analysis (or has simply been treated as involving zero cost). Moreover, many cost estimates are based on models that assume a carbon-free "backstop" energy technology(ies) that may (does) not yet exist, a technology that is often identified as "generic". The "backstop" technology assumption can substantially reduce mitigation costs. The SPM should include a discussion clarifying the important modeling assumptions that drive costs. U.S. Government (Government of U.S. Department of State)	Identical A-562		
SPM-119	7	B	8	3	8	4	Is the statement necessarily true for lower levels of participation? May make it more expensive for those who participate, but total cost may be fixed. Clarify that the costs being referred to are global totals. Costs in different countries may indeed be lower if the countries do not participate. U.S. Government (Government of U.S. Department of State)	TIA; clarify that this is about global costs; statement is true: the more countries participate the lower the global costs; it is not always true that the cost for those that participate are lower, because of effects of trade and		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
								price of allowances		
SPM-120	7	B	8	3	8	4	Clarify that the costs being referred to are global totals. Costs in different countries may indeed be lower if they do not participate. U.S. Government (Government of U.S. Department of State)	ACC		
SPM-573	7	A	8	4	8	6	Insert super script reference to footnote 5 at **first** mention of GDP losses in line 5, not at the second reference in line 6, as presently. Note 5 is one of the most important lines in the entire SPM and probably deserves promotion from a footnote. (Pat Finnegan, Grian)	ACC		
SPM-574	7	A	8	4	8	8	Negative GDP losses due to GHG emission reductions are peculiar and cannot generally accepted. The model showing the negative GDP losses presumes a mechanism that the larger carbon tax is imposed, the larger investments may take place by the revenue obtained through the carbon tax, and then employment increase and GDP increase will follow. In reality the carbon tax will work to diminish economic activities because of the higher energy prices, and GDP in total will be decreased. However, the model does not consider these effects. The model presumptions could be justified for short time periods; however, for a long time span such as up to 2050 and 2100, the presumed mechanism can never be justified. For these reasons, I strongly recommend you to delete the negative values in Figure SPM 5 and the related words. If not, you should at least provide with description regarding the limitations of the model. Otherwise, IPCC will confuse and mislead readers. (the same comments to Figure TS 15a and Figure 3.29a) (Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE))	DISCUSS if studies that show negative costs are sufficiently comparable to be included; if the studies can be included provide an explanation for their results in the caption	3	accepted. Figure to be revised. (3), but retaining negative costs
SPM-575	7	A	8	4	8	4	explain that "level of participation" means the number of Parties or countries which are participating. (Rachel Warren, University of East Anglia)	ACC; add explanation		
SPM-576	7	A	8	4	8	4	Is there not the case where higher baseline emissions, if associated with inefficiencies, can actually mean some lower cost reduction potentials?	~~DISCUSS~~	3	Rejected. While theoretically possible, no

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Government of Environment Canada)			empirical evidence available in the modelling literature. (3)
SPM-121	7	B	8	4	8	5	What is the exact meaning of this important sentence? A sentence with content similar to note 9 on page 11 MUST be added here as well for perspective. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; add annual growth rate reduction between brackets		
SPM-122	7	B	8	4	8	4	Before "Costs for multigas stablisation", shouldn't the adjective " Cumulated (over 2000 to 2050) " be used? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	REJ: applies also to costs in a specific year		
SPM-577	7	A	8	5	8	15	In sentences units are shown in ppmv, while in Figure SPM. 5 stabilization level is shown in W/m2. This is confusing. Units in Figire SPM. 5 should be changed to ppmv. (The same comment should be applied to Figure TS. 15 (p. 27 of TS). (Mitsutsune Yamaguchi, Teikyo University)	ACC; W/m2 to be dropped		
SPM-578	7	A	8	5	8	6	Explain the outer ends of the range. E.g., under which conditions/assumptions are the costs around 1 % (or even negative!) and under which conditions/assumptions 5 %?? (re Uncertainty Guidance Note). The SPM mentions only the inclusion of non-CO2 options as a reason for low estimates. Is this the only, or most important reason? At least in TS, but preferably also in SPM. This would be an improvement over the TAR, whereas the results as such are not that much different. (Rob Swart, MNP)	DISCUSS how to provide additional clarification in caption; all studies are multigas should also be mentioned	3	Accept. Text to be revised to give greater explanation of key assumptions (3) Ch 3 proposal
SPM-579	7	A	8	5	0	0	"Costs for [..] stabilisation at 650ppm are generally below 2%" where page 11 line 21 says "..stabilisation around 650 ppm show global GDP loss below 0.5%". Is the difference due to to the time horizon : 2050 vs 2030? These statements are confusing the way they are presented now	See A-572		

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							(Ronald Hutjes, Alterra)			
SPM-580	7	A	8	5	8	5	after "650 ppmv CO2-eq" add: "(4 to 5 W/m² radiative forcing)" (Aviel VERBRUGGEN, University of Antwerp)	REJ; delete W/m2 from figure		
SPM-581	7	A	8	5	8	6	It would be useful to add the average annual GDP reductions in the main text here as annual GDP growth is the most frequently used statistic. Whilst footnote 5 makes in clear what the annual GDP is, a policy maker skimming through the report might overlook the footnote and wrongly conclude that, for example, stabilisation at 550ppm could cost as much as 5% GDP per annum, whereas the actual cost is in the range 0.03% to 0.1%. Better to avoid any possibility of such a mistake. (Government of UK)	ACC		
SPM-582	7	A	8	5	8	5	Is this global average loss? (Government of Environment Canada)	ACC; add “global average”		
SPM-583	7	A	8	5	8	6	Change "give higher or negative numbers" to "give higher losses or positive gains". (Government of Environment Canada)	ACC		
SPM-584	7	A	8	6	0	0	"higher or negative numbers" needs clarification; reference to fig. SPM.5 is made, but the x-axis refers to stabilization level in W/m2, whereas the text refers to stabilization levels in ppmv; the letters A to E along the x-axis are not clear at all (Michael Kohlhaas, German Institute for Economic Research)	See A-583		
SPM-585	7	A	8	6	8	6	after "550 ppmv CO2-eq" add: "(3.25 to 4 W/m² radiative forcing)" (Aviel VERBRUGGEN, University of Antwerp)	REJ; W/m2 will be dropped		
SPM-586	7	A	8	6	8	8	Describing GDP loss in terms of proportion can be misleading as it seems to give the wrong perception that the loss is rather small. Therefore, we suggest to add the information on NPV of abatement costs. (Government of Japan)	REJ; too complex and misses context for large numbers		
SPM-587	7	A	8	6	0	0	The reference to GDP loss can easily be misinterpreted, so we propose that footnote 5 is included in the main text. (Government of Norwegian Pollution Control Authority)	ACC, see A-581		
SPM-123	7	B	8	6	8	6	Explain that the a GDP loss of 2% is 2% below BAU growth. It is a minor reduction in GDP increase, which is usually assumed to grow	See B-121; issue about costs further into the future	3	Accept. Text to be revised to

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							3% per year. Take footnote 5 into the main text. Explain also that for higher stabilization levels cost occur further in the future and are therefore not appearing in 2050. (Government of European Community / European Commission)	UNCLEAR		make statements clearer. (3)
SPM-588	7	A	8	7	8	7	after "450 ppmv CO2-eq" add: "(<3.25 W/m² radiative forcing)" (Aviel VERBRUGGEN, University of Antwerp)	REJ, see A-585		
SPM-589	7	A	8	3	0	0	First sentence should start: Mitigation costs will be higher for lower stabilization targets, lower participation… (Government of Norwegian Pollution Control Authority)	ACC, text is changed		
SPM-590	7	A	8	7	8	7	Change "give higher or negative numbers" to "give higher losses or positive gains". (Government of Environment Canada)	ACC		
SPM-591	7	A	8	7	8	8	This para should reflect that since TAR the range of scenarios has expanded below stablisation around 550 ppm-eq. and that cost estimates for scenarios at or below 450 ppm-eq. are pointing to a comparable range of cost as for 550 ppm-eq., see figure TS15a) for scenarios below 3.25 W/m2 (cat.A) and figure TS15b) for with those scenarios mostly within the EMF21 range of cost estimates. Proposal: replace "for 450 ppm ....reliable estimate (HM)" with "since TAR, some new scenarios have estimated costs for 450 ppm CO2-eq and below. These results confirm gradually increasing costs with lower stabilisation levels, generally in the order of up to a few percent of GDP." (Government of Germany)	REJ; literature base too weak DISCUSS	3	Rejected. Literature does not support arguments. However, text will be revised in line with comment SPM 123-B. (3)
SPM-592	7 F 5	A	8	8	8	8	Figure SPM 5: Describe the meaning for "A, B, C, D and E", which correspond to Table SPM 1. For example, the corresponding levels of CO2 concentration should be added for easy understanding. (Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE))	ACC, CO2 eq numbers in stead of W/m2 and ABCDE to be clearly marked		
SPM-124	7	B	8	8	8	8	Clarify what you mean by "carbon sinks": CCS, forests and soils, or both ?? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; glossary		
SPM-	7	B	8	8	8	9	"multigas reduction reduces costs". This seems indeed to be the	REJ; clear enough		

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125							agreement, but another issue seems relevant here: several non-CO2 emission reduction options exist in the short term at lower cost compared to CO2. But reducing to very low levels in the long term (e.g. 450 co2eq.) non-CO2 options are no longer available and CO2 is reduced more compared to non-CO2. This is important to show that non-CO2 options can complement but not replace CO2 mitigation. (Government of European Community / European Commission)			
SPM-593	7 F 5	A	8	10	19	15	Figure SPM.5 in the summary for policymaker is crucial. Therefore, one needs to be very careful what kind of numbers and model results can and should be shown. The graph shows GDP losses with different stabilisation targets. This figure as it is constructed now is as if you would compare apples and oranges. The graph is misleading and gives wrong impressions. model results cannot be compared because of the following reasons: 1. different baseline assumptions: IMCP focuses on technological changes which is relevant also for the baseline (TC in baseline), IPCC not. 2. different model parameter assumptions: not only for the baseline, but also for substitution elasticities etc.; 3. different model types: top down models and bottom up models usually show very different results, especially because they differ in type, assumptions and TC; 4.different regional scale of models: in IMCP there are some one region -models (Demeter, Mind) which can hardly compared with the other multi regional models;. as this slide with be used as policy recommendation, it is dangerous to present such kind of overview. As the IMCP study focuses primarily on TC, "benefits" of emissions mitigation as presented by the E3ME model, can only be explained by TCs. It is however, difficult to explain decision maker, why emissions mitigation improves GDP. This is not in line with any IPCC study before; furthermore, it is very confusing to have two AIM studies- AIM A1 PS and AIM-IMCP show very different results: this can be explained, as before, through the treatment of TC in IMCP. It is however very difficult to explain outsiders why this is the case. I would strongly recommend	DISCUSS	3	Accepted. Figure to be revised (3)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							either use only IPCC scenarios or run IMCP models in the IPCC mode. (Claudia Kemfert, German Institute for Economic Research)			
SPM-594	7 F 5	A	8	10	19	15	Figure SPM.5 in the summary for policymaker is crucial. Therefore, one needs to be very careful what kind of numbers and model results can and should be shown. The graph shows GDP losses with different stabilisation targets. This figure as it is constructed now is as if you would compare apples and oranges. The graph is misleading and gives wrong impressions. model results cannot be compared because of the following reasons: 1. different baseline assumptions: IMCP focuses on technological changes which is relevant also for the baseline (TC in baseline), IPCC not. 2. different model parameter assumptions: not only for the baseline, but also for substitution elasticities etc.; 3. different model types: top down models and bottom up models usually show very different results, especially because they differ in type, assumptions and TC; 4.different regional scale of models: in IMCP there are some one region -models (Demeter, Mind) which can hardly compared with the other multi regional models;. as this slide with be used as policy recommendation, it is dangerous to present such kind of overview. As the IMCP study focuses primarily on TC, "benefits" of emissions mitigation as presented by the E3ME model, can only be explained by TCs. It is however, difficult to explain decision maker, why emissions mitigation improves GDP. This is not in line with any IPCC study before; furthermore, it is very confusing to have two AIM studies- AIM A1 PS and AIM-IMCP show very different results: this can be explained, as before, through the treatment of TC in IMCP. It is however very difficult to explain outsiders why this is the case. I would strongly recommend either use only IPCC scenarios or run IMCP models in the IPCC mode. (Government of Germany)	See A-593		
SPM-595	7	A	8	10	8	12	Besides baseline assumptions and mitigation options, assumptions on technological change present a driving factor of mitigation costs.	ACC; add “technological change”	3	Noted. Figure to be revised

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							Also the type of model used and its parameter assumptions have a substantial impact on the results. Results need to be seen in light of these differences. Especially important to explain outliers which are not really outliers given the differences in underlying assumptions. (Government of Germany)	DISCUSS the possibility to explain outliers in caption		(3)
SPM-596	7	A	8	11	8	11	delete "or" before "shorter", and delete "and long-term" (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	~~REJ; changes the meaning~~		
SPM-597	7	A	8	12	8	12	the statement "could vary considerably" looks quite acceptable but also somewhat irrelevant because the interesting PM issue is what causes the variations and what can be done, how the variations can be controlled? Is it possible to add somewhat more on this? (Aviel VERBRUGGEN, University of Antwerp)	~~DISCUSS; would take a lot of text to go into this and that space is not available~~	3,13	Rejected. Explanation detailed and space unavailable in SPM. (3)
SPM-598	7 F 5	A	8	12	8	15	Figure SPM 5: Is this reduction relative to BAU? The graph is not clear and should be simplified or deleted. (Government of Australia)	ACC addition "compared to baseline" REJ deletion of figure		
SPM-599	7 F 5	A	8	13	0	0	figure SPM5. It would be very helpful to have two X-axes one with stabilisation level in radiative forcing (W/m2) and a second one with equivalent stabilisation levels in multigas concentration: (ppm CO2equiv) (Ronald Hutjes, Alterra)	ACC; will change to ppmv		
SPM-600	7 F 5	A	8	13	0	0	Figure SPM.5. On x-axis of the plot, there are "A", "B", "C", "D" and "E" characters which meaning is not explain anywhere within the summary, neither in the figure legend nor in the text. They should be removed or explained. In other reports and chapters the meaning of the characters is explained in the text. So, there is no problem in that case. (Government of Spain)	See A-599		
SPM-601	7 F 5	A	8	13	8	13	It is unclear to what the categories in Figure SPM.5 refer. Please provide more complete labels or a cross-reference to full descriptions. (Government of Environment Canada)	See A-599		

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SPM-602	7 F 5	A	8	13	8	15	Figure SPM 5: In the curve below the x-axis the global costs of mitigation are growing with an increasing stabilization level (negative GDP losses are becoming smaller) - this doesn't seem sensible and would require some additional explanation, or alternatively the curve should be deleted from the figure. (Government of Finland)	ACC; add to caption, see also revised text		
SPM-603	7 F 5	A	8	14	0	0	Figure SPM.5: Showing the x-axis in the related ppm number, rather than W/m2 would be more accessible to policymaters, (Harald Winkler, University of Cape Town)	ACC		
SPM-604	7 F 5	A	8	14	0	0	Figure SPM 5 Can a comment be added about the highest and lowest values (IMACLIM-IMP and the negative one) Not easy to see difference between the open triangles) (Ann Gardiner, AEA Technology)	ACC; add to caption, but see also A-593		
SPM-605	7 F 5	A	8	14	0	0	Figure SPM.5: Would be clearer in relating to the text if it specifically contained ppmv rather than just W/m2 on x axis. (Stephen Sheppard, University of British Columbia)	ACC		
SPM-606	7 F 5	A	8	14	0	0	Figure SPM.5: This is a very useful figure. It would be even more useful to a wider audience and outside the WG3 SPM if the figure in the SPM referred to ppm CO2eq stabilisation levels rather than W/m2. The translation between those two units could be done in the TS to provide a link between the original studies and their presentation in a format relevant to policy-makers. (Andy Reisinger, TSU IPCC Synthesis Report)	ACC		
SPM-607	7 F 5	A	8	14	0	15	About Figure SPM.5. What is the base case when the GDP losses are calculated? (Toshihiko Masui, National Institute for Environmental Studies)	See A-598		
SPM-608	7 F 5	A	8	14	8	0	Figure SPM 5 Are all these studies multigas studies? This should be clarified in the figure text. (Government of Norwegian Pollution Control Authority)	ACC; add to caption		
SPM-126	7 F 5	B	8	14	8	15	Figure SPM.5 would become much more useful for policy makers if a relation with concentrations and temperature increase (e.g. in 2100) could be established. (Government of European Community / European Commission)	See A-599		
SPM-	7	B	8	14	0	0	Rephrase Figure caption. U.S. Government	ACC		

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127	F 5						(Government of U.S. Department of State)			
SPM-128	7 F 5	B	8	14	8	0	Rephrase Figure caption. Authors should consider clarifying the caption. U.S. Government (Government of U.S. Department of State)	ACC		
SPM-129	7 F 5	B	8	14	8	0	Figure 5 – Might be useful to explain something about the E3MG scenario since its sign differs from all of the others. U.S. Government (Government of U.S. Department of State)	ACC		
SPM-130	7 F 5	B	8	14	8	0	Clarify that this is global GDP. U.S. Government (Government of U.S. Department of State)	ACC		
SPM-609	7 F 5	A	8	15	8	15	Figure SPM5, indicate that Classes A through E are the same ones used in Table SPM1. (Government of Environment Canada)	See A-599		
SPM-610	7 F 5	A	8	15	8	15	add "The stabilisation classes A-E correspond with those in table SPM.1." (Government of The Netherlands)	See A-609		
SPM-611	7 F 5	A	8	15	8	0	"Why point estimates versus ranges?" The breadth of scenarios would seem to align with ranges, and a median value, and could be standard reporting throughout the document. U.S. Government (Government of U.S. Department of State)	~~DISCUSS; is the question to report a range for each individual study? Is that possible?~~	3	Rejected. Figure explanation to be made clearer (3)
SPM-131	7 F 5	B	8	15	8	15	reduction: compared to what, the BaU, an SRES scenario ??? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC		
SPM-612	8	A	8	16	8	21	The entire paragraph ["Comparing mitigation costs with the benefits of avoided climate change damages and other co-benefits is very complex….involved in climate change policies] contradicts, or at the very least diminshes the validity of, the statements made in SPM page 11 lines 36 to 41 [i.e. "While studies use different methodologies, there is general agreement for all analyzed world regions that neart-term health benefits from reduced air pollution following GHG reductions can be substantial and may offset a substantial (note should use -->significant) fraction of mitigation	TIA; reconsider the whole paragraph; it is now very weak; try to get message about cost of stabilisation (minus co-benefits) versus cost of inaction (see Stern review), see also SPM A-13		Underlying section needs to be revised first. In course of the week new para 8 from ch 3.(Stern review?)

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							costs...offers potentially large cost reductions"]. This contradiction needs to be resolved by either deleting or amending page 8 lines 16-21 and amending its related chapters (Jose Etcheverry, David Suzuki Foundation)			
SPM-613	8	A	8	16	8	21	This paragraph refers to co-benefits in the chapeau, but then does not provide any information on co-benefits. To provide a basis for linking climate policies with development goals, a stronger and clearer exploration of co-benefits (and why they are difficult to quantify and the relationship is complex) might be helpful. (Andy Reisinger, TSU IPCC Synthesis Report)	See A-612		
SPM-614	8	A	8	16	8	21	Whilst this paragraph is true, it would be very helpful indeed to cite an example of damage or adaptation costs from an authoritative source, whilst still stressing uncertainty. For example, a recent World Bank paper for the Bank's Development Committee meeting on 18th September 2006 (An Investment Framework for Clean Energy and Development - a progress report, SecM2006-0360) states in paragraph 98, page 50, that "partial estimates of the costs of impacts of a doubling of greenhouse gas concentrations (or about a 2.5 temperature increase) without adequate adaptive efforts range from 0.5 to 2% loss of GDP per year with higher losses in most developing countries ...' The inclusion of this type of estimate would help clarify the readers mind roughly the sorts of damage costs that might be incurred and, very approximately, how they might compare with mitigation costs. The entire tenure of the chapter seems to be that mitgation is expensive and difficult and there is no compelling reason to carry it out. Without a range of impacts costs this SPM cannot persuade policymakers action is needed. (Government of UK)	See A-612		
SPM-615	8	A	8	16	8	21	This paragraph should state what is known about climate change damages. i.e. "Although the climate change damages may be significant…., comparing mitigation costs….". Could make clearer the complication that the benefits are not necessarily expereinced where the mitigation costs are incurred. Discussion of discount rate	See A-612		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							too technical for an SPM. Explain in simple terms. (Government of Environment Canada)			
SPM-616	8	A	8	16	8	21	Discuss issues that influence social cost of carbon and benefits of avoided climate change as shown by Figure 3.45. Indicate that the interdependency of adaptation, mitigation and avoided damages is important (3.5.2) (Government of Germany)	See A-612		
SPM-617	8	A	8	16	8	21	Add: For some regions and sectors and even on a global scale benefits outweigh mitigation costs. Merge this section with section C12., page 11, line 37-41or refer to it. (Government of Germany)	See A-612		
SPM-618	8	A	8	16	0	0	Add full paragraph on adaptation and stress importance of interaction between adaptation and mitigation (refer to ch. 2.6.2, 2.6.3 and 3.5 and 11.9). In light of quantitive research studies (section 11.9.1) mention that interaction exists and may inhibit synergies and trade-offs depending on the sector and region under consideration. Link mitigation and adaptation to emissions pathways and costs. (Government of Germany)	See A-612		
SPM-132	8	B	8	16	8	16	Make point parallel to point 7: "Global benefits of avoided climate change and co-benefits rise with lower stabilization levels. Comparing…" More than "it is difficult" can be said about this. (Government of European Community / European Commission)	See A-612		
SPM-133	8	B	8	16	8	17	What is the value of this statement in terms of content? Clarify text. U.S. Government (Government of U.S. Department of State)	See A-612		
SPM-134	8	B	8	16	8	17	Claify text. What is the value of this statement in terms of content? U.S. Government (Government of U.S. Department of State)	See A-612		
SPM-135	8	B	8	16	8	17	“Comparing mitigation costs with the benefits of avoided climate change damages and other co-benefits is very complex.” The wording here is poor; how hard the analysts had to work is not the salient point. Suggest changing wording to something like: “While a comparison of mitigation costs to the benefits of avoided climate	See A-612		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							change damages and other co-benefits is a laudable goal, such a comparison is complicated by inherent uncertainties in predicting benefits and the methods of relating longer-term benefits to nearer-term costs." Clarify text U.S. Government (Government of U.S. Department of State)			
SPM-619	8	A	8	17	0	0	That something is very complex is not a very informative assessment. Can't a more daring statement be made? E.g., that the number, size, varied nature and sometimes subjective (e.g. discount rate) character of the uncertainties in determining costs and benefits make a quantitative comparison not meaningful? This was basically the SAR conclusion. Such a statement would not deny the usefulness of a more qualitative CBA. The current formulation may suggest that as we do more research, uncertainties would be reduced and a meaningful quantitative CBA becomes possible. A more modest change would be to add " and involves many subjective assumptions" right after "complex". (Rob Swart, MNP)	See A-612		
SPM-620	8	A	8	17	8	17	Insert reference to section [3.5] at end of first sentence. If any one sentence in the report is to be considered unambigously true, this is it. However, the reference should be to the section where this is most comprehensively discussed which is section 3.5. This reference will then show in bold. (Pat Finnegan, Grian)	See A-612		
SPM-621	8	A	8	17	8	17	It's very clear, No further research needed? (Juan F Llanes-Regueiro, Havana University)	See A-612		
SPM-622	8	A	8	17	8	21	This § covers a very important issue, and the reader would appreciate more information. (Aviel VERBRUGGEN, University of Antwerp)	See A-612		
SPM-623	8	A	8	18	8	18	Replace estimating by costing (Government of France)	See A-612		
SPM-136	8	B	8	18	8	0	"…impacts…and environmental and health impacts (or are these understood to be included in "non-market"?" U.S. Government (Government of U.S. Department of State)	See A-612		
SPM-	8	B	8	19	8	19	… calculation TO the assumptions …	See A-612		

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137							(Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))			
SPM-624	8	A	8	20	8	21	But practically no studies have been done which actually do this, and there's absolutely no agreement as to what the rate of decline should be. (,)	See A-612		
SPM-625	8	A	8	20	8	21	I did not find justification for this last sentence when I did a search in Chapter 3. Suggest deleting last sentence on declining discout rates. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	REJ; is in chapter 2; ACC to add reference to respective section		
SPM-626	8	A	8	20	8	20	edit bullet to read "comparing mitigation costs with the monetised benefits of ...." (i.e. insert "monetized"). Add after "policies", "Nevertheless it is clear that the lower the stabilisation level, the lower the damages due to climate change in both market and non-market sectors in all world regions, the lower the risk of abupt changes in the earth system and the less the need for (and hence costs of) adaptation in human systems. Hence higher mitigation costs are offset by lower adaptation costs. Consideration of co-benefits of mitigation policies generally offset mitigation costs (see C12). (Rachel Warren, University of East Anglia)	See A-612		
SPM-627	8	A	8	20	8	20	Add new bullet which reads in bold (with text taken from WG3 Ch 3 which on which I am an author) "Stabilisation at 450 ppm CO2 equivalent would be likely to limit impacts to those associated with temperature rises of 0-2 degrees above 1990" (or convert to whatever baseline is decided upon) and avoid those listed (WG2 Ch 19) as occurring for temperature rise of 2-4 degrees above 1990 (see Table SPM1). Hence, referring to WG2 Ch 19, examples of resultant avoided climate change damage include that the risk of a decline in food production would be limited to low latitudes (0-2C) as opposed to being global (2-4C); the risk of widespread or complete deglaciation of the Greenland Ice Sheet would be lowered; drought and forest fires would be much less widespread;	See A-612 DISCUSS possibility of adding table; problem is large WG II overlap		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							damages to infrastructure would be limited as opposed to widespread; increases in water stress would be limited to areas where significant water stress already occurs rather than stressing new areas; the risk of a widespread conversion of forest to grassland amplifying warming would be greatly reduced, and the risk of species extinctions from climate change would be reduced from one third to one quarter of species. (Or make this point by including a table). (Rachel Warren, University of East Anglia)			
SPM-138	8	B	8	20	8	20	… discount rates that decrease … : the implications of decreasing discount rates should be clarified. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-612		
SPM-139	8	B	8	20	8	21	Last sentence: too detailed for an SPM (Government of European Community / European Commission)	See A-612		
SPM-140	8	B	8	20	8	21	Either eliminate the sentence beginning with "Recent literature…" or preface it with the following, "ALTHOUGH CONTROVERSIAL, SOME recent literature…" Inserted text is shown in UPPER CASE. Just because it appears in recent literature doesn't mean that is necessarily the correct way to go. Authors should acknowledge that not all literature supports the statement U.S. Government (Government of U.S. Department of State)	See A-612		
SPM-141	8	B	8	20	8	21	Delete sentence beginning with "Recent literature…" There is no reason to highlight this example in the SPM as there is an ongoing debate that continues on this matter. Also reference to chapter 3.3. and 3.5 should be changed to chapter 2.5.2.1. U.S. Government (Government of U.S. Department of State)	See A-612		
SPM-628	8	A	8	21	8	21	References to sections discussing discount rates over time are very necessary and highlight the complexity that point 8 describes. Much of this discussion, however, is to be found in Chapter 2, as well as 3.5. Insert references at end of line 21 = [2.3, 2.5, 3.5] (Pat Finnegan, Grian)	See A-612		
SPM-	8	A	8	21	8	21	comment: we regret no further insights are given how to use	See A-612		

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629							discounting rates in (socio-)economic models for climate change. Model and CBA outcomes are very sensitive to discounting rates, and this lack in progress hampers decision making on the magnitude of mitigation and adaptation efforts. We therefore suggest to add: "As the choice of discount rates largely remains a value judgement, the use of different discount rates in model calculations and CBAs may assist transparant decision making." (Government of The Netherlands)			
SPM-630	8	A	8	21	8	21	Add: "It is, however, very important to put estimates of mitigation costs into context by relating them to quantitative assessments of damages avoided by mitigation on different time scales. Qualitative evidence in the WG II report of AR4 suggests, that benefits from avoided damages are likely to be enormous. Nevertheless, quantitative assessments of aggregate benefits are poorly reflected in WG II and WG III reports of AR4. Strengthening such information in future IPCC assessments would be highly desirable." (Government of Germany)	See A-612		
SPM-631	7	A	8	22	0	0	Footnote 4: The welfare implications of mitigation are hugely influenced by "should pay for mitigation". Include a sentence along the lines of 'Bottom-up studies that consider the distribution of payment for mitigation may come to very different conclusions.' (Harald Winkler, University of Cape Town)	REJ; that is already said in line 11-12		
SPM-632	7	A	8	22	0	0	Footnote 4: please add at the end "... should pay for this mitigation and do not quantify the benefits from mitigation" (Manfred Treber, Germanwatch)	See A-612		
SPM-633	0	A	8	22	9	1	Add a paragraph in order to discuss the effect of a noticeable and sustained increase of oil and gas prices in the period (as already observed) on emissions scenarios. While approaching the "peak oil" (between now and year 2030), one could expect much higher oil and gas prices. Although ups and down may still occur, this should be considered as a real opportunity for policy makers,w ho should consider it is of good policy to maintain sustained high prices for the consumers in order to help the shift for better energy management and renewable sources.	See high oil price para issue A-256		

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							(VARET jacques, French Geological Survey)			
SPM-634	0	A	8	22	9	1	Add a figure in order to show that the peak for oil and gas resources do well occur in the period considered (see proposed figure, from J. Varet, Futuribles 2005). (VARET jacques, French Geological Survey)	See A-633		
SPM-635	7	A	8	22	0	0	Footnote 4: It might be worth adding that (to my knowledge) most of these top-down models also assume perfect substitutability between sectors, and no transaction or transition costs. (Andy Reisinger, TSU IPCC Synthesis Report)	ACC; add to caption fig 5		
SPM-636	7	A	8	24	0	0	Footnote 5: Include in the main text. This is an important alternative metric to "loss of GDP". (Harald Winkler, University of Cape Town)	ACC; add annual GDP growth rate impact between brackets		
SPM-637	7 F 5	A	8	0	0	0	Figure SPM.5 The model of E3MG showing the negative value of GDP losses presumes a mechanism that the larger carbon tax is imposed, the larger investments may take place by the revenue obtained through the carbon tax, and then employment increase and GDP increase will follow. In reality the carbon tax will work to diminish economic activities because of the higher energy prices, and GDP in total will be decreased. However, the model does not consider these effects. The model presumptions could be justified for short time periods; however, for a long time span such as up to 2050 and 2100, the presumed mechanism can never justified. For these reason, we strongly recommend you to delete this model results in Figure SPM.5 and together with relevant reference in the text. (Government of Japan)	See A-593		
SPM-638	7 F 5	A	8	0	0	0	Figure SPM.5 Describing GDP loss in terms of proportion can be misleading as it seems to give the wrong perception that the loss is rather small. We suggest to add the information on "net present value (NPV) of abatement costs" as in TS, Figure TS 15(b). (Government of Japan)	REJ; too complex		
SPM-639	7 F	A	8	0	0	0	figure SPM.5: suggest to turn the x-axis as lower stabilisation levels imply higher costs	UNCLEAR		

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	5						(Government of The Netherlands)			
SPM-142	7 F 5	B	8	0	8	0	Figure SPM5 and line 11 on p 8 : what are the main factors and assumptions explaining the variability among results? Saying that the costs vary a lot because assumptions vary a lot does not help the reader to understand much. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; add to text		
SPM-640	0	A	9	0	14	0	Generally, in part C: Should add corresponding contents about the condition/terms of, and barriers to the implementation of mitigation potential in each subpart(sector), such as cost and technical problems. (Government of China Meteorological Administration)	REJ; costs are given (in table 2) and on implementation fous is on effective policy instruments; barriersare mentioned in several places, but a mechanical discussion of barriers for each item becomes too complex and boring (because same barriers every time)		Text on barriers will be included with a response to the comment on no regrets options in table 11.3. (11)
SPM-641	9	A	9	0	0	0	footnote 6: Given the relevance of the discount rates it is proposed to indicate also the actual figures used for the social and private discount rates. (Government of Austria)	ACC; add these		Agree (11)
SPM-642	0	A	9	0	14	0	The work of the IEA Alternative Energy Scenario needs a far better summary in this section on potentials (e.g. TS, Page 5, circa line 18). (Government of Environment Canada)	DISCUSS	11	Chapter 4 issue (11)
SPM-643	9h ea di ng	A	9	0	0	0	Paragraphs 7 and 8 from page 8 seem to fit better here following Section C chapeau. (Government of Environment Canada)	REJ; para 7 and 8 belong to LT section; this is S/MT section		Page 8 is more clearly long term 2050 – 2100. (11)
SPM-644	9h ea di ng	A	9	1	14	37	The bold introduction uses the term "low-cost" that is apparently defined as <20$/ton CO2eq. In statement 26 it is suggested that for carbon prices between $20-25 large shifts to zero carbon power supply become attractive. I suggest to find text to avoid that 20-25 can be considered "high" while 20 is "low", e.g. "slightly higher	TIA when merging section C header with para 9		Accept. Replace “low-costs” with <20$/ton CO2eq.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							that the low costs options of statement 9". (Rob Swart, MNP)			Check price range statement 26 with text ch11. (11)
SPM-645	9h ea di ng	A	9	1	9	5	the statement that there is “a large low-cost mitigation potential” needs to be qualified in light of the potentially large double-counting problem that I have raised in my “General Comments” above. Furthermore, why, if cost is so “low”, is it difficult to get governments to implement policies that would achieve mitigation potential? Indeed, why, if cost is so low, is government policy needed at all? Perhaps the answer is that cost is not low, once limited scalability of current technologies or lack of enabling technologies (e.g., storage for intermittent solar and wind) are considered. (Christopher Green, McGill University)	TIA when merging section C header with para 9 Avoid “low” Argument that low cost measures do not need policy intervention is not correct: there are strong barriers; this needs to be said explicitly, where negative costs are mentioned		TIA in above comment. (11)
SPM-646	9h ea di ng	A	9	1	9	5	The paragraph begins talking about the "large low-cost mitigation potential between now and 2030 in the various sectors"; then refers to "more costly measures" needed "to be on a trajectory towards stabilisation at 450 to 550 ppmvCO2-eq", although their impact on "annual GDPgrowth rates is limited". And finishes referring to the need of "appropriate additional government policies" for achieving "this potential"; but which potential refers to? The low-cost measures, or the more costly ones? At least for me, it is not very clear, or isn't clear at all. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)	TIA when merging section C header with para 9		TIA. (11)
SPM-647	9h ea di ng	A	9	1	5	5	Again, this paragraph seems to be recommending a stabilization level around 450 and 550 ppmv CO2 emissions, while the literature on stablization of GHGs concentrations indicate the possibility of reaching levels as low as 375 ppmv CO2. We recommend to replace the current text at line two with the following text: 'To be on a trajectory towards stabilization at 375 and 400 ppmv requires...'	REJ; that is not what the text says		Agree (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Giulio Volpi, WWF International)			
SPM-648	9heading	A	9	1	9	1	The word "now" needs qualifying. Is it 2006 or it will depend on when this report will be read? (Government of MALAWI)	TIA when merging section C header with para 9		TIA. (11)
SPM-649	9heading	A	9	1	9	0	"in the various sectors" is not clear. How many sectors are represented - all sectors or a selection of various sectors? This statement requires clarification, if it represents all sectors, then stating "all" is suggested. (Government of Japan)	TIA when merging section C header with para 9		TIA. (11)
SPM-650	9heading	A	9	1	9	1	Be explicit- to what level can these low-cost potentials get us? To what levels can existing tools get us?Again, throughout SPM, "additional" efforts needed to deploy existing tools is confused with where further development of technologies, etc. is required. Policy makers need to know what goals can be achieved through options that exist but are not being employed vs. where achieving a goal depends on development of something new. (Government of Environment Canada)	TIA: how far it will get us is explicitly stated in para 9; on technology: all of it is available (this may need to be stated explicitly)		Needs to be re-written. Consider the feasibility of getting results from existing models. (11)
SPM-143	9heading	B	9	1	9	1	How is "low-cost" being defined? (Government of European Community / European Commission)	TIA; drop “low”		Agree. (11)
SPM-144	9heading	B	9	1	9	5	Why does Section C focus on a trajectory towards 450 to 550 ppm? Why not 550 to 650 ppm? Strike this sentence. Why does Section C focus on a trajectory towards 450 to 550 ppm? Why not 550 to 650 ppm? U.S. Government (Government of U.S. Department of State)	REJ; is not focussing on 450-550; just indicates that potential< 100 $/t is suffiecient to reach certain levels		REJ. (11)
SPM-145	9heading	B	9	1	9	5	Why does Section C focus on a trajectory towards 450 to 550 ppm? Why not 550 to 650 ppm? U.S. Government (Government of U.S. Department of State)	See B-144		See B-144. (11)
SPM-146	9headi	B	9	1	9	5	The use of the terms “low cost” and “limited” are inappropriate value judgements and the authors should rephrase the sentence. U.S. Government	TIA; drop “low”		Agree. (11)

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	ng						(Government of U.S. Department of State)			
SPM-147	9heading	B	9	1	9	5	the statement that there is "a large low-cost mitigation potential" needs to be qualified in light of the potentially large double-counting problem that has been raised in "General Comments" above. Furthermore, why, if cost is so "low", is it difficult to get governments to implement policies that would achieve mitigation potential? Indeed, why, if cost is so low, is government policy needed at all? Perhaps the answer is that cost is not low, once limited scalability of current technologies or lack of enabling technologies (e.g., storage for intermittent solar and wind) are considered. The use of the terms "low cost" and "limited" ane inappropriate value judgements and the authors should rephrase the sentence. U.S. Government (Government of U.S. Department of State)	REJ; double counting is avoided through scenario method used; see also A-645		See A-645. (11)
SPM-148	9heading	B	9	1	9	5	Suggest revising the paragraph to read as follows: "There are significant potential opportunities to mitigate CO2 emissions between now and 2030 that can be tapped using government policies. Measures with a cost exceeding US $100t/CO2-eq (economic potential) are required for a trajectory towards stabilization at 450 to 550 ppmv CO2-eq. Mitigation efforts targeting a trajectory of 550 ppmv CO2-eq are generally estimated to reduce projected global economic output by between 1% and 5% (US $__ to $__trillion) in 2050, with most studies showing an output loss of less than 1% (US $___ to $___ trillion) in 2030. The impact on annual GDP growth rates is limited. Rationale: The term "low-cost" is too subjective to be used in this paragraph, as many might consider the policies with a cost of US $100t/CO2-eq that are referred to later on to be very costly. This paragraph should integrate economic results presented earlier with those presented later. Furthermore, IPCC should not try to "spin" the policymaker audience on costs – it should present projected changes in the value of economic output and annual economic growth rates, since policymakers are interested in both and can use their own judgment in using the relevant concepts. The use of the terms "low cost" and	REJ; merging para 9 and 10 makes text too complex; ttwo paragraphs should be fine TIA remark on qualifying costs when merging section C header with para 9		Low cost has already been removed. See A-644. Needs to be re-written to be more precise. (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							"limited" ane inappropriate value judgements and the authors should rephrase the sentence. U.S. Government (Government of U.S. Department of State)			
SPM-651	9h ea di ng	A	9	2	9	4	Not only costly measures are required. Add: "… requires THESE AND more costly measures, …" (Harald Winkler, University of Cape Town)	TIA when merging section C header with para 9		TIA. (11)
SPM-652	9h ea di ng	A	9	2	9	4	The description of "…, but the impact on annual GDP growth rate is limited." is policy prescriptive, and should be changed. (Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE))	See A-650		See A-650 (11)
SPM-653	9h ea di ng	A	9	2	9	3	It may to give the wrong impression that stabilisation between 450 and 550ppmv CO2-eq is a globally agreed target. Need modification. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	REJ; text is not suggesting that		REJ. (11)
SPM-654	9h ea di ng	A	9	2	0	0	The figures that are given here 450 - 550ppmv as a stabilisation target are prescriptive, suggesting this range to be the ideal. This is certainly not the case if we are to remain below a 2 degree rise. I would suggest 'To be on a trajectory towards stabilisation at a lower ppmv' or 'To be on a trajectory towards stabilisation at a higher ppmv'. (Catherine Pearce, Friends of the Earth International)	REJ; that is not what the text says		REJ. (11)
SPM-655	9h ea di ng	A	9	2	9	3	Comment: how can the conclusion be drawn that for stabilisation at 450 ppm the impact on GDP growth rates is limited, when page 8 (line 7-8) mentions there are too few studies for 450 to give reliable estimates of the impact on GDP growth? (Government of The Netherlands)	REJ; that is not what the text says. Heading will be dropped.		Not Agreed. GDP impacts depend on policy frameworks and too few studies have looked at 450ppm CO_2-eq. (11)
SPM-	9h	A	9	2	9	4	It is not obvious that welfare impacts associated with lower growth	See A-650		See A-655

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656	ea di ng						are limited. Is this impact on GDP additional to say 750 target or only 450-550? (Government of Australia)			(11)
SPM-149	9h ea di ng	B	9	2	9	4	This introductory paragraph states that a 450 to 550 ppm emissions trajectory "requires more costly measures, but the impact on annual GDP growth rates in limited". The word "limited" is meaningless in this context. By "limited," do the authors mean "low"? And if so, low compared to what? It also contradicts paragraph 7, which states "Global mitigation costs rise with lower stabilisation levels. . .". Recommend striking this sentence. The use of the terms "low cost" and "limited" ane inappropriate value judgements and the authors should rephrase the sentence U.S. Government (Government of U.S. Department of State)	See A-650		See A-655 (11)
SPM-150	9h ea di ng	B	9	2	9	4	The use of the terms "low cost" and "limited" are inappropriate value judgements and the authors should rephrase the sentence. U.S. Government (Government of U.S. Department of State)	See A-650		See A-655 (11)
SPM-151	9h ea di ng	B	9	2	9	2	How/Why did they chose stabilizations of 450 to 550 ppmv? U.S. Government U.S. Government (Government of U.S. Department of State)	REJ; this is just to indicate how far the potential < 100$/t can get you		REJ. (11)
SPM-657	9h ea di ng	A	9	3	9	5	"the impact on annual GDP growth rates is limited." This sentence is rather subjective. Deciding whether the impact is limited or not is a value judgement, which the IPCC is not supposed to make. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	See A-650		See A-650 (11)
SPM-658	9h ea di ng	A	9	3	9	3	I do not understand footnote 6. Suggest reword to explain that it is a cost-benefit analysis of the non-climate implications of the mitigation measure being considered (and thus does not include the avoided climate change damages). Or if I have misunderstood replace with clearer sentence. (Rachel Warren, University of East Anglia)	DISCUSS; footnote to be reworded; in particular it is questionable if costs indeed include non-climate benefits Energy saving, non-market costs? Health benefits? Maybe change "are" in "are to be" or "should".	11	Do not need footnote. Economic potential is in the glossary. (11) Depends on underlying

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								Sharpen definition.: Included in the benefits is the saved cost on energy, the other financial non-climate benefits are non-significant, Other non-market, non-climate benefits are excluded. The definition should be adjusted to the practice. (back to ch.2). probably better to speak about financial non-climate benefits. Revise footnote.		literature
SPM-659	9heading	A	9	3	9	3	What is meant by more costly ? More costly than what ? Possibly, change the sentence into "The measures costs increase when the selected stabilisation level decreases, but even on a trajectory towards stabilisation at 450 to 550 ppmv CO2-eq, the impact on annual GDP growth rates is limited." (Government of France)	TIA when merging section C header with para 9		TIA. (11)
SPM-660	9heading	A	9	3	9	4	The description should be modified "but the impact on annual GDP growth rate is limited." This is too subjective. Recommend to add the information of objective GDP growth rate value. (Government of Japan)	See A-650		See A-650 (11)
SPM-661	9heading	A	9	4	9	12	There are two sentences saying similar things. The first "This potential can only be achieved with appropriate additional government policies" could be mis-read to mean that only governments need to act. The second sentence in my view expresses it better "These potentials can only be reached when adequate government policies are in place." Rephrase the first sentence to reflect the same intention, or move teh second sentence up. (Harald Winkler, University of Cape Town)	TIA when merging section C header with para 9		Suggested replacement is better. (11)
SPM-662	9hea	A	9	4	9	4	Replace 'limited' by 'very small'. This is a more accurate description: the relative impact on annual GDP growth rates is	REJ; avoid qualitative terms; see also A-650		REJ (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	ding						almost negligible, according to the numbers provided later in this section. (Ian Cook, United Kingdom Atomic Energy Authority)			
SPM-663	9hea ding	A	9	4	0	5	The words "rapid' or "urgent" should be added in terms of government policies given the importance of rapid action in achieving the lower stabilisation levels. Government is not the only effective actor: the role of the public and other stakeholders in achieving stabilisation targets by enabling policy change, lobbying for stringent policy implementation, and directly reducing GHG emissions, should also be noted. (Stephen Sheppard, University of British Columbia)	REJ; that is not meant; See also A-661		REJ (11)
SPM-664	9hea ding	A	9	4	9	5	There is no mention here, or anywhere else, of the damaging effect that rising taxes on income (including 'stealth taxes') and wealth, and damaging raids on pension funds, have had on people's willngness and ability to invest in energy efficiency and micro-renewables (including retro-fitting). Incentives for such investment purposes are usually minimal, and payback periods - except for solar water heaters in sunny climates - generally in excess of 10 years. (Michael Jefferson, World Renewable Energy Network & Congresses)	DISCUSS Goes to far, not for SPM	11	Refer to chapters 3, 12 and 13. (11)
SPM-665	9hea ding	A	9	4	9	4	To sentence ending "GDP growth is limited." add " with different impacts acrosss different sectors". (John Drexhage, International Institute for Sustainable Development)	TIA when merging section C header with para 9		TIA (11)
SPM-666	9hea ding	A	9	4	9	5	Replace "This" with "These" Rationale: there is a need for policy instruments also for the low-cost mitigation mentioned in line 1. See also line 11 where "These" is used. (Government of Norwegian Pollution Control Authority)	TIA when merging section C header with para 9		TIA (11)
SPM-152	9hea ding	B	9	4	9	4	What does “limited” mean here? Can it really “only” be achieved with additional government policies? U.S. Government (Government of U.S. Department of State)	See A-650		See A-650 (11)
SPM-	9h	B	9	4	5	4	Suggest more clarity about “impact on annual GDP growth rates is	See A-650		See A-650

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153	heading						limited." For example, such studies may presume perfectly efficient policies (i.e., global reduction at the lowest marginal cost). [NOTE TO TPCC review team:It is recommended that a USG economist looks at this paragraph closely. This statement is essentially saying that peaking global emissions in the next 20 years will have limited impacts on annual GDP growth. This statement appears counterintuitive. END NOTE] The use of the terms "low cost" and "limited" ane inappropriate value judgements and the authors should rephrase the sentence. U.S. Government (Government of U.S. Department of State)			(11)
SPM-667	9heading	A	9	5	9	5	To help readers make the most of the SPM, it might be helpful to end this sentence with "… government policies as described in Section D". Otherwise readers might be left with the question "yes, but what policies?" (Andy Reisinger, TSU IPCC Synthesis Report)	ACC		ACC (11)
SPM-668	9heading	A	9	5	9	5	Add "and efforts from multi-communities" (Government of China Meteorological Administration)	UNCLEAR		Request clarification. (11)
SPM-669	9	A	9	7	11	16	The first three sentences of this paragraph need to be redrafted as they present a misleading picture as to the certainty of the costs estimates and economic potential for mitigation of Greenhouse gases by 2030. The figures are also presented without the significant caveats that surround the bottom-up estimate of Table 11.3. The authors of the SPM need to ensure that the context that the discussion of the economic potential for mitigation, is clear and should not imply that the challenge to reduce greenhouse gas emissions is an easy one. (Government of Australia)	REJ; caveats are given in para 9 (can also be strengthened in table 2) Caveats to be strengthened in table and text.		Caveats still to be discussed. (11)
SPM-670	9	A	9	7	9	12	Suggest that the following text replaces the first three sentences (this text is derived from Section 11.3 and the Technical Summary): "Table SPM 2 provides a rough, bottom-up estimate of the potential for mitigation of greenhouse gases in 2030. The table illustrates that in 2030, between 8-12 GtCO2-eq could be mitigated at costs	TIA when merging section C header with para 9		Useful text to be considered. Revise penultimate sentence to say

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							<US$20/tCO2-eq (insert confidence reading). At costs of up to US$100 around 18-25 GtCO2-eq could be mitigated, (insert confidence reading) which is consistent with the emission profiles for stabilisation between 450-550 ppmv CO2-eq (insert confidence reading). The majority of this potential comes from emissions reductions in the power and industry sectors (for instance through the increased use of nuclear power and bioenergy). These potentials should be treated as indicative only and are dependant on specific government intervention and national market characteristics." (Government of Australia)			"the majority of the 20-100 US$/tCO2eq potential comes from emission reductions in power and industry". (11)
SPM-671	9	A	9	8	11	17	Many policy-makers may have a hard time understanding this technical language and the implications of the numbers in Table SPM 2. (Stephen Sheppard, University of British Columbia)	TIA when merging section C header with para 9		
SPM-672	9	A	9	8	9	15	One very strong message in this SPM is the need for government policies to bring achieve the economic potential of mitigation measures, but it often is not made clear why this is so, and could therefore be seen as a prescriptive statement rather than an assessment. I suspect in part the answer is contained in footnote 6: Economic potential is defined to include non-market costs and benefits, and using social discount rates. By definition, this means that market mechanisms on their own cannot deliver the potential because the benefits do not flow back in full to those undertaking mitigation actions without additional government interventions. If my reading is correct, it might be worthwhile elevating the footnote into an actual paragraph in the SPM to make this important message clear. Otherwise readers will read all the findings about economic potential and keep wondering why the market doesn't deliver this obvious potential, while others will feel that the economic potential is overstated in this report because they will confuse it with commercial potential. (Andy Reisinger, TSU IPCC Synthesis Report)	TIA when merging section C header with para 9 Suggestion on specifically addressing limits of market is good		
SPM-673	9	A	9	8	9	11	The description of "At costs <US$ 100/tCO2-eq it is estimated at 18 to 25 GtCO2eq, which is consistent with emission profiles for	REJ; we specificall say "between"		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							stabilisation between 450 and 550 ppmv CO2-eq" will be inconsistent with Table TS.8. Some model results show the marginal costs of over 100 US$/tCO2-eq for stabilizing at 450-550 ppmv CO2-eq. (Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE))			
SPM-674	9	A	9	8	9	15	The statement that potentials in 2030 (AR4) with are in line with potentials in 2020 (AR3) is confusing and suggests that the target is receding faster than time is advancing (since the AR3 was in 2001 and AR4 will appear in 2007). (Michael Raupach, CSIRO Marine and Atmospheric Research)	ACC; modify text		
SPM-675	9 T 2	A	9	8	9	15	Table SPM2 has the B2 baseline, are the mitigation potential numbers in this paragraph only true for comparison with the B2 baseline or are they baseline independent? If not what are the numbers of relative to A1? (Rachel Warren, University of East Anglia)	ACC; add footnote to table		
SPM-676	9	A	9	8	9	15	May be worth pointing out that therefore the lower stabilisation levels require all sectors in the table to apply their mitigation potential, if this can be said with confidence. (Rachel Warren, University of East Anglia)	REJ; not needed		
SPM-677	9	A	9	8	9	0	In section Number 9, overall economic reduction potential seems to include only the reduction potential of mitigation technologies. If so, reduction potential must be made accordingly. By including economic reduction potential for other non-technological mitigation options, such as policies and measures aimed at changing lifestyles and improving resources, it is assumed that the total economic reduction potential increases. (Government of Japan)	ACC; add this notion		Life style options not included. Be clear on this. We still need to find a good way to talk about non-technical measures in the SPM.
SPM-678	9	A	9	8	9	8	Suggest changing the phrase "economic reduction potential" to "cost-effective greenhouse gas reduction potential" as it more accurately reflects what you are trying to say. (Government of Environment Canada)	REJ; “economic potential” is defined “cost-effective” not		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-679	9	A	9	8	9	9	Is it possible to link the 8-12 GtCO2 eq at $20/t to a stabilisation level, as is done in the next sentence for the 18-25 GtCO2 eq at $100/t? (Government of Environment Canada)	REJ; not useful		
SPM-680	9	A	9	8	9	10	Are the greater removals at higher costs cited cummulative total removals (include those at lower cost) or not? Clarify. (Government of Environment Canada)	REJ; is obviously cumulative (we say <20, <100)		
SPM-681	9	A	9	8	9	8	The phrasing 'overall ….by 2030' is confusing. Does the sentence mean annual emissions savings in 2030; or the accumulated emissions savings from now (?) to 2030? Caption of Table SPM.2 (p10, line 1) suggests it is the first of these meanings. If so, could be fixed by using 'in' instead of 'by'. (Government of Australia)	ACC; change "overall" into "from all sectors" and "by" into "in"		
SPM-682	9	A	9	8	9	8	Suggest re-drafting the start of this sentence along the following lines, "The overall economic potential for the reduction of greenhouse gases in 2030…" This is important as it does not split the defined term "economic potential". (Government of Australia)	ACC		
SPM-154	9	B	9	8	9	8	The overall economic reduction: you probably need to add "per year" at the end of sentence The reference year for dollars should be given somewhere. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-681		
SPM-155	9	B	9	8	9	15	Mention that the overall economic reduction potential is relative to the 2030 baseline. Give the range of total emissions in 2030 (and how they compare to 1990 emissions). (Government of European Community / European Commission)	ACC		
SPM-156	9	B	9	8	9	11	What does this mean? Rewrite to make clear. U.S. Government (Government of U.S. Department of State)	TIA when merging section C header with para 9		
SPM-157	9	B	9	8	9	11	What does this mean? Revise text for clarity. U.S. Government (Government of U.S. Department of State)	Identical B-156		
SPM-158	9	B	9	8	9	15	This paragraph should reference the fact that 2/3 of the identified reduction potential at below either $20t or $100t levels cost levels occur OUTSIDE the OECD. This should be noted without regard	DISCUSS In particular the point about the definition of economic potential	11	Express in PPP? If emissions in developing

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							to to equity considerations – it is merely a statement about where efficient reductions can occur based on existing studies. It is extremely surprising that for several reasons that the range of potential mitigation opportunities at given costs is so narrow (8 to 12Gt CO2-eq at US $20 and 18 to 25 Gt at US $100. First, one would imagine that "economic reduction potential" would be very sensitive to the price of fossil fuels, which are highly uncertain – it has to matter whether oil is $20 per barrel or $100 per barrel. Second, the state and cost of available technology in 2030 is unknown. Third, the evaluation of "non market costs and (non-climate) benefits" that is apparently included in the calculation are inherently highly speculative, and it is not clear how these costs and benefits are calculated and whether or not other control measures are assumed. Fourth, the use of social discount rates is controversial and should not be buried in a footnote. 3. There should be an explicit reference, in the text, to the fact that "economic reduction potential" is generally less than "market reduction potential," the amount of reduction that might be achieved under private decision making criteria when a market value is placed on CO2-eq emissions but other institutional and decision criteria, such as discount rates, are not changed. It is surprising that for several reasons that the range of potential mitigation opportunities at given costs is so narrow (8 to 12Gt CO2-eq at US $20 and 18 to 25 Gt at US $100. First, one would imagine that "economic reduction potential" would be very sensitive to the price of fossil fuels, which are highly uncertain – it has to matter whether oil is $20 per barrel or $100 per barrel. Second, the state and cost of available technology in 2030 is unknown. Third, the evaluation of "non market costs and (non-climate) benefits" that is apparently included in the calculation are inherently highly speculative, and it is not clear how these costs and benefits are calculated and whether or not other control measures are assumed. Fourth, the use of social discount rates is controversial and should not be buried in a footnote.	is troubling; are we really sure this is the right definition? (see also A-658) Point about mentioning large potential outside OECD to be considered Potential will be shown in table2 or figure (with more references to the explanation of the calculation), and is also mentioned in sectoral paragraphs. Be clear that it is not suggested to be a political issue		countries are low, how can the potential be high? On Non-market benefits: Included in the benefits is the saved cost on energy, the other financial non-climate benefits are non-significant.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							3. There should be an explicit reference, in the text, to the fact that "economic reduction potential" is generally less than "market reduction potential," the amount of reduction that might be achieved under private decision making criteria when a market value is placed on CO2-eq emissions but other institutional and decision criteria, such as discount rates, are not changed U.S. Government (Government of U.S. Department of State)			
SPM-159	9	B	9	8	9	0	This is confusing, poorly written, and explains nothing. Moreover, the text (line 8) refers to "economic reduction potential" while the footnote defines "economic potential." Are they different things? U.S. Government (Government of U.S. Department of State)	See rewrite		
SPM-160	9	B	9	8	9	15	It is surprising that for several reasons that the range of potential mitigation opportunities at given costs is so narrow (8 to 12Gt CO2-eq at US $20 and 18 to 25 Gt at US $100. First, one would imagine that "economic reduction potential" would be very sensitive to the price of fossil fuels, which are highly uncertain – it has to matter whether oil is $20 per barrel or $100 per barrel. Second, the state and cost of available technology in 2030 is unknown. Third, the evaluation of "non market costs and (non-climate) benefits" that is apparently included in the calculation are inherently highly speculative, and it is not clear how they are calculated and whether or not other control measures are assumed. Fourth, the use of social discount rates is controversial and should not be buried in a footnote. There should be an explicit reference, in the text, to the fact that "economic reduction potential" is generally less than "market reduction potential," the amount of reduction that might be achieved under private decision making criteria when a market value is placed on CO2-eq emissions but other institutional and decision criteria, such as discount rates, are not changed. U.S. Government	See rewrite		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Government of U.S. Department of State)			
SPM-683	9	A	9	9	0	10	A graph or table illustrating the relation between reduction costs in terms of USD/tCOequiv and costs in terms of GDP loss (cumulative upto a certain year, and/or avg annual growth reat loss) would be very usefull in relating the various statements made under conclusion 7 and 9 and in table SPM2 (Ronald Hutjes, Alterra)	REJ; text clear enough		
SPM-684	9	A	9	9	9	9	It might add clarity to indicate that the reduction potential of 8-12 GtCO2-eq refers to a reduction potential per year. (Government of Austria)	ACC		
SPM-161	9	B	9	9	9	0	The literature would not support such a narrow range for the estimate of "overall economic reduction potential" at particular prices per ton of carbon equivalent. For one thing, estimates of economic reduction potential would necessarily be dependent on price scenarios for fossil fuels, which are themselves highly uncertain. There should be an explicit reference, in the text, to the fact that "economic reduction potential" is generally less than "market reduction potential," the amount of reduction that might be achieved under private decision making criteria when a market value is placed on CO2-eq emissions but other institutional and decision criteria, such as discount rates, are not changed. The footnote definition of "Economic potential" is very problematical. It defines "economic potential using another term "cost effective" that is not explicitly defined and that policymakers will not understand. The notion of social discount rates instead of private ones is also a problem. For example, does it take account of preferences over non-energy attributes of products. An illustration of the value of these attributes would be the use of technology advances to enhance performance rather than fuel efficiency of light duty vehicles in the United States over the 1990 to 2005 period. U.S. Government (Government of U.S. Department of State)	See B-158		
SPM-	9	A	9	10	9	10	"450 and 550 ppmv" should be "550 and 450 ppmv"	REJ; why??		

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685							(Yuan Guo, Energy Research Institute, National Development and Reform Commission)			
SPM-686	9	A	9	11	9	12	The authors need to define what, in their view is an "adequate government policy". (Government of Australia)	ACC; refer to section D;		
SPM-162	9	B	9	12	9	15	These sentences describe the methodologies behind table SPM.2 and the statement at the beginning of this paragraph. This is less relevant for an SPM. Suggest to change table SPM.2 into a graph, shortly describe ranking of key sectors and/or regions. (Government of European Community / European Commission)	DISCUSS possibility of turning table 2 in a graph for the SPM (leaving the table in the TS); methodological issues are seen by others as very relevant; maybe move them to the figure caption then	11	
SPM-687	9	A	9	14	9	14	would "medium range" be clearer than "intermediate"? (Rachel Warren, University of East Anglia)	TIA; drop “intermediate”		
SPM-688	9	A	9	15	0	0	"in line with" is not clear; one may understand that the AR4 2030 potentials are similar to the TAR 2020 potentials OR that the AR4 2030 potentials are consistent with a 10 year extrapolation of the 2020 TAR numbers. (Rob Swart, MNP)	ACC; modify sentence		
SPM-689	9	A	9	15	9	0	add: "These estimates do not include, however, potential emission reductions resulting from changes in production and consumption patterns. For example switching from car transport to public transport (and freight from road to rail), energy management approaches in industry and a decrease in suburbanisation trends would contribute to significant further reductions in emissions." (,)	DISCUSS	11,5	
SPM-690	9	A	9	15	9	15	What is the significance of similarity between TAR estimates to 2020 and AR4 estimates to 2030? (Government of Environment Canada)	See A-688		
SPM-163	9	B	9	15	9	15	… TAR estimates for 2020: yes, but here 2030 is discussed. Any comment on the 10-yr difference? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-674		
SPM-	9	A	9	16	9	16	It is suggested to add the following important information: A	TIA when merging section C		

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691	10						portfolio of options that attempts to balance emission reductions across sectors in a manner that appears equitable (e.g. by equal percentage reduction) , is likely to be more costly than an approach primarily guided by cost-efficiency. Costs will be also reduced if options that correct the two market failures of climate-change damages and technological innovation-deficits. (Government of Austria)	header with para 10		
SPM-164	9	B	9	17	0	0	Footnote 6 This is extremely confusing, and requires being rewritten to make the point. Moreover, the text (line 8) refers to "economic reduction potential" while the footnote defines "economic potential." Is "economic reduction potential" different than "economic potential"? U.S. Government (Government of U.S. Department of State)	ACC; reformulate footnote. See rewrite		
SPM-692	9	A	9	50	9	51	Footnote 6. This definition is not very clear. What is included in non-markets costs and non-climate benefits? The authors need to provide a more detailed explanation of these costs. (Government of Australia)	See B-164		
SPM-693	9 T 2	A	10	0	0	0	Table SPM 2 should add a column presenting the original emissions in baseline, otherwise people cann't judge mitigation potentials propertly. (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	DISCUSS replacing table with graphs in SPM and leaving table in TS ACC extra column to separate out the 2030 baseline emissions		OK, graph should also include baseline emissions. (11) Graph idea accepted with proper attention for the presentation of uncertainties
SPM-694	9 T 2	A	10	0	10	0	Table SPM 2: this table brings up some small questions, but given it is mentioned it will be developed further, comments can be made later. (Aviel VERBRUGGEN, University of Antwerp)	See A-693		See A-693 (11)
SPM-695	9 T	A	10	0	0	0	Table SPM2: Change units for sector emissions in column 1 to same units as rest of table ie MtCO2eq	See A-693 TIA: use GtCO2eq in view of		Try to cover CO_2-eq. and

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	2						(Government of UK)	accuracy		indicate when and why not recorded. (11)
SPM-696	9 T 2	A	10	0	10	0	Table SPM.2:(1)the figures in this table are almost from very limited models, so it is "low confidence";(2) from this table we can find that the GDP per person and energy consumption per person are low in developing countries, and also according to the talbe the lower the energy consumption per preson, the larger the mitigation potential. Considering the conclusion from the table, it is not reasonable and will mislead policy makers, for it does not consider the energy requrement for the development of non-OECD countries or developing countries. Furthermore, although there are big reduction potential in non-OECD countries,there are lots of barriers, and their capacity is very low. In order to achieve these potentials, technology transfer and effective international cooperation are needed. So we suggest delete Table SPM.2. (Government of China Meteorological Administration)	See A-693 (1) REJ; medium confidence is warranted (2) REJ; there is no relationship with E/capita and mitigation potential; energy requirements for development are included in the baseline and mitigation potential is not depending on that. (3) ACC to add in footnote that regional potential does not say anything about who should pay for reduction		(1) Sufficient caveats in text. Confidence level to be discussed. (2) REJ; the table does not imply a relationship between energy per capita and mitigation potential. (3) ACC. (11)
SPM-697	9 T 2	A	10	0	10	0	Table SPM 2: some figures are missing in the last four columns, and therefore, the corresponding lines "All sectors" are meaningless. Please check the consistency. (Government of France)	See A-693 TIA; missing data will be filled, but even if they are not, the total is meaningful as long as the limitations are acknowledged	5,6,7,8, 10	TIA (11)
SPM-698	9 T 2	A	10	0	10	0	Table SPM 2 should be introduced by more comments on the way the figures were derived (Government of France)	See A-693 REJ; more explanation in chapter and TS	11	REJ (11)
SPM-699	9 T 2	A	10	0	10	0	Table SPM-2: Title: Add: "Estimated mitigation potential BY COST at a sectoral…" (Government of Environment Canada)	See A-693 ACC cation change		ACC (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-700	9 T 2	A	10	0	10	0	Table SPM-2: According to numbers here, SIGNIFICANT reductions are possible at zero cost or net benefit. This very important information needs to be CLEARLY highlighted in the main text. There is a need to discuss barriers to implementing these potential reductions. Suggest this could be done in paragraph 8 (page 8). (Government of Environment Canada)	See A-693 ACC; add in para 9, but not in para 8 (that is about LT)		ACC (11)
SPM-701	9 T 2	A	10	0	10	0	Table SPM2 is difficult to understand and thus needs a better explanation. Can it be rendered more visually/graphically? For instance, graphical representation of the potentials for reduction at different costs as a portion of the projected emissions. (Government of Environment Canada)	See A-693		See A-693 (11)
SPM-702	9 T 2	A	10	0	0	0	table SPM.2, comment: the figures given suggest to be accurate in Mtons, but the summing shows they have been rounded; it is therefore suggested to change in column 4-9, row 3, "Mton" to "Gton", and to express all figures in columns 4-9, rows 4-48 in this unit (Government of The Netherlands)	See A-693 ACC unit change		ACC unit change (11)
SPM-703	9 T 2	A	10	0	0	0	table SPM.2, column 6-9, top row, add "for medium economic potential" (Government of The Netherlands)	See A-693 UNCLEAR		REJ. (11)
SPM-704	9 T 2	A	10	0	10	0	Table SPM 2: second note, add text on the importance (small or significant?) of the other gases (Government of Finland)	See A-693 ACC; non-CO2 potential should be added	4,5,6	ACC; non-CO2 potential should be added. (11)
SPM-705	9 T 2	A	10	0	10	0	Table SPM 2: estimate of the emissions in the Energy Supply sector as well as All sectors are missing. Without these data the table is incomplete as the mitigation potential doesn't mean much unless it is compared with projected emissions. (Government of Finland)	See A-693 See A-697		The aggregation is a challenge as well. (11)
SPM-706	9 T 2	A	10	0	10	0	Table SPM 2: add costs at regional level for the waste sector (Government of Finland)	See A-693 ACC; ch 10 to add	10	
SPM-	9	A	10	0	10	0	The estimates of achievable mitigation (by 2030) presented in	See A-693	3,11	Noted.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
707	T 2						tables SPM-2, TS-19, and 11-3, may not in fact contribute to mitigation from baseline. The estimated achievable emission reductions may be absorbed by the energy-intensity reductions and decarbonization embedded in the SRES B2/WEO (2004) baselines. If in fact estimated mitigation possibilities can truly contribute beyond that which is already embedded in the baseline scenarios, then that should be demonstrated in detail, not simply assumed. U.S. Government (Government of U.S. Department of State)	REJ; mitigation potential is additional to what is included in baseline DISCUSS if comparison with stabilisation profiles from TD LT models is using comparable baselines		Comment related to CH11 (3) Needs to be clarified if potential is truly additional (11)
SPM-708	9 T 2	A	10	0	10	0	Calculated with SRES B2 scenario. Is that the best/most reasonable way to do this? Might be useful to explain scenario quickly and state why it was selected. U.S. Government (Government of U.S. Department of State)	See A-693 REJ; this for chapter/TS		REJ; this for chapter/TS (11)
SPM-709	9 T 2	A	10	0	0	0	Table SPM 2, last column: Do economic potentials at different cost categories give average mitigation potential, or low or high? Why is total of economic potential (300 (for <0) +250 (for 0-20) +10 (for 20-50) =560) in row: buildings, fuel savings, EIT higher than economic potential high (550) in column economic potential <100 US$/t CO2eq high? (Government of Germany)	See A-693 TIA; potential per cost category will also be given in ranges	11	Needs to be consistent. (11)
SPM-710	9 T 2	A	10	1	0	0	Table SPM 2: Are the figures cumulative mitigation potential up to 2030; they can hardly be annual numbers "in 2030", as in the title. Page 9, line 9 also says "by 2030". (Harald Winkler, University of Cape Town)	See A-693 REJ; it is potential in 2030		
SPM-711	9 T 2	A	10	1	10	5	Is Table SPM2 implying that there are no transportation sector abatement options available for less than $100/CO2? If yes, that is an important point and one worth making in the text. It would be useful for many readers of an SPM to take the time and point out that abatement cost vary significantly across economic sectors. Also it is not clear how Table SPM2's description of transportation abatement options is consistent with lines 21-27 on SPM page 12. (James Dooley, Battelle)	See A-693 REJ; what is meant is that all is < 100; cost categories will also be presented in final version	5	REJ (11)
SPM-712	9 T	A	10	1	0	0	why are the 2030 WEO/SRES emissions for the energy and forestry sectors the only ones "n.a."?, why for agricultured only 2020?	See A-693 ACC; add these numbers	4, 9	ACC (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	2						SRES B2 should be available for all sectors. Add 2030 WEO/SRES B2 total numbers as well in column 1 (Rob Swart, MNP)			
SPM-713	9 T 2	A	10	1	0	0	Note that/why no differentiation in costs categories was/could be made for transport (Rob Swart, MNP)	See A-693 See A-711		See A-693 See A-711 (11)
SPM-714	9 T 2	A	10	1	0	0	explain why the uncertainty ranges in the buildings sector as so much smaller than for other sectors (Rob Swart, MNP)	See A-693 DISCUSS uncertainty range in buildings	6, 11	DISCUSS (11)
SPM-715	9 T 2	A	10	1	0	0	Explain why some sectors do not have ranges, or better: estimate ranges or uncertainty % where missing (Rob Swart, MNP)	See A-693 ACC all sectors will have ranges	5,6,8,9	ACC (11)
SPM-716	9 T 2	A	10	1	10	0	Table SPM.2 The baseline for the waste sector is not SRES B2. Need to add explantory note indicating that the baseline for the waste sector was a BAU projection using the 2006 UNFCCC inventory guidelines and the historical rate of increase in landfill gas recovery for energy use; also need to ref.Monni et al. (2006)--see full reference in Chapter 10. (Jean Bogner, Landfills +, Inc)	See A-693 DISCUSS waste sector baseline should be comparable to SRES B2 or WEO; otherwise useless	10	DISCUSS waste sector baseline should be comparable to SRES B2 or WEO; otherwise "explain" (11)
SPM-717	9 T 2	A	10	1	10	7	In Table SPM 2, under the Energy Supply section, I do not see how this ties in with the (highly flawed) analysis done in Chapter 4 in section 4.4.3, with particular reference to Figure 4.4.7, which although it needs fixing/clarifying, implies different numbers than those used here. (Steve Sawyer, Greenpeace International)	See A-693 DISCUSS and clarify the difference with ch 4 numbers in footnote		DISCUSS (11)
SPM-718	9 T 2	A	10	1	0	0	table SPM2 caption:"Estimated mitigation potential in Mton CO2 eq….." Now the units are too much hidden in the table. Overall label of potential per cost category: "Mid-range economic potential at different cost categories…" (Ronald Hutjes, Alterra)	See A-693 ACC, but in Gt		ACC (11)
SPM-719	9 T	A	10	1	0	0	Table SPM 2. There should be significant emissions reductions available in the transport sector at low or negative costs. Their	See A-693 ACC; will be added	5	ACC (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	2						ommission from the table is noticeable and troubling given the importance of this sector and the availability of low-cost mitigation options. (Jason Mark, Union of Concerned Scientists)			
SPM-720	9 T 2	A	10	1	0	0	The information in Table 10.6 (Chapter 10, Pg. 27) provides the regional breakdown and more comprehensive cost breakdown needed to put the waste sector on the same basis as other sectors. This information should be incorporated into Table SPM.2. The table should have a footnote describing the concerns that Chapter 10 authors have about the quality of their emissions data. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	See A-693 ACC; add those data	10	ACC (11)
SPM-721	9 T 2	A	10	1	10	0	Table SPM 2: In the column headed "Economic potential < 100 US$CO2eq", give the centre value and a range rather than a low and a high value (eg replace Low 200, High 1400 with 800 +- 600). This make clear that this figure is the sum of potentials at different cost levels in the columns to the right. (Michael Raupach, CSIRO Marine and Atmospheric Research)	See A-693 REJ; all numbers will have range		REJ (11)
SPM-722	9 T 2	A	10	1	10	0	Table SPM 2: In row 3, middle column, give the units of mitigation potential as MtCO2eq/y, not as MtCO2eq (since these are mitigations in emission fluxes). (Michael Raupach, CSIRO Marine and Atmospheric Research)	See A-693 ACC; but in Gt/yr		ACC (11)
SPM-723	9 T 2	A	10	1	10	0	Table SPM 2, rows for "energy supply" and Forestry": why is there no 2030 emission figure for these sectors? This makes the magnitude of the mitigation potential difficult to assess. Likewise, a total (pre-mitigation) emission should be given in the last line. (Michael Raupach, CSIRO Marine and Atmospheric Research)	See A-693 ACC; will be added	4,9	ACC (11)
SPM-724	9 T 2	A	10	1	10	0	Does the table include non-CO2 GHGs for sectors other than industry? I assume it does, but it is labeled in such a way that it looks like ONLY the industry sector includes non-CO2 GHGs. I am confused by the note that energy supply does not have estimates of non-CO2 gases since there is information in USEPA 2006 and EMF21 on methane from natural gas and coal supply as well as information on SF6 in electricity distribution. (Katherine Casey Delhotal, Research Trinagle Institute)	See A-693 ACC; non-CO2 will be added	4,5,6	ACC (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-725	9 T 2	A	10	1	0	0	Table SPM2. This table contains very important information, however the data sources and credibility of the data are unclear. Further explanation with regard to how the values found in this Table were calculated as well as how the error margins of the calculations have been accounted for is required. These explanations should be presented in the SPM, or as a reference in the TS. (Government of Japan)	See A-693 ACC; better explanation of method in footnote and detail in ch 11 and TS	11,TS	ACC and better explanation of method in footnote and detail in ch 11, 4-10, and TS. (11)
SPM-726	9 T 2	A	10	1	10	50	The expansive and comprehensive caveats, which are included at Table 11.3 need to be reflected in the SPM and the TS (at page 88 line 1) . At present none of the information explaining why Table 11.3 needs to be treated with caution is included and, therefore, a more certain representation of cross-sectoral mitigation potentials is provided in this table than is warranted. (Government of Australia)	See A-693 See A-725		Adjustment hopefully via new text of page 9. (11)
SPM-727	9 T 2	A	10	1	10	1	The description of the table should clearly state that the table is indicative only. Suggest including "indicative" to replace "estimated". (Government of Australia)	See A-693/A-669 DISCUSS; “indicative” may be too vague, but care must be taken not to suggest more accuracy than we can justify; careful that we are not broadening ranges and confidence levels so much that the message disappears; scrutinise the methods that were used to calculate these potentials		DISCUSS (11)
SPM-728	9 T 2	A	10	1	10	50	The authors need to carefully review Table SPM 2 and Table TS 19 (page 88 line 1) to ensure that changes that are made in the body of the text after the current review period are reflected and flow through into this Table, as the Table could be a focus for policy makers. Before such a table is included the authors also need to carefully list exactly what is included in each of the sectors and explain how different metrics in the literature are accounted for.	See A-693 See A-727		See A-693 See A-727 (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(Government of Australia)			
SPM-729	9 T 2	A	10	1	10	0	In Table SPM.2 what is EIT? U.S. Government (Government of U.S. Department of State)	See A-693 ACC; glossary		ACC (11)
SPM-165	9 T 2	B	10	1	10	1	Table SPM2 : (sectoral level) Mton CO2eq : The layout of this table needs to be improved, so that the units used in each cell are clear to the reader without having to read the caption. The bottom of this table was not readable in my version of the file. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-693 ACC		ACC (11)
SPM-166	9 T 2	B	10	1	10	2	Why are no uncertainty ranges given for some of the sectors in the Table? Or does this mean that the figures are very accurately known? (Government of European Community / European Commission)	See A-693 See A-715, Will be done		See A-693 See A-715 (11)
SPM-167	9 T 2	B	10	1	10	2	This (Table SPM 2)is a very useful Table that strongly increases our understanding of the magnitude of the emission reduction potentials and were these potentials can be found. It would be useful to also report the total reference emission levels in quantitive terms. (Government of European Community / European Commission)	See A-693 ACC add total 2030 emissions		ACC (11)
SPM-168	9 T 2	B	10	1	10	2	Table SPM.2: Leave this table in the TS, but summarize the information graphically in the SPM. E.g. by bar charts showing total global emissions in 1990, total emissions in 2030, and reduction steps from the 2030 level: e.g. per cost range, and/or per sector, and/or per region. Also include the emission profiles for stabilisation between 450-550 ppmv CO2-eq: can the required emission reductions be achieved? If required, the sector information can be made visible in separate sector graphs when discussing the sectors later in the SPM: including an indication of the range of estimates. when using graphics, the list of notes can be left out (refer to TS). (Government of European Community / European Commission)	See A-693 Will be challenging to get all that in graphical form		Linking table with specific stabilisation target is not appropriate. (11)
SPM-	9	B	10	1	10	15	The estimates of achievable mitigation (by 2030) presented in	See A-693		See A-693

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
169	T 2						tables SPM-2, TS-19, and 11-3, may not in fact contribute to mitigation from baseline. The estimated achievable emission reductions may be absorbed by the energy-intensity reductions and decarbonization embedded in the SRES B2/WEO (2004) baselines. If in fact estimated mitigation possibilities can truly contribute beyond that which is already embedded in the baseline scenarios, then that should be demonstrated in detail, not simply assumed. U.S. Government (Government of U.S. Department of State)	Identical A-707		(11)
SPM-170	9 T 2	B	10	1	10	0	Table SPM.2. The aggregation of mitigation potentials in Table SPM 2 is seriously flawed, and the authors should consider deleting the table unless these shortcomings can be solved. The aggregation appears to be new analysis, not an assessment. It attempts to aggregate completely different sectoral estimates, which is unsound. These cannot be simply added up for a global mitigation potential since they do not include regional and cross-market economic effects. A proper assessment of the mitigation potential from a cross-sectoral perspective requires a fully consistent modeling framework using a common baseline that takes into account economic interactions between sectors. U.S. Government (Government of U.S. Department of State)	See A-693 DISCUSS; aggregation is perfectly acceptable in an assessment; a fully consistent modelling framework is not available; that is why a scenario analysis was applied (this needs to be made clear in ch 11 and TS)	11	There are some models with a consistent modelling framework. (11)
SPM-171	9 T 2	B	10	1	10	50	Table SPM.2. Forestry row results need to be replaced with final revised global mitigation estimates from revised Chapter 9 global estimates, taking into account comments made on Chapter 9 that it report the results of global forest sector and climate economic models given in Table 9.5 instead of the bottom-up regional estimtes currently provided. U.S. Government (Government of U.S. Department of State)	See A-693 DISCUSS	9	
SPM-172	9 T 2	B	10	1	10	0	Table SPM.2 Estimates of Mitigation Costs and Potentials: We have serious reservations about the validity and comparability of the underlying estimates from Chapters 4 to 10, which are presented in Tables SPM.2 and TS.19, because there is no demonstration that the estimated mitigation potentials have been evaluated properly with respect to the two baselines used for this	See A-693 See B-170		Needs to be resolved (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							analysis. The mitigation estimates in the SOD apparently do not take account of the technological changes already embedded in the SRES B2 and WEO 2004 reference scenarios against which the mitigation estimates were made. The estimates of mitigation costs and potentials from Chapters 4 to 10 lack transparency and robustness. It is unclear whether these estimates come from the assessed literature or should be considered new research for each chapter. Before these chapter estimates can be carried over to Chapter 11 and then brought forward to the SPM they need to be thoroughly explained and substantiated. U.S. Government (Government of U.S. Department of State)			
SPM-173	9 T 2	B	10	1	10	1	Table SPM 2. Explain the significance of the comparison and differences between the referenced data sources being presented. Newer, better data and estimates ? Is there any way to capture or summarize the important conclusion(s) to be drawn from this very data-heavy table ? U.S. Government (Government of U.S. Department of State)	See A-693 See A-700, 725		Needs to be resolved (11)
SPM-174	9 T 2	B	10	1	10	50	SPM Table 2's Forestry row results need to be replaced with final revised global mitigation estimates from revised Chapter 9 global estimates, taking into account comments made on Chapter 9 that it report the results of global forest sector and climate economic models given in Table 9.5 instead of the bottom-up regional estimtes currently provided. U.S. Government (Government of U.S. Department of State)	See A-693 Identical B-171		See A-693 (11)
SPM-175	9 T 2	B	10	1	10	0	SPM Table 2's "Agriculture" row results need to be replaced with final revised global mitigation estimates from revised Chapter 8 Table 8.1, taking into account comments made on Table 8.1 that it be revised to include global climate economic model results, not US estimates projected globally. U.S. Government (Government of U.S. Department of State)	See A-693 DISCUSS	8	DISCUSS (11)
SPM-176	9 T 2	B	10	1	10	5	Some of the rows are labeled "GtCO2" (which should be Gt CO2, and actually, should be SI based on grams) but the columns are labeled "Mton CO2". The same units should be used throughout the table. Also, the sector heading says "2030 emissions" but the	See A-693 See A-702 DISCUSS agriculture numbers; if they are indeed for 2020 than	8	

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							Agriculture row is for 2020 emissions; the Agriculture row should be adjusted to correspond to 2030 (unless the "2020" was a typographical error, in which case it should be changed to "2030"). U.S. Government (Government of U.S. Department of State)	translation to 2030 numbers is needed		
SPM-177	9 T 2	B	10	1	11	0	It is unclear how the estimate of mitigation potential in Table SPM.2 for the transport sector was developed. This text indicates that they are the potentials for light duty vehicles, biofuels and aviation only, but a sum for these factors is not shown in either Chapter 5 or 11. Chapter 11, Pg. 16, lines 36-42, referring to the transport sector, states "… some crude extrapolation is required for overall coverage.", but does not explain the basis or process for extrapolation. Finally, Table 5.17, is a summary of CO2 mitigation potential in the transport sector from several studies, but none estimate the 28.3% reduction indicated in this table. That table provides cost estimates for specific technologies, but not for the global total. There are costs estimates for an unspecified amount of mitigation in LDVs, which indicate that the cost will be below $100/tCO2 if oil price is somewhat above $40/Bbl. U.S. Government (Government of U.S. Department of State)	See A-693 DISCUSS	5	
SPM-178	9 T 2	B	10	1	10	0	In Table SPM.2 what is EIT? Define and put into acronyms table. U.S. Government (Government of U.S. Department of State)	See A-693 ACC; glossary		ACC (11)
SPM-179	9 T 2	B	10	1	0	0	The information in Table 10.6 (Chapter 10, page 27) provides the regional breakdown and more comprehensive cost breakdown needed to put the waste sector on the same basis as other sectors. This information should be incorporated into Table SPM.2. The table should have a footnote describing the concerns that Chapter 10 authors have about the quality of their emissions data. U.S. Government (Government of U.S. Department of State)	See A-693 See A-720		See A-693 See A-720 (11)
SPM-730	9 T	A	10	5	10	5	Add to footnote to explain whether B2 has 50% lower emissions in 2100 than WEO, or whether the two baselines are rather similar	See A-693 DISCUSS baseline issue; are	11	WEO goes to 2030 only.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
	2						(Rachel Warren, University of East Anglia)	WEO and SRES B2 comparable?		(11)
SPM-180	9 T 2	B	10	27	10	0	"The scenario described in Table SPM 2 provides a maximum of 50 EJ/year of new non-CO2-emitting power, beyond the baseline case, in 2030. It will be necessary to provide non-CO2-emitting primary power in the range of 150 EJ/year by 2050, 500 EJ/year by 2100 and over 1000 EJ/year during the next century, while limiting CO2-emitting power to a small fraction of this level. The total requirement over the period until 2200 is in the range of 100,000 EJ. To address this problem requires large-scale non-CO2-emitting energy resources that, in aggregate, are not limited in their fractional market penetration. Table SPM 3 provides a perspective on the options to provide these levels of energy. U.S. Government (Government of U.S. Department of State)	See A-693 Identical A-769		See A-693 (11)
SPM-731	9 T 2	A	10	0	0	0	Table SPM 2. See comments above on Chapter 4, pp. 72-92. I do not believe the economic potentials for the energy supply options are accurate or credible. They greatly understate the potential for "other renewables" and overstate the potential for nuclear and fossil CCS. (Steve Clemmer, Union of Concerned Scientists)	See A-693 DISCUSS	4,11	See chapter 4 (11)
SPM-732	9 T 2	A	10	0	10	0	Calculated with SRES B2 scenario. Is that the best/most reasonable way to do this? Might be useful to explain scenario quickly and state why it was selected. U.S. Government (Government of U.S. Department of State)	See A-693 DISCUSS; see also A-730		DISCUSS (11)
SPM-733	10	A	11	0	11	0	footnote 9: when the end-loss is compared to an average annual rate, does one not have to specify the period over which the average is spread? (Aviel VERBRUGGEN, University of Antwerp)	ACC; but will be in brackets now		
SPM-181	9 T 2	B	11	1	11	1	… range in ECONOMIC mitigation potential… ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-693 ACC		
SPM-734	9 T 2	A	11	2	11	4	"Mitigation options at costs >100 US$/tCO2-eq are not included here, but are reported in the source chapters. Only the numbers for waste are cut off at 50 US$/t CO2-eq.". Suggest simpler/shorter	See A-693 DISCUSS; all numbers upto 100$/t to be given; waste sector	10	Waste update will be done

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							wording to: Mitigation options at costs >100 US$/tCO2-eq (>50 US$/t for waste) are not included here, but are reported in the source chapters. (Jean Bogner, Landfills +, Inc)	to be updated		
SPM-735	9 T 2	A	11	4	11	4	Need to explain why the transport sector could not estimate costs when all the other sectors could. (Rachel Warren, University of East Anglia)	See A-693 TIA; transport numbers to be added	5	
SPM-182	9 T 2	B	11	4	11	4	… unknown … : this is troublesome, could it be 100 % of the transport mitigation potential ? Is'n there a way to give at least a higher bound? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-693 See A-735, 736		
SPM-736	9 T 2	A	11	10	11	11	It is unclear how the estimate of mitigation potential in Table SPM.2 for the transport sector was developed. This text indicates that they are the potentials for light duty vehicles, biofuels and aviation only, but a sum for these factors is not shown in either Chapter 5 or 11. Chapter 11, Pg. 16, lines 36-42, referring to the transport sector, states "… some crude extrapolation is required for overall coverage.", but does not explain the basis or process for extrapolation. Finally, Table 5.17, is a summary of CO2 mitigation potential in the transport sector from several studies, but none estimate the 28.3% reduction indicated in this table. That table provides cost estimates for specific technologies, but not for the global total. There are costs estimates for an unspecified amount of mitigation in LDVs, which indicate that the cost will be below $100/tCO2 if oil price is somewhat above $40/Bbl. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	See A-693 DISCUSS transport numbers to be updated and improved	5	
SPM-183	9 T 2	B	11	10	11	11	Why not separate aviation from the others means ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-693 REJ; not for SPM; in TS	TS	
SPM-737	9 T 2	A	11	13	11	14	Delete the sentence "Industry is exclusive of material efficiency improvements, other than through recycling." Table 7.4 (Chapter 7, Pg. 11) lists a number of materials efficiency techniques other than recycling, e.g. the use of blended cements and geopolymers to	See A-693 ACC; change note		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							reduce clinker requirement in the cement industry. The approach used by Chapter 7 estimated mitigation potential by industry, rather than by technology, makes estimating the amount of mitigation potential due to materials efficiency improvements difficult. However, they are included. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)			
SPM-184	9 T 2	B	11	13	11	14	Delete the sentence "Industry is exclusive of material efficiency improvements, other than through recycling." Table 7.4 (Chapter 7, Pg. 11) lists a number of materials efficiency techniques other than recycling, e.g. the use of blended cements and geopolymers to reduce clinker requirement in the cement industry. The approach used by Chapter 7 estimated mitigation potential by industry, rather than by technology, makes estimating the amount of mitigation potential due to materials efficiency improvements difficult. However, they are included. U.S. Government (Government of U.S. Department of State)	See A-693 See A-737		
SPM-185	9 T 2	B	11	13	11	14	Delete the sentence "Industry is exclusive of material efficiency improvements, other than through recycling." Table 7.4 (Chapter 7, page 11) lists a number of materials efficiency techniques other than recycling, e.g. the use of blended cements and geopolymers to reduce clinker requirement in the cement industry. The approach used by Chapter 7 estimated mitigation potential by industry, rather than by technology, which makes estimating the amount of mitigation potential due to materials efficiency improvements difficult. However, the approach by industry is included. U.S. Government (Government of U.S. Department of State)	See A-693 Identical B-184		
SPM-738	9 T 2	A	11	14	0	0	"combined heat and power is not included": Why not? It is a major GHG mitigation option. (Government of Germany)	See A-693 ACC; CHP to be added to ch4 and included in table	4,11	
SPM-739	9 T 2	A	11	16	0	0	replacing central values by a range in the final version of the table would NOT benefit readability! (Ronald Hutjes, Alterra)	See A-693 REJ; but it better reflects uncertainty		
SPM-	10	A	11	19	11	27	Why are the cost estimates, expressed as loss of GDP, lower in a	REJ; GDP loss increase over		REJ

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740							shorter time-frame? Compare paragraphs 10 (here) and 7, where by 2050, the same 500 stabilisation goal has costs of less than 2% GDP. On the one hand, it might be that more expensive options need to be used, but then again, there is more time for low-cost technologies to come through. Are these numbers robust to assumptions about technological change? (Harald Winkler, University of Cape Town)	time (adding reduction of annual gdp GROWTH RATE IN BRACKETS MAY HELP avoiding this misunderstanding)		(11)
SPM-741	10	A	11	19	0	0	are these numbers based on the same results as Figure SPM5/statement 7? If so, shouldn't the statements be combined/linked ("in line with the numbers presented in statement 7")? (Rob Swart, MNP)	DISCUSS we must make sure the same methods are used to derive the LT and ST numbers; more discussion needed on selecting studies and on how to express ranges	3,11	Rejected. Numbers are consistent (3) To be discussed (11) Discussion has taken place: Terry is able to fill in lt and ST numbers in a similar way. The note was made that also the uncertainty should be reported similarly.
SPM-742	10	A	11	19	11	23	p. 8, lines 3-8 and n 5; and p.11, lines 19-23 and n 9 --- The stabilization costs indicated in the SPM are (highly) suspect because they are assessed against baselines that already include large reductions in emissions attributable to technological change, the adoption of which has not been considered in the mitigation cost analysis (or has simply been treated as involving zero cost). Moreover, many cost estimates are based on models that assume a carbon-free "backstop" energy technology(ies) that may (does) not yet exist, a technology that is often identified as "generic". The "backstop" technology assumption can substantially reduce	REJ; we use standard methodology; DISCUSS the backstop issue		REJ. The baseline and mitigation scenarios use of technologies is addressed in the model studies. Back stop technology assumptions are

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							mitigation costs. (Christopher Green, McGill University)			usually made explicitly. (11) On the basis of the definition of ''backstop'' this comment is rejected. Most modellers avoid backstops. Too complicated to identify which options have backstop technologies.
SPM-743	10	A	11	19	11	28	These GDP results cannot stand alone. The least one can do to improve these informations is to explain how important assumptions made are to the results, especially assumptions about capital mobility, use of credits from Joint Implementation and Clean Development Mechanism and oil prices. Depending on these assumptions the GDP impact will vary greatly. This can among other studies be seen from the study made by the EU Commissions research unit IPTS (Analysis of Post-2012 Climate Policy Scenarios with Limited Participation, June 2005. Study is included) and the study made by COWI for UNICE (Competitiveness and EU Climate Change Policy, october 2004. Study is included in the email). (Helle Juhler-Kristoffersen, Confederation of Danish Industries)	See A-742		REJ. Already taken into account. Model studies adopt different assumptions. Quoted outcomes address these. (11)
SPM-744	10	A	11	19	11	28	Section 10 reports 650 to 550 ppmv but section 7 deals with 550 and 450 - this could be confusing (Ann Gardiner, AEA Technology)	ACC; something about 450 should be said here		There are too few studies to report cost estimates for 450ppm CO_2-eq (11) this needs

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										to be said in the text
SPM-745	10	A	11	19	11	28	These GDP results cannot stand alone. The least one can do to improve this information is to explain how important assumptions made are to the results, especially assumptions about capital mobility, use of credits from Joint Implementation and Clean Development Mechanism and oil prices. Depending on these assumptions the GDP impact will vary greatly. This can among other studies be seen from the study made by the EU Commission research unit IPTS (Analysis of Post-2012 Climate Policy Scenarios with Limited Participation, June 2005. Study is included) and the study made by COWI for UNICE (Competitiveness and EU Climate Change Policy, October 2004). (Nick Campbell, ARKEMA SA)	Identical A-743		See A-743 (11)
SPM-746	10	A	11	19	11	28	It is important to comment on important assumptions made and their consequences to the results, especially assumptions about capital mobility, use of credits from Joint Implementation and Clean Development Mechanism and oil prices. Depending on these assumptions the GDP impact can vary greatly. This can be seen, for instance, from the study made by the EU Commission research unit IPTS (Analysis of Post-2012 Climate Policy Scenarios with Limited Participation, June 2005. Study is included) and the study made by COWI for UNICE (Competitiveness and EU Climate Change Policy, October 2004). (Jean-Yves CANEILL, EDF)	See A-743		See A-743 (11)
SPM-747	10	A	11	19	11	23	It is vital to state first the situation for the stabilization at levels of 450 ppm CO2eq. or below which are necessary in order to limit the worst consequences of climate change. Here, as elsewhere, the 650 ppm CO2 eq. is the point of departure, as if assuming that would be an acceptable solution to avoid dangerous climate change. (Donald Pols, Friends of the Earth Netherlands/Milieudefensie)	REJ; there is no ranking intended		REJ (11)
SPM-748	10	A	11	19	11	23	Are the cost estimates in para 10 based on the same model analyses introduced in para 7? (Koji Kadono, Global Industrial and Social Progress Research	See A-741		To be discussed. (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							Institute(GISPRI))			
SPM-749	10	A	11	19	11	23	Having talked about 450ppmv on page 5, it may be seen as odd not to have commented on GDP impacts of achieving that stabilisation level. It would be helpful to say in qualitative terms how the benefits of action to achieve stabilisation levels which carry less risk will help offset the GDP costs. Even if this is an area with insufficient fact base to draw quantitative conclusions, it is at least suggesting this as an area for further study. (Government of UK)	See A-744		See A-744 (11)
SPM-750	10	A	11	19	11	28	cost estimates are explained only for 650ppmv CO2EQ and 550 ppmv CO2EQ : it would be crucial also to give estimates for lower stabilisation levels like 450 ppmv CO2EQ or if available even 400 CO2EQ (Government of European Community / European Commission)	See A-749		See A-744 (11)
SPM-751	10	A	11	19	11	23	Describing GDP loss in terms of proportion can be misleading as it seems to give the wrong perception that the loss is rather small. Therefore we suggest to add the information on NPV of abatement costs. (Government of Japan)	REJ; absolute numbers miss the context and are misleading		REJ. (11)
SPM-752	10	A	11	19	11	27	Again, check consistency and clarity with page 8 lines 3-12. (Government of Environment Canada)	See A-748		To be discussed (11)
SPM-753	10	A	11	19	11	27	comment: conclusion 10 is strongly related to conclusion 7; it would be more clear if they were grouped together (Government of The Netherlands)	See A-748		To be discussed (11)
SPM-754	10	A	11	19	11	27	This para does not report mitigation cost in 2030 for stabilisation scenarios below 550ppm-eq (Categories A and partly B). This information is missing from Chapter 11.6.2 as well and should be added there, in the TS and SPM. An example for such a scenario analysis can be found in "den Elzen, M.G.J and Meinshausen, M., 2005. Meeting the EU 2 C climate target: global and regional emission implications. MNP-report 728001031 (www.mnp.nl/en), Netherlands Environmental Assessment Agency (MNP), Bilthoven, the Netherlands." in figure 8, where costs of up to 1% of GDP are reported for 450 ppm eq. and up to 1.5% for 400 ppm eq. around	See A-744		To be discussed (11)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							2030. A peer-reviewed source for this figure can be found in: den Elzen, M. and Meinshausen, M. 2006, "Multi-Gas Emission Pathways for Meeting the EU 2 C Climate Target", In: Hans Joachim Schellnhuber (editor in chief) Avoiding Dangerous Climate Change, Cambridge University Press 299-309; figure 31.8, page 308 (Government of Germany)			
SPM-755	10	A	11	19	11	26	Are there estimates regarding the GDP loss to be expected to meet the EU target of a maximum of 2 C? (Government of Germany)	REJ; this can be derived from table 2 and para 10, but there is no reason to single that out in text		REJ. (11)
SPM-186	10	B	11	19	11	19	How do these cost estimated relate to those shown in paragraph 7 (page 8)? (Government of European Community / European Commission)	See A-748,752		See 748 (11)
SPM-756	10	A	11	20	11	27	This paragraph should provide costs estimates also for more aggressive mitigation scenarios, consistent with trajectories towards 400 ppm and below. (,)	See A-749		See 744 (11)
SPM-757	10	A	11	20	11	20	Again, this paragraph seems to recommend a stabilization level around 650 ppmv CO2 emissions, while the literature on stablization of GHG concentrations indicate to levels as low as 375 ppmv CO2. The text should therefore mention cost estimates for mitigation consitent with 375 ppmv (Giulio Volpi, WWF International)	See A-747		See A-747 (11)
SPM-758	10	A	11	21	11	22	Please specify when stabilisation would occur. (Government of Australia)	ACC; refer to table 1		ACC. (11)
SPM-759	10	A	11	21	11	22	The figures of 0.5% and 1% GDP loss need some context. Provide an estimate of the actual loss in dollars in 2030. Also, why is this for 2030 when similar data on p. 8, lines 4-6 are for 2050? U.S. Government (Government of U.S. Department of State)	See A-751 Section C is ST, section B is LT		REJ. Also drop footnote. (11)
SPM-187	10	B	11	21	11	22	The figures of 0.5% and 1% GDP loss need some context. Provide an estimate of the actual loss in dollars in 2030. Also, why is this for 2030 when similar data on p. 8, lines 4-6 are for 2050? U.S.	Identical A-759		REJ. Also drop footnote. (11)

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							Government (Government of U.S. Department of State)			
SPM-760	10	A	11	22	11	22	Footnote 9 should be brought back into the main text because it include key information that helps putting into context the real costs of mitigation scenarios. (,)	See A-762		REJ. In the SPM no technical debate about mitigation costs. (11)
SPM-761	10	A	11	22	0	0	footnote 9 is an important enough clarification to be included in the main text, not in a footnote…. (Ronald Hutjes, Alterra)	See A-760		REJ. (11)
SPM-762	10	A	11	25	11	27	This statement would be important, but doesn't appear to be entirely correct. Surely, if an allocation regime were to either include or exclude a country like China up to 2030, then the economic impact of this choice on that country would be much larger than if the allocation regime is a given and the choice is only about the target level? Please check and clarify/explain this apparently overly generic statement. (Andy Reisinger, TSU IPCC Synthesis Report)	ACC; sentence to be elaborated	13	~~Page 11, Line 26. Remove "particularly timing," and replace "but" by "as well as". Finish the sentence at "scenario".~~ (11). The above is contrary to ch 13.
SPM-763	10	A	11	25	11	26	"Regional abatement costs are dependent on the allocation regime……..but the assumed.....". It is not clear how regional abatement costs depend on the allocation regime. Does this assume "no use" or "partial use" or "inefficient use" of the flexibility mechanisms within and across the time-periods? If so, does the problem arise from the allocation regime or the flawed design and implementation of flexibility mechanism? (Government of India)	See A-762		See A-762 (11)
SPM-764	10	A	11	26	11	26	replace "particularly," by "and" (Government of The Netherlands)	See A-762		See A-762 (11)
SPM-	10	A	11	26	11	26	replace "assumed" by "targeted" and insert "assumed" before	TIA; move "assumed" to before		TIA

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
765							"baseline scenario" (Government of The Netherlands)	"baseline"		(11)
SPM-766	10	A	11	26	11	26	Useful to define the "allocation regime" here? What is meant by "allocation regime"? What is being allocated? U.S. Government (Government of U.S. Department of State)	See A-762		Line 26 after "regimes" add "assuming global emission permit trading" (11)
SPM-188	10	B	11	26	11	26	What do the authors mean by "allocation regime"? What is being allocated? U.S. Government (Government of U.S. Department of State)	See A-762		See A-762 (11)
SPM-767	10	A	11	27	11	28	Insert a new paragraph: "Beyond the short time horizon (2030) of Table SPM 2, and especially during the period 2050 to 2100, most plausible scenarios require rapid movement towards limiting annual carbon emissions to very low levels, whilst energy consumption continues to grow; it is unlikely that this can be accomplished without very strong efforts to develop and deploy new technologies that can almost completely replace carbon-emitting technologies during the course of this century. Essentially, these technologies are carbon capture and storage, solar (substituted by other renewables where locally appropriate), fusion and advanced nuclear fission" (Ian Cook, United Kingdom Atomic Energy Authority)	REJ; is already covered in para 6		
SPM-768	11	A	11	28	11	32	This is not the most common use of the concept of "spill-over" in this context. Spill-over would reflect the changes in GHG trends arising from the dissemination in other countries of the technical changes resulting from carbon constraints in industrialised countries. The good reference on this impact, which may overcome the leakage effect, is Grubb, M.J., Hope, C. and Fouquet, R. (2002) "Climatic implications of the Kyoto Protocol: the contribution of international spillover." Climatic Change, 54(1-2): 11-28. See also this report Chapter 2 p. 73 (Cédric PHILIBERT, International Energy Agency)	DISCUSS Add definitions of carbon leakage and spill-over to SPM glossary Proposal ch 11 ->	11	Please see new paragraphs: Spillover effects of mitigation are the effects of mitigation measures of one country or group of countries on

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										other countries who are net fossil fuel exporters. It is important to emphasize the uncertainties in estimating spillover effects. Spillover effects are a significant element in the evaluation of policies by nations globally linked through trade, foreign direct investment, and technology transfer. With respect to the effect of mitigation on oil prices the literature has hardly advanced beyond the TAR. Given the importance of the assumptions underlying the analyses and the relative lack of

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										new literature hydrocarbon fuel exporting nations (in both Annex 1 and non-Annex 1) may expect lower oil prices and lower GDP results from emission abatement policies, but these results depend strongly on assumptions related to Annex 1 policy decisions and oil market conditions. Carbon leakage refers to the effect that a part of the CO2 reduction achieved by abating nations is offset by an increase in CO2 emissions in non-abating countries.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										Critical uncertainties remain in the assessment of carbon leakage with some equilibrium modeling supporting the conclusion in the TAR of leakage in the order of 5-20%, while findings from other sectoral analysis indicate lower levels of leakage. Highlighting the uncertainties involved is the recent evidence of relocation in the aluminum industry associated with the increase in natural gas prices in the EU and North America. (11)

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SPM-769	10	A	11	27	11	0	"The scenario described in Table SPM 2 provides a maximum of 50 EJ/year of new non-CO2-emitting power, beyond the baseline case, in 2030. It will be necessary to provide non-CO2-emitting primary power in the range of 150 EJ/year by 2050, 500 EJ/year by 2100 and over 1000 EJ/year during the next century, while limiting CO2-emitting power to a small fraction of this level. The total requirement over the period until 2200 is in the range of 100,000 EJ. To address this problem requires large-scale non-CO2-emitting energy resources that, in aggregate, are not limited in their fractional market penetration. Table SPM 3 provides a perspective on the options to provide these levels of energy. [Copy Table 4.3.1 here.] U.S. Government (Government of U.S. Department of State)	UNCLEAR; see A-840	11	
SPM-770	11	A	11	28	11	35	When looking at the background information in chapter 11 the SPM does not represent a fair summary of the carbon leakage issue. The attitude seems to be that carbon leakage is not significant. This is not true and by saying so the SPM represents a biased version of results mentioned on p. 73 in chapter 11. There are surveys referenced in chapter 11 of a carbon leakage up to 40 percent in the EU. Reference could also be made to a COWI study made for UNICE, which estimates an impact of about 20 % carbon leakage already by 2010 in the EU (Study included in the email). (Helle Juhler-Kristoffersen, Confederation of Danish Industries)	DISCUSS para states leakage rates up to 20%;		See new paras. (11) Ch 11 proposes to split the text in a para on leakage and a para on spill overs.
SPM-771	11	A	11	28	11	35	When looking at the background information in chapter 11 the SPM does not represent a fair summary of the carbon leakage issue. The attitude seems to be that carbon leakage is not significant. This is not true and by saying so the SPM represents a biased version of results mentioned on p. 73 in chapter 11. There are surveys referenced in chapter 11 of a carbon leakage up to 40 percent in the EU. Reference could also be made to a COWI study made for UNICE, which estimates an impact of about 20 % carbon leakage already by 2010 in the EU. (Nick Campbell, ARKEMA SA)	Identical A-770		
SPM-	11	A	11	28	11	35	When looking at the background information in chapter 11 the	Identical A-770		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
772							SPM does not represent an exact summary of the carbon leakage issue. It looks like that the carbon leakage is not significant. There are surveys discussed in chapter 11 of a carbon leakage up to 40 percent in the EU. Reference could also mention a COWI study made for UNICE, which estimates an impact of about 20 % carbon leakage already by 2010 in the EU. (Jean-Yves CANEILL, EDF)			
SPM-773	11	A	11	28	11	35	This paragraph is somewhat cryptic because it assumes that the reader knows the relevant TAR findings by heart. The actual findings need to be given, as well as how they have or haven't changed since the TAR. The TS contains much clearer language with clear findings that could be condensed into relevant SPM statements. (Andy Reisinger, TSU IPCC Synthesis Report)	REJ: fully quoting TAR conclusions would take too much space; in TS more detail can be given	TS	REJ (11)
SPM-774	11	A	11	28	11	28	It is suggested to include the following information from the TS (page 44, lines 1 to 3) in the SPM: It is well accepted that even with good decision making and co-operation between the public and private sectors, the necessary transition will take time and that the sooner it begins the lower the overall cost on total GDP will be as studies of trajectories under uncertainty emphasize stronger early action particularly on long-lived infrastructure and other capital stock. (Government of Austria)	UNCLEAR; this TS text does not apply to para 11		Agree (11)
SPM-775	11	A	11	28	0	35	Paragraph 11. If spillover effects are to be mentioned at all it should include other effects than just those on oil-exporting countries. (Government of Sweden)	ACC; also include something on non-oil exporters		See new paras
SPM-776	11	A	11	28	11	28	Need to rephrase. Recent literature does not seem to confirm the conclusions of the TAR- as the para itself states, new literature suggests that leakage will be minimal. (Government of Environment Canada)	REJ; no that is not true		REJ (11)
SPM-777	11	A	11	28	11	28	Define or explain briefly the term “carbon leakage” and why in footnote 10 there would be an “increase in emissions” due to “implementation of reductions in Annex I”. Use clarifying construction. U.S. Government	REJ; is in footnote 10 (will be moved to glossary)		REJ (11)

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							(Government of U.S. Department of State)			
SPM-189	11	B	11	28	11	35	The assumption on the loss of GDP by oil-exporting countries on the basis of lower oil price is probably not so well established. (Government of Switzerland)	DISCUSS	11	REJ, This is a result of findings. See revised paras (11)
SPM-190	11	B	11	28	11	28	Para speaks of many things that are not defined, e.g. leakage, 5-20% of what?, spill over. Some interpret leakage as the increasing and spill over as the decreasing effect of Annex I action on non-annex I countries' emissions. (Government of European Community / European Commission)	ACC both carbon leakage and spill-over will be defined in glossary		Agree (11)
SPM-191	11	B	11	28	11	28	For the Policy Maker/Lay Reader, define or explain briefly the term "carbon leakage" and why in footnote 10 there would be an "increase in emissions" due to "implementation of reductions in Annex I". Use clarifying construction. U.S. Government (Government of U.S. Department of State)	REJ; definition in footnote should be clear		REJ (11)
SPM-778	11	A	11	29	11	29	replace "but could be lower due to diffusion of low-emission technology" by "but would be less if low-emissions technology is effectively diffused" (Government of The Netherlands)	ACC		See revised paras (11)
SPM-779	11	A	11	30	11	32	The affirmation: ¨(oil-exporting countries can expect lower oil prices and GDP loss but results depend on aassumptions about annex - I policies and oil exporting country responses)¨ - isn´t in accord with actual situation and the future perspectives. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; that is what TAR said and there is no other literature		See revised paras (11)
SPM-780	11	A	11	30	11	31	As the WGIII Report page 72 line 22-23 indicates: "It is important to emphasize the uncertainties in estimating spill over effects." It would be useful to make this the opening line for this this section. As written in the underlying report, there are many different spill over effects, all of which depend on assumptions made, thus no models/study can reflect the full dynamics of all of the factors at play. The underlying report suggests that there is far more new literature	ACC; reorder para so that new findings Are close to TAR findings		ACC. This comment major basis for revised paras (11)

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							dealing with carbon leakage than with oil prices, so including both topics equally under the line "recent literature confirms the conclusions of the TAR" would not be accurate. It would make sense to separate out "carbon leakage" and "oil prices" into two separate sentences for making their respective comparisons to the extent of new literature since the TAR. Sentences along the lines of..... 1) With respect to carbon leakage, not only does "recent literature confirm the conclusions of the TAR" there are new findings indicating that "widespread relocation is unlikely". 2) With respect to the effect of mitigation on oil prices, would suggest referring directly to the underlying report that states "literature has hardly advanced since the TAR" (pg. 76 line 46-47) which is far from "confirming". To be consistent with the large uncertainties, many assumptions made and relative lack of new literature, would suggest the following change: "oil exporting countries MAY expect lower oil price and GDP loss but results depend STRONGLY on assumptions about Annex I policy and oil exporting country response, and new findings indicate that revenues from oil exports are now much higher than assumed in earlier studies" (Government of Environment Canada)			
SPM-781	11	A	11	30	11	31	Will GDP loss be reduced or increased for oil-exporting countries? The answer may seem clear but should be stated. Perhaps - "lower oil prices, and GDP losses" would make the sentence clearer. (Government of Australia)	See A-780		See revised paras (11)
SPM-192	11	B	11	31	11	31	… oil price and… SOME GDP loss ? (does "lower" apply to GDP ?) (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC		See revised paras (11)
SPM-782	11	A	11	32	0	0	add uncertainty statement ((HM?) (Rob Swart, MNP)	ACC		ACC See revised paras (11)
SPM-	11	A	11	32	11	32	add "However, various oil exporting countries have promoted	Prefer A-780		Prefer revised

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783							diversification of their economies into other sectors to alleviate natural resource dependency." (Government of The Netherlands)			paras (11)
SPM-784	11	A	11	32	11	34	What studies support the "new findings"? It is not clear on what studies they are referring to here; presumably that by Reinaud et al. is included. While Reinaud et al concluded that leakage would be lower than previously thought, it is also reported that "ambiguous results" warranting "further research"? Is this sufficient to support a new "finding". U.S. Government (Government of U.S. Department of State)	See A-780		See revised paras (11)
SPM-193	11	B	11	32	11	34	What studies support the "new findings"? The authors are not clear on what studies they are referring to here; presumably that by Reinaud et al. is included. While Reinaud et al concluded that leakage would be lower than previously thought, didn't they also report "ambiguous results" warranting "further research"? Is this sufficient to support a new "finding". U.S. Government (Government of U.S. Department of State)	Identical A-784		
SPM-785	11	A	11	33	11	34	"... widespread relocation is unlikely ..." Such expressions are misleading in that it is clear that no installation will be dismantled in A and transfered to B to continue its operations there. What is important is that there are practically no new investments e. g. in the EU but in Asia and elsewhere where energy intensive production does not face CO2 constraints, or at least very little. Investment decisions are driven by many factors but it should not be denied that as long as there is no truly international CO2 regime different climate policies in A and B do play a major role for energy intensive industry investments. Soothing expressions as in lines 33/34 do lead policy makers onto the wrong track. (Joachim Hein, BDI - Federation of German Industries)	See A-780		See revised paras (11)
SPM-786	11	A	11	33	11	33	The statement "studies on the energy intensive industry indicate that widespread relocation is unlikely" needs to be qualified as some industries (e.g. aluminium) are seeing a trend towards some closure of existing capacity in OECD countries and a marked expansion in non-OECD countries (see attached	DISCUSS See also A-780	11	See revised paras (11)

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							'regional_shift_1980-2004.ppt') (Robert Chase, International Aluminium Institute)			
SPM-787	11	A	11	33	11	33	The statement "studies on the energy intensive industry indicate that widespread relocation is unlikely" needs to be deleted since significant changes have already in energy intense industries such as aluminium and additional changes are in progress. (Kenneth Martchek, Alcoa)	See A-786		See revised paras (11)
SPM-788	11	A	11	33	11	34	One of new finding "studies on the energy intensive industry indicate that widespread relocation is unlikely" is not correct. According to the executive summary of Chapter 7 (P2, L33-42), such relocation is happening. (Government of China Meteorological Administration)	See A-780, 786		See revised paras (11)
SPM-789	11	A	11	33	11	33	Energy intensive industries? U.S. Government (Government of U.S. Department of State)	REJ; well known term		REJ (11)
SPM-194	11	B	11	33	11	34	Please add time qualifier for finding concerning relocation of energy intensive industries. U.S. Government (Government of U.S. Department of State)	See A-780		See revised paras (11)
SPM-195	11	B	11	33	11	33	Energy intensive industries? U.S. Government (Government of U.S. Department of State)	Identical A-789		
SPM-790	11	A	11	34	11	34	How much higher are oil revenues and what is the effect? U.S. Government (Government of U.S. Department of State)	ACC; elaborate		See revised paras (11)
SPM-196	11	B	11	34	11	34	unlikely : why ? Please say in a few words, given high policy interest for this question. … are now much higher … : please clarify which oil price is assumed throughout the SPM ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-780		See revised paras (11)
SPM-197	11	B	11	34	11	34	How much higher are oil revenues and what's the effect? U.S. Government (Government of U.S. Department of State)	Identical A-790		See revised paras (11)
SPM-791	12	A	11	36	11	41	Reduction of air pollution levels have been achieved over the last few decades by measures such as cleaning up fossil fuel power plants and catalytic convertors for car exhausts. These initiatives	REJ; text is not claiming that all air pollution reduction is the result of GHG reduction		

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							are independent of GHG reductions and claiming that they are/will be a consequence of GHG measures is disingenuous. (David Jackson, McMaster University)			
SPM-792	12	A	11	36	11	41	Could the health benefits here be quantified? (Government of UK)	REJ; better to avoid large numbers and this comparison is more meaningful for policy makers		REJ; better to avoid large numbers and this comparison is more meaningful for policy makers (11)
SPM-793	12	A	11	36	11	38	Norway has recently carried out an cost-effectiveness analysis on GHG where local effects on air pollution has been taken into consideration. (Government of Norwegian Pollution Control Authority)	Thank you for informing us		We would look at it and include it in the discussion of Sec. 11.8 (11)
SPM-794	12	A	11	36	11	41	" While studies use different methodologies, there is…….large cost reductions". In explaining this (point 12), it is vital to remind the asymmetry in co-benefits of air quality and climate change measures. We suggest adding the following at the end ..."There is however significant asymmetry in the co-benefits from the standalone air pollution and climate change measures. The standalone air quality measures, such as for instance the scrubbing of sulfur dioxide emissions from coal power plants, have delivered little or no climate change mitigation. The carbon mitigation from the same plants through higher efficiency equipments or fuel switching, on the other hand, deliver substantial sulfur dioxide mitigation". (Government of India)	REJ; too complex for SPM; consoder for chapter/TS	11,TS	REJ; too complex for SPM, also, the asymmetry is not always true. It would be misleading to include it alone in the SPM (11)
SPM-795	12	A	11	37	0	0	There are multiple costs of illness and mortality associated with acute and chronic respiratory diseases related to climate change and to rising CO2. Warming and heat waves increases ground-level	REJ; too complex for TS; Consider for chapter 11	11	REJ; too complex for TS; Will be

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							ozone and higher atmospheric CO2 leads to greater production of allergens like ragweed pollen and some soil molds (Wayne et al. 2003). The latter issue – a relatively new finding -- is highlighted in the WGII report. Rates of asthma may rise due to the combination of: 1. more aeroallergens, 2. synergies between diesel particulates and aeroallergens, 3. prolongation of spring and fall allergy season, 4. more ground-level ozone during heat waves, 5. more fires in the U.S., and 6. dust storms from Africa hitting the East coast and those from China hitting the West Coast (Epstein and Mills 2005). See: http://chge.med.harvard.edu/research/ccf/documents/ccf_final_report.pdf, with complete set of references for these issues. Wayne P, Foster S, Connolly J, et al. Production of allergenic pollen by ragweed (Ambrosia artemisiifolia L.) is increased in CO2-enriched atmospheres. Annals of Allergy, Asthma and Immunology. 2002;8:279-282. (Paul Epstein, Harvard)			considered for chapter 11, section 11.8, although this is a second order effect: warming will increase the health damages of AP and allergens, which are going to be reduced by measures to reduce GHG (11)
SPM-796	12	A	11	37	11	41	This paragraph must be highlighted and put in a priviledged place, because its huge importance to mankind, related also to reductions on mitigation costs. Now, it could be oversighted and ignored among many points referred to all sectors and issues with much less relevance. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)	REJ; there are no privilidged places in SPM		REJ; there are no privileged places in SPM (11)
SPM-797	12	A	11	37	11	37	To add: ¨....near-term health and environmental benefits from...¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; we want this para to focus on health		REJ; we want this para to focus on health (11)
SPM-798	12	A	11	37	11	41	Excellent (Rachel Warren, University of East Anglia)	Thank you		Thank you (11)
SPM-799	12	A	11	37	11	37	Needs clarification Provide examples of the kinds of health benefits obtained from reduced air pollution and “costs” of the negative health effects of air pollution. U.S. Government (Government of U.S. Department of State)			NOTE: we would gladly put more detail if allowed…

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										(11)
SPM-198	12	B	11	37	11	37	Clarify. Help the Policy maker/lay reader by giving a couple of examples of the kinds of health benefits obtained from reduced air pollution and "costs" of the negative health effects of air pollution. U.S. Government (Government of U.S. Department of State)	ACC; add something in brackets		ACC, added. (11)
SPM-800	12	A	11	39	0	0	Give examples: reduced energy dependency, increased energy security, employment, etc. And expand the last sentence accordingly from integration wityh air policies to integration with the other policies involved. (Rob Swart, MNP)	ACC; add in brackets		ACC; added (11)
SPM-801	12	A	11	39	11	39	To add:.....co-benefits than health and environment would further.... " (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; see A-797		REJ; see A-797 (11)
SPM-802	12	A	11	39	11	39	add ",such as improved energy security and innovation" between "than health" and "would further", and replace "would further enhance cost savings." by "would show further cost savings." (Government of The Netherlands)	see A-800		see A-800 (11)
SPM-803	12	A	11	41	11	41	What are the "potentially large cost reductions"? U.S. Government (Government of U.S. Department of State)	ACC; add "compared to uncoordinated policies"		ACC; add "compared to uncoordinated policies" (11)
SPM-804	10	A	11	48	11	0	Footnote 9 says 1% loss of GDP in 2030 is equivalent to 0.05% per year. Assume what is meant is that the loss in 2030 represents the integrated loss of GDP from time zero. It isn't clear to me. U.S. Government (Government of U.S. Department of State)	TIA in clarifying difference between the two terms (footnote; reduction of annual GDP growth rate will be moved to main text in brackets)		
SPM-199	10	B	11	0	11	0	Note 9: The content of this note is VERY important, and should be included in the text itself. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC		
SPM-	17	A	12	0	0	0	footnote 12: It is suggested to delete "negative" because net costs	ACC; and write "negative net		

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805							might be positive or negative. (Government of Austria)	costs" in main text then		
SPM-806	13	A	12	0	12	0	Could use a chapeau introducing sectoral paragraphs and that these are discussing existing potentials. (Government of Environment Canada)	TIA; work that into the intro box		
SPM-807	13	A	12	1	12	19	I think that it is necessary to highlight the existence of programs in certain developed regions and countries (e.g., EU-15 and Swiss Federation, respectively) devoted to increase the participation of renewables in TPES for 2040-2050, till around 50% (EREC 2040), and to reduce per capita energy demand for 2050 to one third of contemporary levels (Steps Towards a 2000 Watt per capita Society, 2004), because those efforts illustrate new approaches to mitigation measures, directed to increase GDP while reducing fossil energy sources' consumption. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)	REJ; SPM is focussiing on global potentials; regional programmes only for chapters	4	REJ; SPM is focussiing on global potentials; regional programmes only for chapters (4)
SPM-808	13	A	12	1	0	0	This page is where a summarised discussion of the Peak Oil issues would naturally fit. (Michael Jefferson, World Renewable Energy Network & Congresses)	ACC; will try to have a separate oil-price para here see A-256 Repeat statement from TAR. See ch 4 proposals		Accepted. We are working on that. (4) The assessment on peak oil as in the TAR still holds.
SPM-809	13	A	12	1	12	5	The paragraph states that there are wide range of energy supply mitigation options available in the short to medium timeframe, including fuel switching from coal to gas. However, in many instances the report also points out correctly that mitigation options are also region specific. That principle applies to the issue of fuel switching as well. In a North American context, fuel switching from coal to gas is not as attractive due to current price and supply contraints, although there are other benefits such as low installation costs, fuel efficiency etc. Thus, the cited paragraph should indicate the regional constraints with fuel switching from coal to gas.	TIA; no space to go into regional differentiation (other than what is given in table 2); but a few words stressing regional portfolio difference ok		Rejected. ; no space to go into regional differentiation (other than what is given in table 2); but a few words stressing regional portfolio

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							(Eli Turk, Canadian Electricity Association (CEA))			difference ok (4)
SPM-810	13	A	12	1	12	19	The key component in actually getting mitigation options off the ground is financing and investment flows and yet it is not at all addressed here or very effectively in the rest of WG 3's report. This is a serious omission and needs to be addressed both in the SPM and in one of WG 3's chapters. (John Drexhage, International Institute for Sustainable Development)	DISCUSS Para 26 has some of it See ch 4 proposals	4,11	Accepted. Check the possibility to say something about (4)
SPM-811	13	A	12	1	12	9	Define time frames (short to medium term). Majority of CCS deployment will occur in the second half of this century (IPCC SRCCS 2005, TS, p.44) – how does it fit into the time frame? (Gabriela Von Goerne, Greenpeace)	TIA; see earlier point (A-3) that we should try to include a table with options and technological maturity; add "(some)" before CO2 capture		Financing and investment flows, probably combined with CDM. (4)
SPM-812	13	A	12	2	12	6	There should be a clear distinction between existing, technically proven, abatement options and promising but still emergining options. This has important risk and 'speed of deployment' implications (Iain MacGill, University of NSW)	See A-3		See comment SPM 3 A. (4)
SPM-813	13	A	12	2	19	9	The entire Energy supply section needs to be reviewed to ensure that it is consistent with the other sectoral sections of pages 12-14 of the SPM. Currently the SPM Energy supply section does not distinguish between mature and readily deployable technologies as the sections on Industry (SPM page 13 lines 12 to 24) and on Waste (SPM page 14 lines 14 to 24) do consistently differentiate technology options using the aforementioned parameters (i.e. "mature and readily deployable"). In fact the entire Energy supply section groups all technology options on the same level field (misleadingly indicating to readers that all energy technologies mentioned are readily available and mature); this significant problem needs to be amended both in the aforementioned SPM section and related chapters. (Jose Etcheverry, David Suzuki Foundation)	See A-3 DISCUSS if we can make a distinction between options available now and after 2015 as the Inustry chapter does Maturity needs to be reflected	4,5,6,7,8, 9,10,11	See SPM 3 A. it would be very difficulty to analise the period up to 2015. Energy supply investments have long lifetime (4)

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SPM-814	13	A	12	2	12	3	It might be worth adding "at a range of costs" at the end of the headline sentence. This is an important part of the introduction because none of the options come at net negative costs, and hence it means that some form of government intervention would be necessary to tilt the playing field towards these options (which is a statement that is then made in the following paragraph). (Andy Reisinger, TSU IPCC Synthesis Report)	REJ; not true See ch 4 proposals		Accepted but headline sentence will be modified. (4)
SPM-815	13	A	12	2	12	4	Clarify "available" as commercially available or viable, etc. E.g. some renewables, CCS are not expected to drop in price significantly for a while. Does this make them realistically "available?" Also, some technological advancements are probably necessary to make very large quantities of biofuels. U.S. Government (Government of U.S. Department of State)	See A-812, 813		Accepted. Try to say "available for deployment now" (4)
SPM-816	13	A	12	2	12	19	Is it possible to say something about economic and social trade-offs between different R&D investment strategies; e.g. consequences of massive investment into comparatively costly but clean technologies for the production of energy for the capacity of economies to invest simultaneously into other technological advances or into reaching other sustainability goals like poverty alleviation. Are there win-win situations emerging from the scenarios, like certain R&D investment strategies in the energy sector with expected favourable consequences for climate change mitigation with a higher potential of serving different sustainability objectives relative to other investment strategies, which may be equally favourable in terms of climate change mitigation but less favourable if other societal objectives are considered? (Government of Germany)	REJ; not for SPM; consider in ch 4	4	Noted. Quite interesting but too much controversial. Not wise to discuss. (4)
SPM-200	13	B	12	2	12	4	Not sure what "available" means in this context. E.g. some renewables, CCS are not expected to drop in price significantly for a while. Does this make them realistically "available?" Also, some technological advancements are probably necessary to make very large quantities of biofuels. Need to clarify "available" as commercially available or viable, etc. U.S. Government	See A-812,813,815		Accepted. Try to say "available for deployment now" (4)

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							(Government of U.S. Department of State)			
SPM-817	13	A	12	3	12	3	Use of "will"? rather than "could" Probably better to get across that there is no "magic bullet" and that because energy supply is such a huge driver of CO2 emissions, to deliver stabilisatisation at lower levels effort will have to be placed across a portfolio of technologies in this sector, for example ....(list). Why is the potential for biomass particularly high? Suggest add "on existing agricultural land" if this is so and point out that not if not. Should comment on whether low stabilisation options can be achieved (a) without nuclear or (b) without CCS. Certainly not possible without either I would think. (Rachel Warren, University of East Anglia)	See A-818 on "will vs could REJ; biomass point because biomass is biggest of renewables REJ point about land for bioenergy, because this will be in a dedicated para (23 will be moved here) Point about low level stabilisation and nuclear vs CCS is for para 6 (DISCUSS there)	3	Rejected. Paragraph makes appropriate points well. (3) See A-818 on "will vs could REJ; biomass point because biomass is biggest of renewables REJ point about land for bioenergy, because this will be in a dedicated para (23 will be moved here) Point about low level stabilisation and nuclear vs CCS is for para 6 (DISCUSS there) (4)
SPM-818	13	A	12	3	12	0	Regarding, "implementation will be in the form of a portfolio of options", revising to "implementation will need to be in the form of a portfolio of options in order to achieve a truly sustainable energy future in a decarbonised world" is suggested. Rationale: In	ACC See ch 4 proposals		Rejected. Policy prescriptive. (4) is dealt with in the material

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							reference to Chapter 4, page 7, lines 43-46, it would benefit the reader to understand why a portfolio of options is advantageous over a shift to, for instance, only one alternative energy source. (Government of Japan)			submitted
SPM-819	13	A	12	3	12	6	The total effect on the emissions of switching from coal to gas will depend on the state of the supply of energy in the region. (Government of Norwegian Pollution Control Authority)	See A-809		Rejected. Switching from coal to gas is one mitigation option in all countries that use coal..Cost may limit its application by region. (4)
SPM-820	13	A	12	4	12	4	Please delete "particularly biomass" which is justified by the literature. (Cédric PHILIBERT, International Energy Agency)	REJ; see A-817		See SPM 817 A. (4)
SPM-821	13	A	12	4	12	4	Insert "and hydropower" after "particularly biomass…" (Robert Chase, International Aluminium Institute)	DISCUSS if hydropower is so large that it needs to be mentioned	4	Accepted. Add hydropower. (4)
SPM-822	13	A	12	4	12	5	I quite agree that we need to develop and to spread renewable energy. However “Nuclear power” and “Carbon capture and storage” are unsafety and uncompleted technology. They should be deleted from SPM. (Masatake Uezono, Citizens' Alliance for saving the Atmosphere and the Earth)	REJ;, but mention that there is some room for choice, but that usually costs more		Rejected. We can’t be so radical. (4)
SPM-823	13	A	12	4	12	4	To add:¨.....improved supply and distribution efficiency,.... ¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	ACC		Accepted (4)
SPM-824	13	A	12	4	12	5	"fuel switching from coal to gas," such switching is highly limited due to lack of gas resources. Clean coal in the end has the same emission but the efficiency level is higher. therefore, clean coal does have some mitigation impacts. Suggestion: make it more	See A-809 and add “(clean coal)” after “coal”		Noted. But sentence will be fully modified. (4)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							general: "fuel switching to less carbon intensive sources and clean coal" (Government of China Meteorological Administration)			
SPM-825	13	A	12	4	12	0	"…particularly biomass…RE DG in developing countries? Why single biomass out" Remove "particularly biomass". U.S. Government (Government of U.S. Department of State)	REJ; see A-817		REJ; see A-817 (4)
SPM-826	13	A	12	4	0	0	The outstanding importance of energy efficiency and renewables is not reflected in the list of options. Suggestion: "Implementation will be in the form of a portfolio of options: improved supply efficiency, renewable energy of different types, fue switching from coal to gas, possibly supplemented by other measured such as CCS or advanced nuclear depending on the assessment of risks and benefits of the latter technologies." (Government of Germany)	REJ; no ranking intended here		REJ; no ranking intended here (4)
SPM-827	13	A	12	4	0	0	renewable energy (particularly biomass): replace with "renewable energy of different types (explaination: all sorts of renewables will in future be required in significant quantities) (Government of Germany)	See A-825		See comment SPM 825 A. (4)
SPM-201	13	B	12	4	12	0	Remove "particularly biomass" U.S. Government (Government of U.S. Department of State)	See A-817,820,825		See A-817,820,825 (4)
SPM-828	13	A	12	5	12	5	After 'advanced nuclear power,' insert 'fusion power,'. As detailed in Chapter 4 (revised), the acceleration of, and increased industrial focus of, fusion development, following the seven-party decision to begin construction of the 500 MW fusion device ITER in France, is expected to lead to commercialisation of fusion power before mid-century. (Ian Cook, United Kingdom Atomic Energy Authority)	REJ; fusion is certainly not an option before 2030		Rejected. Our discussion covers from now to 2030 only. (4)
SPM-829	13	A	12	5	0	0	"…advanced nuclear fission power, fusion power (starting by mid-century), and CO2 capture and storage…" (Robert Goldston, Princeton Plasma Physics Laboratory)	See A-828		The same as SPM 828 A. (4)
SPM-830	13	A	12	5	0	0	Change "advanced nuclear power" to "advanced fission and fusion" (David Jackson, McMaster University)	See A-828		The same as SPM 828 A.

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										(4)
SPM-831	13	A	12	5	12	5	With respect to GHG emissions, nuclear power has the same effect weather it is "advanced" or not. Suggest deleting "advanced". (Cédric PHILIBERT, International Energy Agency)	ACC		Accepted. (4)
SPM-832	13	A	12	6	12	7	Should be careful with use of phrase "active government involvement" may imply intervention in markets. "appropriate government involvement" or "additional government policies" is less prescriptive. (Government of Environment Canada)	REJ; strong emphasis iis warranted here; TIA: reference to section D to be added		Accepted. Try to use "appropriate". (4)
SPM-833	13	A	12	6	12	7	Add after "active government involvement" reference to policy list in paragraph 27 (page 15 line 1). (Government of Environment Canada)	REJ; too generic		Accepted. Add "(see paragraph 27)". (4)
SPM-834	13	A	12	7	0	9	There is no discussion of the possibility of developing a fossil fuel supply policy (eg. phase-out targets, limiting new exploration or field development) based on linkages of fuel reserve exploitation levels to stabilisation scenarios. If such policies are not feasible, this should be stated and defended. If potentially feasible, and if the AR4 is to be "comprehensive, objective, open and transparent", then surely the possibility should be discussed. Comparisons could be drawn with regulatory and proactive supply policies on harmful products in other sectors. (Stephen Sheppard, University of British Columbia)	REJ; no basis for this in ch 4		Noted. Not discussed in Chapter 4 and little or no literature available. (4)
SPM-835	13	A	12	7	12	9	WGIII should focus on mitigation options – how these are financed is an issue for governments and the private sector. (Government of Australia)	REJ; financing is integral part of the policy mix		REJ; financing is integral part of the policy mix (4)
SPM-836	13	A	12	7	12	7	The authors should review this section as care is needed in drafting to avoid a sense of policy prescription (eg see p19 paragraph 18) (Government of Australia)	UNCLEAR		Accepted. (4)
SPM-837	13	A	12	7	12	7	"Reduction of fossil fuel subsidies…..". It is suggested to add "taxes on fossil fuels" after the "fossil fuel subsidies" (Government of India)	DISCUSS if taxes according to the literature covered in ch 4 have shown to be effective (I	4	Accepted (4)

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								doubt that)		
SPM-838	13	A	12	7	12	9	Does this statement border on policy prescriptive? U.S. Government (Government of U.S. Department of State)	REJ; statement based on the literature		No. We are listing possible alternatives quoted in literature. (4)
SPM-839	13	A	12	8	0	0	Why feed-in tariffs "in particular"? This may be a major policy tool in European countries, but portfolio standards are common in the US, and environmentally-motivated tariffs are not that common in develping countries. Delete ", in particular," which also suggests preference for a particular policy tool. (Harald Winkler, University of Cape Town)	REJ; literature shows feed-in tariffs are very effective		REJ; literature shows feed-in tariffs are very effective (4)
SPM-840	0	A	12	9	0	0	Add a new Paragraph between 13 and 14: "The scenario described in Table SPM 2 provides a maximum of 50 EJ/year of new non-CO2-emitting power, beyond the baseline case, in 2030. It will be necessary to provide non-CO2-emitting primary power in the range of 150 EJ/year by 2050, 500 EJ/year by 2100 and over 1000 EJ/year during the next century, while limiting CO2-emitting power to a small fraction of this level. The total requirement over the period until 2200 is in the range of 100,000 EJ. To address this problem requires R&D to provide large-scale non-CO2-emitting energy resources that, in aggregate, are not limited in their fractional market penetration. Table SPM 3 provides a perspective on the options to provide these levels of energy. " [Copy corrected version of Table 4.3.1 here as SPM 3.] (Robert Goldston, Princeton Plasma Physics Laboratory)	REJ; text is incomprehensible		Rejected. Too much details for SPM. (4)
SPM-841	13	A	12	9	0	0	Suggest to drop "in particular" before "feed-in tarrifs". What policy works best depends on the situation of a specific country. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	See A-839		Rejected. WG III is reporting literature evidences. (4)
SPM-842	13	A	12	9	12	0	Suggest adding new # paragraph to specifically address long term energy supply. "#. The challenge for the latter part of the century	REJ; this is covered in para 14 and section B para 6		Noted. Long-term options

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							requires R&D in advanced technologies such as fusion, fission with fuel recycling and advanced renewables. U.S. Government (Government of U.S. Department of State)			probably in paragraph 14. (4)
SPM-202	13	B	12	9	12	0	Suggest adding new # paragraph to specifically address long term energy supply. "#. The challenge for the latter part of the century requires R&D in advanced technologies such as fusion, fission with fuel recycling and advanced renewables. U.S. Government (Government of U.S. Department of State)	Identical A-842		See comment SPM 842 A. (4)
SPM-843	14	A	12	10	0	0	An R&D program to evaluate energy solutions will require a life cycle analysis (LCA) of their impacts, including analyzing the known and potential health and safety impacts, security issues, ecosystem function concerns, and the economic feasibility of each solution. Financial instruments must be tailored to each energy-efficient and clean energy technology. (Paul Epstein, Harvard)	UNCLEAR		Noted. Very few studies include all these targets in LCA. There is not enough information to follow such complete and desirable approach. (4)
SPM-844	14	A	12	10	12	18	The sentence on line 14 "In this context there is growing interest in new coal-based power plants." needs deleted or explained - does new coal based plants mean new technology (if so what?) or growth of coal use, or China's coal use (which although growing is not 'new coal based plant'). Given that there is a list of technologies in paragraph 13, I would suggest deleting from line 14 on. (Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)	REJ; I see nothing wrong with these sentences		
SPM-845	14	A	12	10	12	18	An explicit conclusion of this paragraph is that "new coal plants equipped with CCS" will be part of "New energy supply investments in developing countries". This is not realistic and it can be demonstrated by a comparison with SO2 emissions. Despite severe air quality problems in many developing nations, very few	REJ; that is not what the para says; claim that CCS is only for developed countries cannot be substantiated based on literature (see Chinese-EU plans for zero		Noted. No more reference in the text to "new coal". (4)

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							coal plant are equipped with SO2 scrubbers. This lack of scrubbing is due to costs, reduced efficiency and waste management. Sulphur is 1 or 2% of coal. Carbon is 70 to 80% of coal. Capturing and managing carbon is 40 times the challenge of managing sulphur. It appear more reasonable to conclude that CCS will be limited to developed countries for a few decades. The paragraph 14 on energy supply investments should be replaced by two paragraphs, one for developed countries, another for developing countries (Luc Gagnon, Hydro-Quebec)	emissions power plant) DISCUSS how to make some more distinction between developing an developed countries Explain what 'capture ready' means? See ch 4 proposals		CH 4 has reformulation. Capture ready is considered very much a policy teerm and the ch4 team would in first instance exclude this section from the FD. Discussion to keep it in, but excplain limitations. . Capture ready term for glossary
SPM-846	14	A	12	10	12	14	I think these opportunities exist whether counting co-benefits or not. Suggest reword to say "and can provide co-benefits such as" rather than "when counting co-benefits". If this is what you meant. Currently it is unclear. (Rachel Warren, University of East Anglia)	ACC		Noted but paragraph will be fully redrafted. (4)
SPM-847	14	A	12	10	12	20	Is it worth reitterating estimates of energy infrastructure investment that will be made over the next 50 years ($16 trillion estimates from SPM page 7, line4) irrespective of policy action? How do mitigation costs in the energy sector compare with overall infrastructure costs? (Government of UK)	REJ; repetition of para 6 DISCUSS if something can be said about additional investment needed to make the 17trillion "clean" (based on WEO 2006?) Be careful not to repeat para 6 6: make sure investments are clean 14: how much additional investment would that involve	4	Noted. Check WEO 2006 for information on additional investment on clean energy. (4) CLA discussion: ch 4 will use material from ch 3 and WEO2006 to address

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										investments in 2030 in energy supply.
SPM-848	14	A	12	10	12	14	The authors need to rephrase the bolded part of the paragraph. As currently drafted it is unclear whether the GHG emission reductions are dependent on counting the listed co-benefits, or whether the co-benefits simply make the emission reductions more affordable. (Government of Australia)	See A-846		Accepted. (4)
SPM-849	14	A	12	11	12	0	Change “security of supply policies” to “policies that promote secure energy supplies”. U.S. Government (Government of U.S. Department of State)	ACC		Accepted. (4)
SPM-203	14	B	12	11	12	0	Change “security of supply policies” to “policies that promote secure energy supplies”. U.S. Government (Government of U.S. Department of State)	Identical A-849		Identical A-849 (4)
SPM-850	14	A	12	12	12	12	To add: ¨....such as air pollution abatement, environment improvement, balance of...¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; would make the statement too vague		Accepted (4)
SPM-851	14	A	12	13	12	27	On energy supply at page 12, there needs to be some serious reference to the so-called 'Peak Oil' problem. This is not handled well in the TS (eg at page 39, lines 22/23,where the reference is much too casual and optimistic).In Chapter 4 there is similar complacency (eg at page 24, lines 8-11; page 29, line 11). This extends to unconventional oil availability (Table 4.3.1) where the estimated ultimately recoverable resource is under 20% (some 6,300 EJ) of what is said to be 'available' here. Chapter 5 is less sure on this subject (eg page 2, lines 38/39; page 6, lines 14/15; and the particularly signficant reference on page 13, at lines 8/12), but it is absolutely critical for the transportation sector. Fig. 4.3.1 provides an excellent starting point for an important discussion of this topic (taking account of the rejection of the more optimistic estimates of the 1970s mentioned on page 28 of Chapter 4). IEA and USEIA estimates of future oil demand combined with estimated recoverable conventional oil resources of about 2, 3 and 4	See A-256 (separate oil price para)		See A-256 (separate oil price para) (4)

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							trillion barrels would indicate a chronic global shortfall of ability to supply in relation to projected demand by the early 2020s, 2030s, and 2040s, respectively. Most estimates of the ultimately recoverable conventional oil resource are in the 2 trillion range. Tar sands and shale recoverable resources are modest by comparison. (Michael Jefferson, World Renewable Energy Network & Congresses)			
SPM-852	14	A	12	13	12	13	Insert 'and energy demand' mitigation options is available in the short to medium time… (Government of Spain)	UNCLEAR		Rejected. We are discussing Energy Supply here. (4)
SPM-853	14	A	12	14	12	18	Use more than one technology to illustrate co-benefits. The examples have a heavy bias to CCS, and some other examplesshould be used to balance this. The hydrogen example also refers to CCS (Harald Winkler, University of Cape Town)	TIA; current text only illustrates the challenges to get to clean energy; add something on co-benefits as well		Accepted. More examples will be added. (4)
SPM-854	14	A	12	14	12	16	Another critical issue is how rapidly renewable energy sources (and efficiency) can be deployed, reducing the amount of fossil CCS and nuclear that is needed. Arguably, there are renewable energy technologies available today that have much fewer environmental, economic and energy security risks and uncertianties than advanced coal and nuclear plants that can also be deployed much more quickly on a large scale. (Steve Clemmer, Union of Concerned Scientists)	TIA; add something on renewables challenges as well See ch 4 proposals, but point IS valid.		Rejected. Main conclusion from this report is that all options will be required to mitigate climate change. (4)
SPM-855	14	A	12	14	12	16	It might be worth adding that not only is retrofitting economically unattractive, but also that the power plants most amenable to CCS, ie IGCC plants, tend to come at a higher base cost than current, top-efficiency standard plants - which again raises the issue that some type of government intervention would be necessary to bring about the widespread introduction of CCS. Right now the paragraph could be read as if CCS would, once developed and tested, diffuse naturally and would not face any cost barriers. That conclusion would clearly be incorrect.	TIA; SRCCS shows that IGCC is more costly than PC without CCS, but that it is the other way around with CCS; try to modify text to reflect that		Accepted. Should read: "how quickly new plants are going to be equipped with CCS" (4)

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							(Andy Reisinger, TSU IPCC Synthesis Report)			
SPM-856	14	A	12	14	12	16	Change the sentence, "A critical issue is how quickly new coal plants are going to be equipped with CCS, because retrofitting power plants with CCS later is generally economically unattractive.", to "One important issue is to speed up considering the feasibility of new coal plants to be equipped with CCS, because retrofitting power plants with CCS later is generally economically unattractive." <Rationale> According to the "SPM Carbon Dioxide Capture and Storage", "Costs vary considerably in both absolute and relative terms from country to country. Since neither Natural Gas Combined Cycle, Pulverized Coal nor Integrated Gasification Combined Cycle systems have yet been built at a full scale with CCS, the costs of these systems cannot be stated with a high degree of confidence at this time."(Chapter 14) and "Currently available literature regarding the matches between large CO2 point sources with suitable geological storage formations is limited. "(Chapter 12) Such being the case, uncertainties still remain and a lot of factors including costs, public response and environmental impacts etc. to be investigated before concluding that CCS can be applied to each coal plant in each country.The original expression is policy prescriptive. (Shigeo Murayama, The Federation of Electric Power Companies)	See A-855		See A-855 (4)
SPM-857	14	A	12	14	12	16	The description of "…, because retrofitting power plants with CCS later is generally economically unattractive" is unclear. For example, the description should be changed to "... with CCS later is more expensive than the new plants". (Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE))	DISCUSS; reformulate to focus on the issue of "capture ready" on which AR4 has new literature compared to SRCCS; message could maybe say: "capture ready is as expensive as retrofitting (which is more costly that integrated design)"	4	Rejected. We don't have enough information to state that adding CCS later is costlier than a new plant. (4)
SPM-	14	A	12	14	12	16	The question of retrofitting CCS economics is debateable and	See A-857		Noted and

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858							depends on a number of uncertain factors, such as the future Carbon price and regulatory constraints. In some cases retrofitting CCS may have attractive option value. Change text from "is generally economically unattractive " to " may be less attractive". As written the statement is in direct conflict with Chapter 4, pg 66, lines 17-35, which defines a C-R plant as one that can economically have capture added in the future and with practical experience of utilities already starting to make plant designs capture-ready specifically so that they can add capture in the future rather than scrap the plant and build a new one. (Government of UK)			sentence will be modified. (4)
SPM-859	14	A	12	14	12	19	The contents with bold are not consistent with the following description. According to the contents in bold, we think that some measures that enhance energy efficiency should be mentioned. Also, for the short- to medium- period, it is not possible to use commencially CCS technologies. (Government of China Meteorological Administration)	See A-853, 855 ACC adding something on efficiency		Accepted. Sentence will be changed. (4)
SPM-860	14	A	12	14	12	16	Replace "is generally economically unattractive" with: "may imply extra costs pending on technology and location". Rationale: In some cases retrofitting power plants with CCS may be done with little extra cost while it can be more costly on other plants eg. depending on the age of the facilities and the location. (Government of Norwegian Pollution Control Authority)	See A-857,858		Noted. Sentence will be changed. (4)
SPM-861	14	A	12	14	12	16	replace "interest ... plants" with "interest in new power plants based on clean coal technologies with the highest efficiency possible", and add "unless new build plants are made capture ready" after "economically unattractive" (Government of The Netherlands)	REJ; that is not what is meant		Noted. Sentence will be fully changed. (4)
SPM-862	14	A	12	14	12	14	"In this context….plants". Instead of the term "New coal power plants", can a more specific term be used? (Government of India)	ACC; reformulate		Accepted. "New" replaced by "more efficient". (4)
SPM-	14	A	12	14	12	16	Suggest inserting: "Critical issues include timeliness of equiping	TIA when reformulating		Rejected. The

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
863							coal plants with CCS and availability of feasible sinks for medium and long term sequestration." (see IPCC SRCCS). U.S. Government (Government of U.S. Department of State)			way is written brings the same idea. (4)
SPM-864	14	A	12	14	12	14	Clarify. What is meant by "new coal based power plants" ? New control technologies ? More efficient conventional coal based power plants ? Not clear. U.S. Government (Government of U.S. Department of State)	See A-862		Accepted. "New" replaced by "more efficient". (4)
SPM-865	14	A	12	14	12	19	The wording as it stands might be understood, as if CCS-ready power plants are already readily available on the market, while this realistically will not be the case before 2020. Furtheron the key issue is the availability of suitable geological storage reservoirs in vicinity of the point source equipped with a capture unit. A widespread use of CCS-technology in the energy and industry sector would require a comprehensive CO2-pipeline network which is comparable to the infrastructure needs of an energy system based on hydrogen, whilest decentralised power sources such as renewables hold great promises due to the fact that vulnerable and costly up- and downstream infrastructure is not needed. Hence, the sentence should be replaced with: "A critical issue is how quickly new coal plants are going to be equipped with CCS and where safe geological storage sites can be found in vicinity of CCS-power plants. Hydrogen, produced from fossil fuel or biomass in combination with CCS, or from renewable sources, could become an important low-carbon energy carrier in the long term. Both options, CCS and Hydrogen require an extensive pipeline network and a challenging transition in infrastructre, while decentralised renewable energy sources hold substantial cost savings potential, as they are not dependent on up- and downstream infrastructure and are less vulnerable to violent attacks. (Government of Germany)	See A-855,857 REJ addition of storage aspects (inclused in CCS) REJ adding renewables for hydrogen, since that is much more costly See A-854 for renewable challenges See ch 4 proposals		The aspect of geological site and pipeline extends the discussion too much. The final part is accepted. The SPM will be modified (4)
SPM-204	14	B	12	14	12	16	Suggest inserting: "Critical issues include timeliness of equiping coal plants with CCS and availability of feasible sinks for medium	Identical A-863		Rejected. The way is written

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							and long term sequestration." (see IPCC SRCCS). U.S. Government (Government of U.S. Department of State)			brings the same idea. (4)
SPM-205	14	B	12	14	12	14	Clarify. What is meant by "new coal based power plants"? New control technologies? More efficient conventional coal based power plants? Not clear. U.S. Government (Government of U.S. Department of State)	Identical A-864		Accepted. "New" was replaced by "more efficient". (4)
SPM-866	14	A	12	15	0	0	fuel switching from coal to gas is unlikely to be viable beyond mid-century, given resource constraints on natural gas, unless hydrates/clathrates can be recovered in substantial quantities. (Michael Jefferson, World Renewable Energy Network & Congresses)	REJ; not concistent with ch 4		Rejected. Fuel switching from coal to gas is one of the options in the short medium – term. Natural gas reserves are still significant to mitigate climate change for some time. (4)
SPM-867	14	A	12	15	12	15	Include 'and energy demand reduction', renewable energy… (Government of Spain)	UNCLEAR		Rejected. We are dealing only with energy supply here. (4)
SPM-868	14	A	12	15	12	16	"... because retrofitting power plants with CCS later is generally economically unattractive" is not precise. Should be changed to "...because retrofitting power plants with CCS generally leads to higher costs than newly built power plants with CCS." (Government of Japan)	See A-857,858		See A-857,858 (4)
SPM-869	14	A	12	16	12	16	Retrofitting an existing coal plant with CCS technologies is likely to be "more expensive" than building the CCS system at the same	See A-857		See A-857 (4)

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							time the power plant is built but that is not the same thing as "economically unatractive." If natural gas prices and carbon permit prices are high, retrofiting an existing already paid off pulverized coal plant might be quite a good investment and might well be cheaper than building a new IGCC+CCS unit if the regional market for baseload power is already saturated. Please be more precise and accurate in wording in something as important as an SPM. Also this same basic agument applies to energy efficiency in buildings. It is cheaper to build the shell, HVAC system, lighting ect to be energy efficent during the construction phase than to go back in and have to retrofit these systems. Why isnt this same point made in the section below about buildings? There is noting unique about this observation as it applies to coal power plants and CCS units. See for example, Wise MA, JJ Dooley, RT Dahowski, and CL Davidson. "Modeling the impacts of climate policy on the deployment of carbon dioxide capture and geologic storage across electric power regions in the United States." Submitted to the International Journal of Greenhouse Gas Control. July 2006. (James Dooley, Battelle)			
SPM-870	14	A	12	16	12	16	Suggest replacing "economically unattractive" with "costlier". If carbon emissions are not priced, installing CCS on new coal plants would be cheaper, but still "unattractive". (Cédric PHILIBERT, International Energy Agency)	See A-857		Accepted (4)
SPM-871	14	A	12	16	12	18	Do we need a sentence on a new energy carrier at that level? Maybe not. If we need it, the ways it is currently written suggests that hydrogen from biomass is a low-carbon carrier only in combination with CCS, which is not the case. Suggest dissociating CCS and biomass here, as in other places. (Cédric PHILIBERT, International Energy Agency)	DISCUSS if hydrogen sentence is important enough to be kept (we need room for other additions) Reformulation but keep hydrogen issue, see text prop ch 4.	4	Accepted The SPM will be modified in this respect (4)
SPM-872	14	A	12	16	12	19	Would require more than just infrastructure changes, in my mind. U.S. Government (Government of U.S. Department of State)	See A-871		Accepted. Should read: "require a challenging

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										transition mainly in infrastructure". (4)
SPM-873	14	A	12	16	12	19	Nuclear should be included as one of the key technologies for producing hydrogen. Consider other renewables as well. U.S. Government (Government of U.S. Department of State)	See A-865		Accepte. Should read " Hydrogen produced from fossil fuels, biomass, nuclear energy.." (4)
SPM-206	14	B	12	16	12	19	Would require more than just infrastructure changes. U.S. Government (Government of U.S. Department of State)	Identical to A-872		Rejected. We are dealing only with Energy Supply here. (4)
SPM-207	14	B	12	16	12	19	Nuclear and renewables should be included as one of the key technologies for producing hydrogen U.S. Government (Government of U.S. Department of State)	Identical to A-873		
SPM-874	17	A	12	32	12	38	We propose that the text is changed as follows: " There is a wide range of profitable and low-cost energy efficiency options for new and existing buildings that could significantly reduce the CO2 emissions. (Government of Norwegian Pollution Control Authority)	ACC		
SPM-875	15	A	12	20	12	34	Concerning Transport, I think that there are two main measures for mitigating emissions from this important service: One of them is to estimulate biofuels production with correct incentives and prices for developing countries, in order to create employs and develop their economies; the other one is that at the same time, to concentrate resources in public transport facilities, in order to save fuels, fossil and bio similarly. So, these twop measures must be highlighted accordingly to their importance, calling the policy makers' attention to them	TIA in reformulating; priority for efficiency, biofuel and public transport		TIA,but we are not going to highlight the way to stimulate biofuels

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							(JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)			
SPM-876	15	A	12	20	12	35	The two paragraphs on the transport sector should include confidence readings. (Government of Australia)	ACC	5, CG Uncertia nty	We will include readings of high confidence for both sentences.
SPM-208	15	B	12	20	12	28	Add in a sentence about the potential of PHEVs. U.S. Government (Government of U.S. Department of State)	See A-890		rejected
SPM-877	15	A	12	21	12	21	This sentence expresses a widely-shared belief but is simply wrong. The use of the "present" suggests this has been the case in recent years. Emissions from the heat and power sector have been growing at a faster rate than emissions from transport - for example, by 40.8% against 30.8% over 1990-2003. (IEA, 2005, CO2 emissions from fuel combustion, OECD/IEA, Paris, p.II.75). The forthcoming 2006 edition, having corrected a number of past data, will show a growth of 53% for heat and power against 36% for transport. The possible argument that only end-use sectors are considered in the AR4 is not acceptable for two good reasons: 1) IPCC reports cannot but follow the IPCC guidelines for national greenhouse gas inventories, where emissions from electricity and heat are addressed exactly the same way as emissions from transport or any end-use sector. 2) Even if one wanted to compare only end-use sectors, then it would be necessary to allocate the emissions of the electricity and heat sector to the various end-use sectors, mainly industry and commercial and residential. This makes a considerable difference in the emissions of these sectors, and thus to their growth rates. (Cédric PHILIBERT, International Energy Agency)	TIA; drop sentence on fastest growth and focus on solutions		Accepted, we will clarify to add the word of end sector.
SPM-878	15	A	12	21	12	27	Reference should be made to vehicle lightweighting. (Robert Chase, International Aluminium Institute)	DISCUSS; is this a significant message?	5	Accepted,we will address fuel efficiency.
SPM-879	15	A	12	21	12	23	Note that there are more transport technology mitigation options but worth pointing out that the policies and measures to incentivise sufficient and sutained investment in these technologies are not yet	TIA in reformulating sentence on fuel cell vehicles		Rejected, it is already there.

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							in place. (Government of UK)			
SPM-880	15	A	12	21	12	27	We suggest to add: "Non-CO2-emissions can be avoided by using mobile air-conditioning systems based on low GWP refrigerants like e.g. CO2 which have been developed recently." (Government of Germany)	DISCUSS if this is important enough (in terms of reduction potential)	5	We will add .
SPM-209	15	B	12	21	12	34	"Transportation emissions are growing faster than emissions in any other sector. However, since the TAR, more mitigation options in the transport sector have become available." This discussion of mitigation options for transportation emissions seems to be focused almost exclusively on cleaner and/or more fuel efficient vehicles. What is barely mentioned here, and is covered in less than two pages in Chapter 5, is the potential for transport demand management that is aimed at reducing vehicle-miles traveled (VMT). Particularly with the rapid growth of broadband Internet access, new opportunities for VMT reduction are increasingly available. U.S. Government (Government of U.S. Department of State)	DISCUSS; ch 5 should improve its treatment on the effects of public transport and then this could be added to SPM	5	Accepted, we will address as a modal split. In SPM To be taken into account after revising chapter
SPM-881	15	A	12	22	12	31	most other sectoral statements apply confidence statements, add confidence statement also here (high confidence?) (Rob Swart, MNP)	See A-876		Same
SPM-882	15	A	12	22	12	27	Recent literature shows the positive mitigation impacts of modal shift programmes. For instance see: Shell Germany Mobility Scenario 2030 indicating that motorisation of young men in Germany had declined from 605 in 1993 down to 453 in 2003 due to wider availability of public transportation options. We suggest to replace the current text with the following 'New developments include successful demand-mangement systems, such as kilometre charging, the marking of efficient hybrid vehicles and cleaner diesels as well as the growing use of biofuels'. We also propose to include the following sentence 'Substantional modal shift, further fuel economy improvements and a substational increase of biofuels based on advanced conversation techniques are possible'. (,)	TIA in strengthening public transport sentences		same

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SPM-883	15	A	12	22	12	23	It might be worthwhile to add one sentence, based on the TS, on the reasons for the consistent upwards trend and its projected continuation. According to the TS and underlying chapter, this includes greater demand for mobility with growing wealth, but also offsets in efficiency by greater use of individual transport and greater engine sizes. Transport is a key policy area and might warrant this additional detail. (Andy Reisinger, TSU IPCC Synthesis Report)	REJ; not more on reasons for growth; focus on solutions		rejected
SPM-210	15	B	12	22	12	27	This paragraph is disappointing, as it is limited to technological aspects of road vehicles. Aviation is not covered. Urban planning and public transport are quickly mentioned in the following para, but they should be discussed more extensively, as they are very important in the long term (urban sprawl induces automobile transportation for a very long time.) Tourism is not mentioned. Bicycling is not mentioned. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	TIA in reformulating para, provided chapter gives enough information	5	We are going to cover aviation, urban planning, and public transport.
SPM-884	15	A	12	23	12	23	To add:¨.....of efficient hybrid vehicles, more saver vehicles, and cleaner .... ¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	UNCLEAR		rejected
SPM-885	15	A	12	24	12	27	"Comment. From my point of view, the prhase: -The development and demonstration of hydrogen powered fuel cells for vehicles has started, but deployment is likely to take a long time.- is uncorrect. In fact, I tink that this prase don't take in consideration the U.S. President's Hydrogen Fuel Initiative, launched in 2003, the U.S. Policy Energy Act of 2005 (Public Law 109-58, Title VIII Hydrogen) and the recent DOE's Hydrogen Goal-Setting Methodologies Report to Congress (August 2006). The Energy Policy Act of 2005, Section 811 (Reports) states: -(a) Secretary.—Subject to subsection (c), not later than 2 years after the date of enactment of this Act, and triennially thereafter, the Secretary shall submit to Congress a report describing— (…) (4) progress, including progress in infrastructure, made toward	DISCUSS; impression is that literature overall is less optimistic	5	rejected

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							achieving the goal of producing and deploying not less than— (A) 100,000 hydrogen-fueled vehicles in the United States by 2010; and (B) 2,500,000 hydrogen-fueled vehicles in the United States by 2020;-. From my point of view if all actual RD&D, technical and cost barriers are overcame in U.S. by 2015 (as indicated in the DOE goal document) and the U.S. Policy Energy Act of 2005 goals are achieve by 2020, the H2 Fuel Cell Vehicles deployment will take from 10 to 15 years. I suggest to modify the phrase in: -The development and demonstration of hydrogen powered fuel cells for vehicles has started and, if the U.S. Program will meet their goals, the deployment will take from 10 to 15 years. Reference: 1) U.S. President's Hydrogen Fuel Iniziative: Office of the President. Hydrogen Fuel: A Clean and Secure Energy Future. 30 Jan. 2003. Available on the Web at <http://www.whitehouse.gov/news/releases/2003/01/20030130-20.html>. 2) U.S. Policy Energy Act of 2005, Public Law 109-58. 8 Aug. 2005. Available on the Web at <http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_public_laws&docid=f:publ058.109.pdf>. 3) Hydrogen Goal-Setting Methodologies Report to Congress. U.S. Department of Energy. Hydrogen Program. August 2006. Available on the Web at <http://www.hydrogen.energy.gov/pdfs/goal_setting_report_congress.pdf>." (Mario Valentino Romeri, none - private Italian citizen)			
SPM-886	15	A	12	25	0	0	After "...a long time." Insert new sentence "Hydrogen will achieve its potential for emission reduction only if it is produced by non-emitting means, particularly renewables and nuclear fission and fusion."	REJ; too detailed		We will add.

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							(David Jackson, McMaster University)			
SPM-887	15	A	12	25	12	27	"are more important" than what? The sentence is absolutely unclear to me (,)	UNCLEAR		This does not apply to our chap.
SPM-888	15	A	12	25	12	25	Add at the end of the sentence ",as many industrial problems remain to be solved" (Government of France)	UNCLEAR		rejected
SPM-889	15	A	12	25	12	25	Phrase "…likely to take a long time" is unscientific; try to quantify (in terms of decades perhaps). (Government of Environment Canada)	ACC; be more precise		We will improve
SPM-211	15	B	12	25	12	27	True, but is that enough to provide a significant amount of transportation fuels? U.S. Government (Government of U.S. Department of State)	See A-256		TIA,we will address this.
SPM-890	15	A	12	26	12	26	Decarbonisation of transport fuels can also come from greater use of (potentially low-carbon) electricity, in particular due to synergy with hybridation of vehicles with "plug-in" hybrids. (Cédric PHILIBERT, International Energy Agency)	TIA when reformulating		rejected
SPM-891	15	A	12	26	12	26	Suggest clarify to read "substantial increase in fleet fraction using biofuel" or "substantial increase in biofuel use" (Rachel Warren, University of East Anglia)	ACC		same
SPM-892	15	A	12	27	12	27	Write in full "costs have not been estimated" (not sure that uncosted is the dictionary) (Rachel Warren, University of East Anglia)	ACC		This does not apply to our chap.
SPM-893	15	A	12	27	12	27	It is proposed to substitute "are possible" by "are options with lower costs (but also lower potential)". It should be avoided to qualify any options as possible or not possible because such language would be clearly policy prescriptive. (Government of Austria)	TIA; reformulate		rejected
SPM-894	15	A	12	27	12	27	add: "Cooling (air conditioning, refrigeration) activities in the transport selector need to be controlled as well" Justification: Covering importance of this sub sector (Government of Germany)	See A-880		TIA
SPM-895	16	A	12	29	12	34	I agree with the sentiment expressed but overall I find Chapter 5 too brief on public transit issues to justify this conclusion. For	DISCUSS; ch 5 to be strengthened on public transport	5	TIA Agreed, will be more on

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							example magnetic levitation trains are not mentioned even though a successful system is now operating in Shanghai (David Jackson, McMaster University)	and text to be checked then again		modal split and public transport. To be taken into account after revising chapter
SPM-896	16	A	12	29	12	34	It should included here that it is crucial for policy makers to recognize that GHG emissions reductions will not be viewed as the critical issues in transportation during the coming decades. Therefore, concerns about transportation will need to focus on local effects (i.e. congestion, local air pollution, increases in traffic accidents) and that basically, the global warming issue in transportation will be addressed within the context of sustainable development. This is an important point for policy makers. While further reference is found in Chapter 5, page 6, lines 18-26), introducing the issue in the SPM is suggested. (Government of Japan)	ACC; include this point, which also makes the cobenefit point		accepted
SPM-897	16	A	12	29	12	33	comment: inconsistent with Ch5-5, 10-14, suggest to insert after "... contributions." "The economic and market potential of reductions in transport GHG emissions may be substantially lower than the technical potential because estimates for future technology costs are often optimistic and/or disregard the trade-off between fuel efficiency and other valued vehicle characteristics." (Government of The Netherlands)	TIA when reformulating; strengthes the point about the need for government policy		Rejected, too detailed
SPM-898	16	A	12	29	12	34	The authors should review this section as care is needed in drafting to avoid a sense of policy prescription. (Government of Australia)	TIA when reformulating		TIA
SPM-212	16	B	12	29	12	33	Provide better references in text. U.S. Government (Government of U.S. Department of State)	REJ; not in SPM		rejected
SPM-213	16	B	12	29	12	30	How much will it depend on government policies? Statement lacks information and, as a result, seems a bit policy prescriptive. Won't high gas prices because of market factors have a substantial effect? U.S. Government (Government of U.S. Department of State)	DISCUSS; what is literature saying about the effect of high gas prices? TIA when reformulating; Park issue for now	5	Rejected, no room for that The issue of gasoline prices and the need for government

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										intervention is not solved yet.
SPM-214	16	B	12	29	12	0	Change “Achieving the emissions reduction potential” to “Realizing potential emissions reductions”. The assessment should not imply that emissions reductions are an “all or nothing choice” with a decision to be made between achieving “the” potential or doing nothing. U.S. Government (Government of U.S. Department of State)	ACC; change “achieving” into “realising”; “emission reduction potential” is a perfectly fine term; no need to change		accepted
SPM-899	16	A	12	30	12	31	Add " and technological innovation" to the first sentense of para 16. Fuel cells technology, for example, needs technological breakthrough in addition to government policies for further development. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	REJ; this is a paragraph on policy		accepted
SPM-900	16	A	12	30	12	30	To add: ¨.....government and enterprises policies....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; message here is that without government policy not much will happen, as is illustrated by the current situation		rejected
SPM-215	16	B	12	30	12	31	Do fuel economy standards have to be stringent and cover the whole sector to work or will some standards drive other parts of the sector to self-regulate in order to avoid regulation? U.S. Government (Government of U.S. Department of State)	REJ; literature (e.g on US CAFÉ standards) shows that weak or partial standards are ineffective		accepted
SPM-901	16	A	12	31	12	33	"and easy availability of soft loans from the banks" may be added after the word 'incomes' at the end of the sentence. (Government of Pakistan)	REJ; too detailed		rejected
SPM-902	16	A	12	32	12	33	delete: "… but effectiveness may drop with higher income" Justification: Taxes etc can be adapted to income increase (otherwise this measure would only make sense in "poor" countries) (Government of Germany)	DISCUSS how strong is the literature on this income effect	5	TIA, we will redraft Literature will be revisited. To be taken into account after revising chapter

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-903	16	A	12	33	12	33	Suggest adding a short sentence: "Emissions from the transport sector could also be covered by emissions trading". (Cédric PHILIBERT, International Energy Agency)	DISCUSS what literature on application of emissions trading to the transport sector says. Point remains valid, but can be reformulated.	5	TIA,we will redraft To be taken into account after revising chapter
SPM-904	16	A	12	33	12	33	Add: "Measures …. planning, proper well justified infrastructure planning and …" Justification: Infrastructure planning has an important impact on mobility demand (Government of Germany)	ACC; add “and infrastructure” after “land”		ACC; add “and infrastructure” after “land”
SPM-905	16	A	12	34	12	34	A short paragraph mentioning the existence of negative cost mitigation potential in this sector seems required. For example, IEA's World Energy Outlook 2005 indicates in its Alternative Policy Scenario that consumers would have to invest some $1.1trillion over the scenario's timeframe (2005-2030) to get more energy-efficient capital goods, mostly more efficient cars and vehicles . Cumulative oil savings over the same period would be about 52 billion barrels (p.275). This would provide financial savings (not discounted, but nor are the investments) of $ 2.028 trillions with the assumption of a price averaging 39 $/barrel over the period. This would suffice to make such a policy a "negative cost" potential. The WEO goes further in assuming that reduced demand for oil would drive the oil price down to $33 per barrel in this scenario. The gross savings over the entire period would thus be the difference between the cost of 935 billion barrels at 39$ each and the cost of 883 billion barrels at 33$ each, or $ 7.326 trillion.The negative cost of the associated emission reductions would thus be over 6 trillion dollars. (,)	DISCUSS Chapter has to be strengthened on cost of mitigation; then based on that hopefully something can be saiis about negative cost potential	5	We will keep discussing.
SPM-906	16	A	12	34	30	0	Developing countries need to open big transport infraestructure that let theirs economics grow and let world transport big and small line in a less and efficient energy consume. Second order connection must be developed to stop the population migration from the uncomunicated territory to the cities, that lets the growth of big	UNCLEAR		rejected

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							urban areas that will become an inefficient energy systems. The investment in transport policies must include in Carbon Market. (Government of Spain)			
SPM-907	16	A	12	34	12	34	add: "Measures to improve logistics and to shift goods transport to the environmentally most efficient means of transport can reduce GHG emissions significantly" Justification: Modal shift and logistics measures have been forgotten to be mentioned (Government of Germany)	DISCUSS What does literature say about goods transport; does this justify an SPM statement?	5	We will consider Chapter is weak on this. Will revisit and reconsider whether worth spot in SPM
SPM-216	16	B	12	34	12	34	Please add ", and are essential in the long term to reduce demand for individual transportation". (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	REJ; policy prescriptive		rejected
SPM-908	17	A	12	35	13	5	Buildings. To add - ¨ More use of bioclimatic aspects in new buildings design, in order to save energy and reduce GHG emissions¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; too detailed		
SPM-909	22	A	13	35	13	38	Is the avoided deforestation potential also included under "forestry" in table SPM2? If so change label "forestry" in table SPM2 to say "forestry including avoided deforestation" or not if it is not included, but then make clear in text here. (Rachel Warren, University of East Anglia)			
SPM-217	17	B	12	35	12	35	Buildings: The synergies that can be found with adaptation should be mentioned here (ex: adaptation to heat waves and extreme events can go hand in hand with better energy efficiency if designed from the start) (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; add some text		
SPM-218	17	B	12	36	13	11	Change the order of paragraphs 17 nd 18. Rationale: first the observed trands and then the range of policy options that are available	REJ; logic is: first technical options/ economic potential; then policy		

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							(Government of Switzerland)			
SPM-219	25	B	14	25	14	27	Studies that evaluate the potential benefits and costs of these mitigation options should be reported, e.g., Crutzen, P. 2006 Climatic Change. U.S. Government (Government of U.S. Department of State)	DISCUSS	11	Ch 11 to see if this source or other refernces can be used to substantiate or lead to changes of the (largely) uncosted statement.
SPM-220	17	B	12	0	12	0	Note 12: Net negative costs : please make clear that they are a benefit ! … saved energy costs : over which period ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; modify footnote		
SPM-910	22	A	13	34	13	43	Within the forestry chapter, there are concerns with the approach of adding up regional bottom-up estimates, extrapolating them to global summary statistics. Global (top-down) analyses exist, and are included in the forestry chapter. However, these results are not reflected in the executive summary of the chapter and as a consequence, are not reflected in the Technical Summary or SPM. The authors should present both the bottom-up results and the top-down global results and make comparisons at the regional level. Both sets of results are contained in the literature. The document should discuss the strengths and weaknesses of each of these approaches. In several places in the chapter, the text focuses on issues that are unique to the Kyoto Protocol – when larger, generic issues also exist. For example, the discussion of permanence focused on the treatment under the Kyoto Protocol. Also the section uses definitions of afforestation and reforestation that are unique to the Kyoto Protocol (however the use of afforestation is used as a generic term in many places within the chapter). U.S. Government (Government of U.S. Department of State)	DISCUSS	9	For SPM too much detail. KP definitions see glossary , and we rely on different studies with different definitions. This is part of uncertainty. (9)

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SPM-911	21	A	13	27	13	33	There are a number of concerns about the global mitigation potential estimates presented for agriculture, including: (a) An over-reliance on one study (Smith, et. al.) which is poorly described in the chapter and the paper is not well documented; (b) extrapolation of U.S. results based on the FASOM model to other regions of the world; (c) the global results use the FASOM model as an underlying tool, there are double-counting concerns with results presented in the forestry chapter; (d) The results appear to be cobbled-together and are not appropriately caveated; (e) The characterization of U.S. agricultural climate change policy is inaccurate; (f) there are several references to biofuels that will need to be cross-referenced with the energy chapters; (g) There are global estimates of the mitigation potential of agricultural activities, including the EMF-21 results and EPA, 2005, that are not captured in the chapter. U.S. Government (Government of U.S. Department of State)	DISCUSS	8	Some refs will be included. D will be addressed in chapter E has been corrected F accepted G EMF will be included. NONE OF THESE POINTS AFFECT THE SPM TEXT
SPM-912	17	A	13	1	13	3	Delete "By 2020, up to 60% of the GHG emissions in the buildings of developimg countries and economies in transition(EIT), and up to 25% of those in developed countries, can be prevented at net negative cost(HL)." No wide range studies can prove the rightness of those data. (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	DISCUSS Are these numbers for new buildings or for the whole sector, inclusing existing building stock? How strong is the literature?	6	Reject. The numbers are for the entire building stock. 74 studies from app. 40 countries and country groups support these figures. (6)
SPM-913	17	A	13	1	13	3	starting at "By 2020 ...", this statement seems to contradict the entry of §6 (p.7, line 1-2) and also line 10, p.13 where "strong barriers" are mentioned. It is true that buildings own a huge emission reduction potential, but the inertia and barriers are significant (when carbon prices stay low), and therefore it is difficult to agree on the lines 1-3 of p.13. (Aviel VERBRUGGEN, University of Antwerp)	ACC; something on barriers to be added to warrant government policy when profits can be achieved		We have included the discussion about barriers in lines 10 – 11. (6)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-914	17	A	13	1	13	3	"up to 60%" and "up to 25%" should be changed to be corresponding ranges for scientific consideration. (Government of China Meteorological Administration)	DISCUSS see A-912 Can ranges be given?	6	? Given the review of data, a range cannot be given. This is because the studies with low figures are incomplete, and their result would be misleading. (6)
SPM-915	17	A	13	1	13	0	There is a discrepancy here with "up to 60% of the GHG emissions in the buildings of developing countries and EIT to be prevented by 2020" and the reference text found in Chapter 6, page 5, line 50, which states that the figure is "up to 62%". A cross-reference verification of these two values is required. (Government of Japan)	See A-912; ensure full consistency, but not suggest precision (60% is better than 62%)		Thank you. This discrepancy will be resolved. (6)
SPM-916	17	A	13	1	13	5	The sentence" By 2020, up to 605 of…….enhance energy security", is unclear. Firstly, it is critical to specify the baseline of future buildings assumed in the developing countries and economies in transition 2020 (also not clear in the sections 6.4. and 6.5 referenced here). Secondly, the 60% of GHG prevention from a baseline at a net negative cost in developing countries is reported with high confidence level but with limited evidence. It is not evident how a scientific assessment may arrive at such a drastic reduction from a baseline with high confidence from limited evidence unless significant market and government policy failures are built into the baseline. Thirdly, in case this number (i.e. 60%) refer only to the technical potential and not to the economic or market potential, it should be stated clearly. (Government of India)	See A-912 Ensure all numbers are economic potential		First: the baseline is specified by each national study. Second: the highest numbers are reported for least developed countries, and they include switch to locally generated renewable energies, replacing high-

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										emission cooking and lighting, among others. Third: the numbers cited are for economic potential. (6)
SPM-221	17	B	13	1	13	3	The maximum savings achievable at net negative cost – 60% in developing countries and 25% in developed countries – are NOT CONSISTENT with the numbers shown in Table SPM2 for the Buildings sector. That Table does not break out the (Scenario B2) baseline between developed and developing countries, but taking all countries together, the combined savings at net negative costs are shown as 3200 (million metric tons?) out of 15.0 GtC02, or 21%. There is no weighted average of 25% and 60% that can yield this result. Are the earlier percentages based on a different baseline scenario (A1 rather than B2)? Finally, if the Chapter sections cited in brackets on p 13 line 5 [6.4, 6.5] are intended as the source of these numbers, this is not correct – the relevant chapters/sections and data tables should be cited. U.S. Government (Government of U.S. Department of State)	DISCUSS check if there is consistency with table SPM-2; is economic potential indeed supplementary to what is in the baseline already?	6	They are consistent. This sentence reviews the potential in various developing countries and includes the words “up to”. A weighted average, reported in Table SPM2, is laregely determined by the potential in the largest developing countries, i.e. China and India, which have lower potentials. These savings

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										are not relative to scenario A1 or B2, but relative to baselines reported in the national studies. The nature of these baselines is reported in the last column of Table 6.3. With regard to the reference, Table 6.3 does show the background studies used for this calculation, as well as section 6.5. (6)
SPM-917	17	A	13	3	13	3	Line 3 currently reads ..."25% of those in developed countries, can be prevented at net negative cost (HL). Energy efficient"... To enhance clarity, it should instead read: option 1: ..."25% of those in developed countries, can be prevented at a profit (HL). Energy efficient"... or option 2 ..."25% of those in developed countries, can be prevented at a profit (HL). This is due to the fact that energy efficient"... (Jose Etcheverry, David Suzuki Foundation)	REJ; does not improve the text		
SPM-918	17	A	13	3	13	3	The word "prevented" needs to be replaced by other synonyms like "mitigated or reduced" (Government of MALAWI)	ACC; use “avoided”		”. Corrected to “avoided”. (6)
SPM-	17	A	13	3	13	3	Insert space before the word "Energy"	ACC		

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919							(Government of MALAWI)			
SPM-920	17	A	13	6	13	11	We think that the findings on domestic and industrial refrigeration and air-conditioning from the special report "Safeguarding the Ozone Layer and the Global climate System - Issues Related to Hydrofluorcarbons and Perfluorcarbons" should be integrated into this section. (Government of Norwegian Pollution Control Authority)	ACC; sentence to be added	6	
SPM-222	17	B	13	6	13	7	The SPM discusses supply and demand strategies for GHG mitigation separately – while failing to make the important point that energy planning, policies, and goals need to systematically consider additional measures to reduce energy demand as a cost-effective alternative to new supply, and build in "integrated energy resource planning" to all decisions about energy infrastructure investment and utilization. U.S. Government (Government of U.S. Department of State)	ACC; but add to para 14		
SPM-921	18	A	13	7	13	10	This section could benefit from a brief discussion of scale and potential - ie for new build it would be technically possible to cut the carbon footprint by half through low carbon design and building management but what is happening is dictated by the stepwise improvements in carbon emissions. (Government of UK)	ACC; make distinction between existing and new buildings		Too detailed for SPM (6) but will reconsider. Ch 6 to propose text. Discussion about the difficulties of making the split between old and new buildings.
SPM-922	18	A	13	7	13	8	These include energy or carbon pricing, appliance standards,… (Government of Norwegian Pollution Control Authority)	REJ; energy and carbon pricing is already under "pricing measures"		
SPM-923	18	A	13	9	13	9	Insert ' informative and educational programs', and public sector energy leadership programmes,… (Government of Spain)	REJ; already covered under "labelling"		accepted, educational programs added (6)
SPM-	18	A	13	9	13	0	A transition is required. Add "however" to the beginning of "to	ACC		, changed.

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924							overcome the strong barriers to capturing the economic mitigation potential in the building sector, a coherent set of policies is required". (Government of Japan)			(6)
SPM-925	18	A	13	10	0	0	Add an example of the barriers faced (Ann Gardiner, AEA Technology)	ACC; add a few words		. No space. If space is given, we can, but it will take 3 extra lines. (6)
SPM-223	18	B	13	10	13	0	Change “capturing the economic mitigation potential” to “realizing potential emission reduction opportunities”. The assessment should not imply that emissions reductions are an “all or nothing choice” with a decision to be made between achieving “the” potential or doing nothing. U.S. Government (Government of U.S. Department of State)	ACC; replace “capturing” by “realising”		done. (6)
SPM-926	18	A	13	11	0	0	I suggest to add: "Encouraging development of ESCOs might help accelarating improvements in the sctor for which transaction costs are high." (Jacques Rilling, CSTB Building Research Center)	DISCUSS If literature on ESCO’s is showing effectiveness, then add this to SPM	6	ESCOs added (6)
SPM-927	18	A	13	11	13	0	The new transport pathes between new neibourghood in metropolitan areas have a crucial effect in the growth of fuel consume and policies to minimazie that effect must be added to the mitigation policies. (Government of Spain)	UNCLEAR		
SPM-224	18	B	13	11	13	11	Third party financing should be mentioned here as an important way to overcome the barriers. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	REJ; too detailed for SPM		
SPM-928	19	A	13	15	13	15	Although this is arguably covered by "fuel shifts", you may want to add "shift from fossil fuels towards electricity" as in industry this shift is often associated with important efficiency improvements, while it also gives more possibilities for decarbonising the energy sources.	DISCUSS Is this an important option?	7	Too general a statement. Depends on specifics (7)

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							(Cédric PHILIBERT, International Energy Agency)			
SPM-929	19	A	13	15	13	16	Please change/add: "…control of CH4, N2O, HFC, PFC and SF6 emissions..." To include SF6 is in line with the information in chapter 7. (Government of Germany)	ACC		OK (7)
SPM-930	19	A	13	15	0	0	add: renewable energy (Government of Germany)	ACC; modify "fuel shifts to also include shift to renewable fuels or electricity		Renewable energy OK, electricity no (7)
SPM-225	19	B	13	16	15	16	Delete the word "However" (Government of Switzerland)	ACC		OK (7)
SPM-931	17	A	12	36	13	5	Please provide reference to the quote of up to 60% emissions in the buildings prevented by 2020. (Government of UK)	REJ; no refs in SPM		
SPM-932	19	A	13	17	13	17	Inappropriate tense. Reword "is respecting" to "respects." (Government of Environment Canada)	Prefer A-934		OK (7)
SPM-933	19	A	13	17	13	17	Delete:" that is respecting international competitiveness". Different countries have different policy priorities - competeveness may or may not be one. (Government of Environment Canada)	REJ; competitiveness is important to industry		Suggest deleting "international" (7)
SPM-934	19	A	13	17	13	17	For the sake of clarity the authors should delete "is respect" replace with "does not harm". (Government of Australia)	ACC		OK (7)
SPM-935	19	A	13	17	13	17	"… a stable policy environment that is respecting international competitiveness…" First, it is not clear whether the stable policy environment refers to national or global policy environment. Second, respecting the international competitiveness is already in the domains of treaties like WTO, together with the permitted exceptions. (Government of India)	ACC; add "national" before "policy environment"; competitiveness is also a national issue		OK (7)
SPM-936	19	A	13	19	13	19	To add: ¨....and economic incentives); and the establishment of sustainable production patterns. In the same way is necessary to reduce the differences between developed and developing countries ¨	REJ; not consistent with chapter		Reject (7)

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							(CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)			
SPM-226	19	B	13	19	13	19	Mention emission trading somewhere in this para (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	DISCUSS; is emissions trading in the literature an important policy instrument for the industrial sector?	7	Emissions trading is important, but may not be linked to technology uptake. (7)
SPM-937	20	A	13	20	13	20	It is better to replace "Beyond 2015" with "In the long-term". (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	REJ; horizon of thia whole section is 2030, so LT is not appropriate		OK
SPM-938	20	A	13	20	13	22	The key findings from the IPCC Special report about CCS should be mentioned here. (Government of Norwegian Pollution Control Authority)	REJ; we cannot do that (no space); ACC making reference in footnote to it		OK (7)
SPM-939	20	A	13	20	13	21	The statement: "…substantial additional potential from energy efficiency improvements and application of CCS and non-carbon process technologies…" . Here, it needs to specify additional to what? Most of the energy efficiency measures and improvements in non-carbon process technologies are already included in the future baseline projections, even when of no climate intervention is assumed in the analysis. In cases when the baseline analysis assumes carbon mitigation instruments, such as for example the Kyoto Protocol which is already ratified, the application of CCS is also included to various extents in the baseline. Therefore "substantial additional potential" beyond this would not exist. Clarification on the "substantial additional potential" should be made or this point no. 20 may be dropped. (Government of India)	TIA, make sure it is made clear that additional is compared to what is in para 19 and that potential is not already covered in the baseline; add footnote to all sector headings referring to table 2		OK (7)
SPM-940	20	A	13	20	13	22	The statement as it stands is incorrect, since there are already today large-scale efficiency improvements possible at economically viable return rates. Thus market conditions should be created to	DISCUSS There may be a problem with respect to defining potential; it	7	Propose accepting the first sentence,

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							overcome obstacles which impede the realisation of the technoligically and economically viable option already available today. There are numerous examples for highly efficient and cost-effective solutions, but the full market penetration takes years or decades without additional incentives to use these already available techniques. Thus the sentence should be replaced with: "There is a substantial additional potential from energy efficiency improvement available already today and instruments and markets need to be created to exploit these potentials. Some technologies may save up to 80% and more and many efficiency improvements can be implemented without additional costs (high confidence). Beyond 2020 there will be a growing additional potential from the application of CCS and non-carbon technologies (medium confidence). (Government of Germany)	could be that chapter 7 defines it differently than other chapters. As pointed out in the comment, why suggest additional potential from efficiency after 2015, while the technical possibilities (at some cost) already exist? Maybe ch 7 means additional at net negative cost? Needs to be reconciled with how we define economic potential (at certain cost levels)		rejecting the second sentence because it is not supported by the chapter. On the third sentence retain additional energy efficiency since new technology is under development. Change non-carbon technologies to non-GHG-emitting technologies. (7) 2015 split has not been approved by CLAs. Will not stay
SPM-227	20	B	13	21	13	21	If this is the first use of "CCS", spell out the abbreviation and explain what this technology is and what promise it holds. U.S. Government (Government of U.S. Department of State)	REJ; it is not the first time; the first time it appears a footnote will be added that points to the SRCCS		OK (7)
SPM-941	20	A	13	22	0	0	SF6 should also be mentioned here. (Government of Norwegian Pollution Control Authority)	DISCUSS if SF6 is big enough to be mentioned here	7	SF6 should be mentioned. (7)
SPM-942	20	A	13	23	13	23	Remove comma after the word "phase" (Government of MALAWI)	ACC		OK (7)
SPM-943	21	A	13	25	13	25	Agriculture and forestry - very long compared with other important sectors as energy, industry, transport	REJ; only one para for agric and one for forestry; after moving		Noted. It is an appropriate

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							(CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	biomass paragraph to energy section, give separate headings to agriculture and forestry		length. (8)
SPM-944	22	A	13	34	13	43	Regarding the descriptive contents on forestry, it seems to be inconsistent with TS and the body of Chapter 9 as a whole. Especially, description of "avoiding deforestation" is substantially different from that of chapter 9. This kind of inconsistency is also found between ES and body of chapter 9. (Government of Japan)	DISCUSS Chapter 9 had already complained about this; what are the key messages then from ch 9? Be careful not to drop the sentences on effect of climate change and the issue of anthropogenic vs natural sequestration because these issues have a high importance for policy Has been resolved		Chapter 9 issue. (8) Will be reworded Chapter 9 will send revised text.
SPM-228	21	B	13	25	13	25	Agriculture and forestry: This is an area wher it is particularly important to integrate mitigation and adaptation. It should be mentioned (see WG2 Chap 18) (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; add something in 21 and 22		
SPM-229	21	B	13	34	13	34	"most effective" compared to what? (Government of European Community / European Commission)	ACC, add “compared to other mitigation options”		
SPM-945	21	A	13	27	0	0	include innsection 21 a statement like: Synergies with sustainable development will also depend on the ownership of farmers and hence the farming system. (,)	REJ; too detailed		Rejected. This is just one of many barriers that we could mention, and singling this one out in the SPM is not justified. But see response to A SPM-946 (8)
SPM-	21	A	13	27	13	32	This paragraph, in particular the sentence lines 31/32, reads as if	ACC; add something on barriers		Accepted.

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946							there were no barriers to implementation. If options are immediately deployable, do not reduce productivity, and on top of that have co-benefits, why are they not being implemented? The TS paints a different picture: it gives a range of barriers, a lot of which include cost issues, competition for land (which is also a cost issue), plus social, institutional and educational barriers. To be a true summary of the TS, the SPM should refer to some of those barriers in this paragraph. (Andy Reisinger, TSU IPCC Synthesis Report)			Suggest changing the start of the sentence beginning: "Many options…" to "Although many options are potentially immediately deployable, in practice there are many barriers which have constrained uptake- reword along these lines" (8)
SPM-947	21	A	13	27	0	33	T. Bruulsema: This policy recommendation is generally excellent, but should get slightly more specific to include the idea that continued improvement in crop yield will be essential to ensure that nutrient use efficiency continues to improve, that soil carbon is maintained and that deforestation is avoided. (Ben Muirheid , International Fertilizer Industry Association (IFA))	REJ; too detailed		Rejected. This is comment is too sweeping w.r.t crop yield as certain methods of increasing crop yield would increase GHG emissions. We prefer the text as it is. Note that these are not policy

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										recommendations but the results of an objective analysis of all options. (8)
SPM-948	21	A	13	27	13	33	What I miss is the notion that if nothing changes only a few % of the technical mitigation potential will be realised in the next decades due to numerous barriers. (Eveline Trines, Treeness Consult)	See A-946		Accepted. See response to A SPM-946. Suggest changing the start of the sentence beginning: "Many options…" to "Though there are numerous barriers to implementation, many options are potentially immediately deployable…." (8)
SPM-949	21	A	13	27	13	34	The feedback issue needs to addressed here: the impacts of anthropogenic climate change on depleting carbon stock in ag soils. (John Drexhage, International Institute for Sustainable Development)	ACC; add something		Rejected. Evidence for overall CC impact on SOC is uncertain as productivity might also increase in some

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										regions and offset increased decomposition from increasing temperatures. Maybe a cross reference to Ch8 & WGII "adaptation" is justified. (8)
SPM-950	21	A	13	27	13	27	"…are improved..." should be changed to be "can improve" (Government of China Meteorological Administration)	REJ: English grammar is ok		Rejected. Misunderstanding of the English. (8)
SPM-951	21	A	13	27	13	30	"Restoration of cultivated organic soils" is mentioned as one of the most prominent mitigation options. This may be true, in cases where only the C stock changes are looked at. However, if the restoration consists of raising the water table and the CH4 emissions from the restored areas are taken into account, measures like afforestation/reforestation would be more efficient. (Government of Finland)	DISCUSS; these seems a bit far fetched, but check literature	8	Rejected. Even accounting for increased methane emissions, there is a net GHG benefit globally. Furthermore, we are comparing in this paragraph only to agricultural mitigation options, not afforestation/reforestation which are discussed in the following

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										paragraph. (8)
SPM-952	21	A	13	28	13	28	The word "organic" should be deleted; restoration of cultivated soils in general, not just those labeled by soil scientists as "organic", might be beneficial. U.S. Government (Government of U.S. Department of State)	ACC		Rejected. The restoration of cultivated organic soils was assessed as a separate and specific measure in Ch8. Other options on cultivated soils are covered by the heading "cropland management", also noted as one of the most prominent options. Will reword to make it clear that they are distinct – check with Ch8. – check glossary. Qualify by ("peaty") (8)
SPM-953	21	A	13	29	0	0	Point 22: Consider what else apart from the mentioned can enhance sinks? (Expert Review Meeting Paris, IPCC)	REJ; these are the most prominent options; we do not want to list everything here		Noted. We have considered, but all the agricultural methods

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										considered that have some potential are mentioned here. (8)
SPM-954	21	A	13	29	13	29	To add: ¨.....lands, the gradual increment of lands dedicated to organic agriculture, leading to reduced GHG emissions.....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	DISCUSS		Rejected. Organic farming contains a wide range of management practices, some of which are beneficial for reducing GHG emissions, and others which are not. The statement about organic agriculture is not supported by the evidence, and does not arise from chapter 8. (8)
SPM-955	21	A	13	30	13	30	"rice" should be changed to be "crop", because the latter is more general. (Government of China Meteorological Administration)	DISCUSS; Is organic farming an important mitigation option?		Rejected. Crops in general already appear under cropland management heading on line 27. Rice land management

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										was considered as a separate and specific measure due to the methane emissions from paddy rice that do not occur for upland crops (8)
SPM-956	21	A	13	30	13	30	Insert comma after the word "potential" (Government of MALAWI)	REJ		Rejected. Not necessary. (8)
SPM-957	21	A	13	30	13	32	"Lower but still……management. Many options are immediately deployable….co-benefits". Only technical options for mitigation in agriculture sector seem to have been considered. Economic instruments such as “removal of subsidy on agriculture in developed countries” and financial support for “R&D and transfer of innovative agriculture technologies to developing countries” should also be added as options. (Government of India)	See A-946; TIA when reformulating		Rejected. Listed in SPM are measures for reducing GHG emissions. This comment lists measures that would help to reduce barriers to implementation. Whilst important, they do not belong here. They are discussed in detail in Chapter 8 – revise the text in Ch8. (8)
SPM-	21	A	13	32	13	33	The last sentence could be misread. The mitigation measure lies in	ACC, change wording		Accepted.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
958							efficiency (ie LESS use of fertilisers), not in ENCOURAGING THE USE of fertilisers. Please rephrase: "… and encourage efficiency in the use of fertilisers". (Andy Reisinger, TSU IPCC Synthesis Report)			(8)
SPM-959	21	A	13	32	13	32	Suggest adding "but there are cost and technological barriers" after "have co-benifits",the current limitations should be emphasized. (Government of China Meteorological Administration)	See A-946		Accepted (in principle) – actual wording to reflect this could instead be as per response to A SPM-946. Suggest changing the start of the sentence beginning: "Many options…" to "Though there are numerous barriers to implementation, many options are potentially immediately deployable….": (8)
SPM-960	21	A	13	33	13	33	To add in the following manner:.....through policies that carry to sustainableagriculture, maintain soil carbon and encourage efficient and sustainable use of fertilizers¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	See A-958; TIA when reformulating		Accepted to add word sustainable. See also response to comment A SPM-958. (8)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-961	21	A	13	33	13	33	“maintain soil carbon” should be written as “maintain soil carbon content” or “maintain soil carbon storage”. U.S. Government (Government of U.S. Department of State)	See A-958		Accepted. (8)
SPM-962	21	A	13	33	13	33	add as in para 22 below something about climate change mitigation potential: "C-stocks may become more vulnerable to loss under climate change or other pressures." See full chapter 8 line 8 page 3. (Government of Germany)	See A-949		Rejected. Evidence for overall CC impact is uncertain and will be very region specific. Productivity is some areas might increase and in others decrease. Increased productivity in some regions may offset increased decomposition from increasing temperatures so C stocks in same areas may increase. Maybe a cross reference to WGII “adaptation” is justified. Not sufficiently well established to highlight in

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										SPM. (8)
SPM-963	22	A	13	34	13	35	What else could enhance sinks in the forestry sector, if not "aforestation and reduced deforestation"? For non-specialists, this sentence looks like a lapalisad. (Cédric PHILIBERT, International Energy Agency)	ACC; modify sentence to become more informative	9	
SPM-964	22	A	13	34	13	34	To add: ¨.....combination of aforestation, reforestation and reduced....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	See A-963		
SPM-965	22	A	13	34	13	43	Para 22; “Implications for Sustainable development” of forest sector mitigation options could be added to para heading and mentioned in the last line of para. (Government of India)	TIA; mention in last line, not in heading		
SPM-966	22	A	13	35	13	35	Insert the word "measure"after the word "effective" (Government of MALAWI)	See A-963		
SPM-967	22	A	13	35	13	35	It is proposed to insert "approach" after "effective" in order to improve the flow of the sentence. (Government of Austria)	See A-963		
SPM-968	22	A	13	35	13	36	“A Large share …… in above ground biomass”. This is not clear, what about 'soil carbon'? (Government of India)	REJ; sentence is clear		
SPM-969	22	A	13	35	13	0	Replace with “of afforestation and reduced deforestation offers the greatest potential to enhance sinks and reduce and avoid and offset emissions” . U.S. Government (Government of U.S. Department of State)	See A-963		
SPM-970	22	A	13	35	13	35	“effective to” might be written “effective set of options to” U.S. Government (Government of U.S. Department of State)	See A-963		
SPM-971	22	A	13	35	13	35	change "high" into "medium" in consistency with chapter 9 page 48 line 26 and page 75 line 8. (Government of Germany)	DISCUSS	9	Reviewer is confusing with the numerical estimate in the chapter .

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										'high confidence' refers to the main statement
SPM-972	22	A	13	36	13	36	add after "..ground biomass": "Within tropical regions, two thirds of the economic potential can be achieved through avoidance of emissions from deforestation and forest degradation. In the short term, this emission avoidance offers the main mitigation option in forestry " (,)	See a-963		Slightly modify sentence
SPM-973	22	A	13	37	13	38	The sentence could be misread: Some non-experts could think that this sentence says that we do not know whether planting trees absorbs carbon dioxide or not (which is not what is intended). You might want to replace the last phrase with "… between DIRECT human induced and natural sequestration RATES". (Andy Reisinger, TSU IPCC Synthesis Report)	REJ; does not clarify		Agree with comment, alternative txt was submitted to tsu
SPM-974	22	A	13	37	13	38	"Factoring out" is difficult but it can be solved for the most part by net-net accounting. (Eveline Trines, Treeness Consult)	DISCUSS; chapter needs to cover this issue better, given high importance in policy debate (the item was specifically discussed during approval of the WG3 AR4 outline approval)	9	Factoring out is a political issue, is partly dealt with in reporting complexity in 9.6. Impact of climate change on mitigation potential is discussed
SPM-975	22	A	13	37	13	38	comment: the statement "In estimating ... sequestration." isn't mentioned in the executive summary of ch9 and hardly in the main body, suggest to delete, if not deleted add "the" between "existing" and "potential" (Government of The Netherlands)	See A-974		Agree with comment, alternative txt was submitted to tsu
SPM-	22	A	13	41	13	0	Change "the mitigation potential" to "potential mitigation	REJ; potential is well defined		Agree with co

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
976							opportunities." Rationale: The assessment should not imply that emissions reductions are an "all or nothing choice" with a decision to be made between achieving "the" potential or doing nothing. (U.S. Government (Government of U.S. Department of State)			chair
SPM-977	22	A	13	42	13	42	To add: ¨.....regulatory, voluntary, and financial incentives, skilled human resources, institutional capacity,.....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; not in line with chapter		
SPM-978	22	A	14	1	14	5	I suggest to include examples when talk about implemented forestry mitigation options, because do more clear the idea (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	UNCLEAR		
SPM-979	22	A	14	1	14	1	Change "mitigation options" to "mitigation measures" (Government of Finland)	ACC		
SPM-980	22	A	14	1	14	1	"Properly designed and implemented forestry mitigation options.....".The term "Properly designed…" is too general and may be replaced or illustrated by mentioning specific options and instruments which reduce vulnerability to climate change and deliver other co-benefits. (Government of India)	REJ; too detailed for SPM		Agree with co chair
SPM-981	22	A	14	1	14	1	"are also effective" should be "might also be effective" U.S. Government (Government of U.S. Department of State)	REJ; this is well established		
SPM-982	23	A	14	5	14	9	Mitigation potential 2.2 Gt CO2-eq/yr by 2030 is given. "Potential fossil fuel emission offsets from bioenergy crops and forest products". This is a rather high amount, would mean an increase more than 50% to the present avoided emissions due to biomass energy use (estimated to be 3.7 Pg CO2 or less in Ch 9 p. 29 lines 19-21). Increase should be given (in some way). (Government of Finland)	DISCUSS; this para has to be moved to the energy supply section and be strengthened to become the bio energy paragraph TIA when reformulating	CG Bio energy	Alternative txt was submitted to tsu Para will be in ch 11 section, and will be modified, following revision of bio-energy section

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										in ch 11.
SPM-983	21	A	13	27	13	33	A totally off the wall remark. Is there any emission advantage in encouraging vegetarian diets in terms of more efficient use of agricultural lands and reduction of the digestive emissions of agricultural animals? Vegetarian and vegan diets are increasingly popular among university youth in North America mainly for health and animal ethics reasons. A strong GHG emission reduction argument, if valid, would further encourage this lifestyle change. (David Jackson, McMaster University)	DISCUSS	8	-
SPM-984	23	A	14	6	14	11	Is it sound to quote here, highlighted in bold, a statement that is supported by "limited evidence" and is the matter of "low level of agreement"? Of course not. This sentence must read something like "There is limited evidence that dedicated bio energy crops and forest products could... The scientific community offers widely diverging views... etc". Thenext sentence "The potential is based on the demand.. because the literature indicates that supply (...) is not a limiting factor." makes no sense: if there was no limit on supply the potential would be equal to the overall demand for fossil fuels ie the mitigation potential would equal our global energy-related CO2 emissions. (Cédric PHILIBERT, International Energy Agency)	See A-982 REJ; On issues of high policy relevance even LL statements are ok TIA when reformulating a range rather than a number (2.2) could be used REJ criticism that the statement is ludicrous, because supply and demand are relative notions; one of the two is limiting, in this case it is the demand (as chapter 4,5 and 7 say)		Accepted. I think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8) Rejected. Even if the evidence is low we should refer to that since it is calling attention in many countries nowadays. This option is always considered as one of the wedges to

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										mitigate climate change. (4)
SPM-985	23	A	14	6	14	8	The authors should insert the standard confidence metric for paragraph 23 and delete "(LL)". (Government of Australia)	See A-982 ACC; move to confidence statement, as for other statements in section C		Rejected. This is a standard confidence metric. (8) Accepted. (4)
SPM-986	23	A	14	6	14	6	It would be critical to mention whether the estimate of the estimated "Potential fossil fuel offsets from dedicated bio-energy crops and forest products…." assumes the removal of agriculture subsidies in the developed countries or their continuation and if it is latter, how much more potential can be tapped by removal of agriculture subsidies by the developed countries. (Government of India)	See A-982 DISCUSS what literature says about influence of agricultural subsidies	8,9, CG Bio energy	Rejected. Listed here are measures for reducing GHG emissions. This comment gives a potential mechanism for removing a barrier to encourage implementation of a measure. Whilst important, the statement does not belong here. See also response to A SPM-957. (8) Agree, Alternative txt was submitted

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										to tsu for SOD (9) Noted. Must be discussed with other Chapters' team. (4)
SPM-987	23	A	14	6	14	8	Why is something that has "limited evidence, low level of agreement" even included here? To what purpose? Strike this sentence and insert in its place the following: "Some research suggests potential offsets from dedicated bioenergy crops and forest products (not covered by agricultural and forestry mitigation) of about 2.2 GtCO2-eq/yr" by 2030 at costs <U.S.$50/ tCO2-eq, though the evidence is limited." U.S. Government (Government of U.S. Department of State)	See A-982, 984		Accepted. This is clearer wording. (8) Agree, Alternative txt was submitted to tsu for SOD (9) Rejected. Even if the evidence is low we should refer to that since it is calling attention in many countries nowadays. This option is always considered as one of the wedges to mitigate climate change (4)
SPM-988	23	A	14	7	14	7	Delete "a" after the word "of" (Government of MALAWI)	See A-982 ACC		Accepted. (8)

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										Accepted (4)
SPM-989	23	A	14	7	14	7	It is proposed to delete "a" in order to improve the flow of the sentence. (Government of Austria)	See A-982, 988		Accepted. (8) Accepted (4)
SPM-990	23	A	14	7	14	7	delete 'a' (Government of Belgium)	See A-982, 988		Accepted. (8)(4)
SPM-991	23	A	14	7	14	7	delete "a" in "of a the order" (Government of The Netherlands)	See A-982,988		Accepted. (8)(4)
SPM-992	23	A	14	7	14	7	Remove 'a' appearing between 'of' and 'the'. (Government of Pakistan)	See A-982,988		Accepted. (8)(4)
SPM-993	23	A	14	8	0	0	this is the only quantitative statement of all sectors, suggest to drop the numbers (should be in Table) and replace qualitative uncertainty statement by confidence statement like inall other sectoral statements. (Rob Swart, MNP)	See A-982,985		Accepted. True both for the number and for the confidence statement. Wait until after Biomass CCT group meeting. (8) Agree (9) Rejected. SPM should as quantitative as possible. Consider reducing number of significant digits. (4)
SPM-	23	A	14	8	14	11	Use of subordinate clauses in this sentence makes the meaning	See A-982		Accepted. I

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
994							unclear. Is the intended meaning that the literature indicates that there is sufficient potential supply of biofuels from agriculture and forestry without any compromise to food security at the global scale? Clarify. (Government of Environment Canada)	TIA when reformulating See A-982 Early in section C the supply and demand of biomass will be brought together, Para 23 moves and will be reformulated.		think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8) Agree, Alternative txt was submitted to tsu for SOD (9) Noted. Yes, the idea is to say that at global level biofuels can be one of the options to mitigate climate change. It is not intended to say that bioenergy is the "magic bullet". (4)
SPM-995	23	A	14	8	14	12	comment: this statement is not present in ch9, please add to ch9 or delete in the SPM (Government of The Netherlands)	See A-982 This statement draws on ch4, as indicated in chapter references		Accepted. I think this is a fair statement. We should revise this

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										paragraph – topic for the bioenergy breakout group discussion in NZ? Agree, Alternative txt was submitted to tsu for SOD (9) Noted. Check if this statement should also be included in Chapter 9. (4)
SPM-996	23	A	14	8	14	8	comment: the source of this quantification is unclear, please clarify or delete (Government of The Netherlands)	See A-982 See ch 4		Accepted. I think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8) Agree, Alternative txt was submitted to tsu for SOD (9)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-997	23	A	14	9	14	9	It is proposed to substitute "the literature" by "some literature" in order to be more consistent with the limited evidence as indicated by footnote 13. (Government of Austria)	See A-982 REJ; it is representative of the literature		Accepted. I think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8) Noted. Check if we have to restrain the word "literature". (4)
SPM-998	23	A	14	9	14	11	"literature indicates that supply from agriculture and forestry, without compromising food security at global scale, is not a limiting factor" References (literature) discussed in some other chapter? (Government of Finland)	See A-982 Is in ch4		Accepted. I think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? See comment SPM 982 A. (4)
SPM-999	23	A	14	10	14	12	"Supply from agriculture and forestry, without compromising food security at global scale, is not a limiting factor." The statement is	See A-982 DISCUSS		Accepted. I think this is a

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							based on studies with rather serious omissions regarding the available potentials, conversion efficiencies and integration with the rest of the energy system. The bioenergy potentials given in the text (Ch. 4.3.3.3, p.50) and based on Hoogvijk (2004) should be reconsidered. The study has assumed that very large areas for energy plantations will be available and that all of the energy grown is directly available, with a conversion efficiency of that of biomass integrated gas combined cycle or F-T synthesis. The conversion losses of the whole energy system are ignored. Also the questions related to integration with the rest of the energy system are ignored. With high amounts of bioenergy use, the required transportation costs (and related emissions) will become substantial. On the other hand, with small-scale technologies the conversion efficiencies will decrease substantially. Also the availability of water for plantations has been ignored. The study has largely concentrated on short-rotation energy plantations, which may also not be a fully valid assumption. (Government of Finland)			fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8) Agree, the hoogwijk estimate is to high, Will be dealt with in CCT (9) See comment SPM 982 A. Noted. Try to include other literature showing the same results of Hoogvijk but based in well used technologies, like ethanol from sugar cane Anyway it is worth to state as follows: “Potential fossil

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										fuel emissions effect from some dedicated..". (4)
SPM-1000	23	A	14	10	14	11	What is the confidence of the first sentence? I feel as if I've see articles that do not support this finding. Are the two sentences really accurate or known well-enough to be put in the SPM? U.S. Government (Government of U.S. Department of State)	See A-982,999		Accepted. I think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8) Accepted. The confidence level wiil be added. (4)
SPM-1001	23	A	14	11	0	0	Paragraph 23, add after the last sentence: When harvest residues from forest production are used in this respect, side effects on biodiversity should be considered as a limiting factor. (See reference: Chp. 9.4.2.4, page 29, line 11-12.) (Government of Sweden)	See A-982 DISCUSS to see if statement to that effect is needed in SPM		Accepted. I think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8) Will include

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										statement on side effects/ancillary benefits (9) Noted. Too detailed to be included in SPM (4)
SPM-1002	23	A	14	11	14	0	Following the statement, "Locally this may not always be the case", providing an example of a situation where it would not be the case is recommended. Additionally, is the occurrence of limiting factors at the local scale more biased in some places than others? A description of the local situation that leads to a limiting factor is required. (Government of Japan)	See A-982 TIA; elaborate a bit		Accepted. I think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8) Agree with comment, but too detailed for the spm, will come back in TS (9) Accepted. Should read : "Locally this may not always be the case, e.g.

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										densily populated areas, intensively cultivated regions". (4)
SPM-1003	23	A	14	11	14	11	Suggest "…at a global scale, is overall not a limiting factor" (Government of Environment Canada)	See A-982, 1002		Accepted. I think this is a fair statement. We should revise this paragraph – topic for the bioenergy breakout group discussion in NZ? (8)
SPM-230	23	B	14	11	14	11	insert the words:"… be the case and may deeply influence agriculture policy and the production of food at the local level." (Government of Switzerland)	TIA; exact wording as suggested not warranted, but some elaboration is ok		
SPM-1004	24	A	14	14	14	14	It is unclear what the reference is for the superscript "14". (,)	REJ; see footnote		
SPM-1005	24	A	14	14	14	23	Suggest the following rewording to reflect Chapter 10 conclusions: Effective waste and wastewater management equates with effective greenhouse gas mitigation and also promote sustainable development through improved infrastructure for public health, safety, and environmental protection. Moreover, although post-consumer waste is a small contributer (<5%) to global GHG emissions, the waste sector can positively contribute to GHG mitigation through mature and readily deployable technologies including landfill methane recovery for energy use (currently >100 Mt CO2e/yr), incineration and other thermal processes for waste-to-energy, and mechanical and biological processes. Landfill methane	REJ; too long		Taken into account. Add key messages from proposed text to existing SPM text. (10) will not be too long. See ch 10 proposal

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							recovery now accounts for >15% of registered annual CERs under CDM (high confidence) and the number of projects is increasing. It should also be stressed that waste is a significant local source of renewable energy which can offset fossil fuel use. Moreover, upfront recycling and waste minimization practices provide indirect GHG mitigation benefits via decreased consumption of raw materials and fossil fuels. (,)			
SPM-1006	24	A	14	14	14	16	It is suggested to delete",but the …(high confidence)." . The half of the sentence has already provided enough information. (Government of China Meteorological Administration)	REJ; would eliminate an important point		Noted. The flow of text doesn't run well, see previous comment above. (10)
SPM-1007	24	A	14	15	14	16	The reference to CDM with a specific figure of ">15%" should be avoided because the situation could change. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	ACC; drop sentence and add CDM text to para 29 Reflect CDM together with other mechanisms. Move to para 28. Don't single out for waste. TS can be explicit on importance for the waste sector.		Rejected. Date for figures quoted will be added. Because CDM is so important to the waste sector, we would like to retain mention of it in Para 24. (10)
SPM-1008	24	A	14	15	14	15	To add: ¨.... Contribute to GHG mitigation and substitution of fossil fuels has energy source.¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; already in last sentence		Taken into account. See notes on reformulation of paragraph above. The last phrase on "energy from

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										waste" should be more generally applied to non recycling technologies. (10)
SPM-231	24	B	14	15	14	16	"Landfill methane recovery ….under CDM." Suggest either to leave out or to move to line 21. What is the purpose of this sentence at this place? (Government of European Community / European Commission)	See A-1007		See A-1005 (10)
SPM-1009	24	A	14	16	0	0	this is the only place in the SPM where CDM/CERs are mentioned and it makes the reader wonder what the other 85 % is. If that cannot be added elsewhere, I propose to drop this sentence here. (Rob Swart, MNP)	See A-1007		See A-1005 (10)
SPM-1010	24	A	14	16	14	16	According to table 9 in the "Analysis" sheet of the September issue of "UNEP Risoe CDM/JI Pipeline" (see www.cd4cdm.org/Publications/CDMpipeline.xls) the 88 landfil gas projects constitutes 8% of the total 1151 projects and 10% of the expected annual CERs. This means that ">15%" statemen is wrong. (Jørgen Fenhann, Risø)	See A-1007		Noted. Latest Landfill Gas % CDM from UNFCCC website will be used – as this gives current updated information. We will use Oct 2006 information as "current". See TS-1313 (10)
SPM-1011	24	A	14	20	0	0	Both here, and in Chapter 10 (page 18), more could be made of the benefits of greater (efficient) waste incineration for heat and power supply, and ghg emissions avoidance. (Michael Jefferson, World Renewable Energy Network &	DISCUSS; can more mitigation be achieved by shifting to waste incineration and energy resuse?	10	Taken into account in final version of Chapter 10.

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							Congresses)			(9)
SPM-1012	24	A	14	20	14	20	replace "incineration" by "flaring" (Government of The Netherlands)	REJ; that is not what is meant		Reject. (10)
SPM-1013	24	A	14	21	14	21	To add: ¨..... Moreover, recycling, reuse, and waste minimization....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; too detailed		Accepted (only 1 word added) (10)
SPM-1014	24	A	14	21	14	23	Awkward sentence. Following "via", change to : "offsets from conservation of raw materials and energy." (Government of Environment Canada)	ACC, reword sentence		Taken into account. See A-1005 (10)
SPM-1015	24	A	14	22	14	22	To add: ¨.....conservation of raw materials and natural resources, and energy...¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; too detailed		Taken into account. Replace “raw” with “virgin”. (10)
SPM-1016	24	A	14	22	14	23	replace "via the conservation of raw materials, and energy from waste offsets fossil fuel consumption." by "via the conservation of raw materials and feedstock energy, and the reuse of the energy content of waste." (Government of The Netherlands)	See A-1014		Noted. See A-1005. (10)
SPM-232	24	B	14	23	14	23	Add, at the end of the sentence: "… fuel compsumption at low cost. [10.3 …]" (Government of Switzerland)	REJ, that is not what is meant; see A-1016		Reject. (10)
SPM-1017	25	A	14	25	14	28	This paragraph is correct and should be kept (,)	Thank you		
SPM-1018	25	A	14	25	14	27	Suggest including the remaining ES section on geo-engineering below the single sentence: use all of Chapter 11, page 4, lines 25-30. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	REJ; too long		
SPM-1019	25	A	14	25	14	27	I believe it would be justified to add "significant" or some such word before "unknown side-effects". By definition, if a geo-engineering intervention is large enough to affect the global	ACC		

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							climate, it must have at least the potential for globally relevant (ie significant/major/large-scale/pervasive, etc) side-effects. (Andy Reisinger, TSU IPCC Synthesis Report)			
SPM-1020	27	A	15	25	15	25	The description of the Japanese Cool Biz campaign is a strong case study which deals with mitigation and adaptation. The Cool Biz campaign has shown remarkable performance in its implementation expense versus CO2 reduction effectiveness ratio. Due to this effectiveness, it is suggested that a description of the Cool Biz campaign be given in the SPM as an example for policy makers as a low-cost, highly effective, co-beneficial adaptation, mitigation policy strategy. (Government of Japan)	REJ; no space for case studies in SPM		
SPM-1021	25	A	14	25	14	27	The text "by bringing material into the upper atmosphere" is vague - propose to delete it due to the unclear meaning as well as being very "speculative" (Government of Finland)	REJ; keep it		
SPM-1022	25	A	14	25	14	27	Want to define "ocean fertilization" for policy makers? U.S. Government (Government of U.S. Department of State)	ACC; glossary		
SPM-1023	25	A	14	25	14	27	Strike reference to "uncosted". Costs have been estimated in the literature. U.S. Government (Government of U.S. Department of State)	DISCUSS; if ch 11 has good cost assessment than add to SPM	11	Ch 11 need to find out from US, which literature they refer too. Else: "largely
SPM-233	25	B	14	25	14	25	Thank you for including this para. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	Thank you		
SPM-234	25	B	14	25	14	27	Delete this paragraph because it does not provide useful information ("…remain largely speculative"). (Government of Switzerland)	REJ; others want it and it is in the report		
SPM-1024	26	A	14	33	14	33	The statement in the headline statement is either incorrect or misleading, and should be deleted. A number of options exist to provide policy incentives equivalent to carbon pricing. The second	ACC; delete first sentence and replace by second		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							sentence, which has the benefit of being clear, factually correct and policy-neutral, should be substituted as the bold 'headline' sentence. U.S. Government (Government of U.S. Department of State)			
SPM-1025	25	A	14	27	14	27	replace "with potential for" by "with the risk of" because potential in the WGIII-IPCC context has a specific meaning and because risk is a better term here. (Aviel VERBRUGGEN, University of Antwerp)	ACC		
SPM-1026	0	A	14	28	0	0	suggest to add a new small paragraph such as " Education in all these fields is essential for the implementation of these mitigation options, especially in developing countries". (Faouzi Senhaji, I.A.V. Hassan II (GERERE))	REJ; not important enough		
SPM-1027	26 heading	A	14	29	14	30	To add:¨....can create adequate orientations , and incentives for business...¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	Heading to be dropped and to be integrated with paras 26-30 REJ; too vague		
SPM-1028	26 heading	A	14	29	14	19	sectoral (Rachel Warren, University of East Anglia)	See A-1027 ACC		
SPM-1029	0	A	14	29	17	40	Section D – general comment: The entire section D of the SPM is policy prescriptive. The focus must be on mitigation options, not political instruments to drive those options. At most, section D should provide a list of policy approaches that countries / industry have used to support mitigation efforts. Comment such as p14 line 26 "carbon pricing is an essential incentive for implementing mitigation options" are clearly subjective and policy prescriptive. The table assessing effectiveness of different international frameworks / approaches on climate change is also particularly subjective. Section D requires a substantial redraft. (Government of Australia)	See A-1027 REJ; policy instruments are vital and the literature allows to draw some conclusions on the effectiveness of policy instruments See also A-1024		
SPM-	26	A	14	29	14	31	Makes it seem as if no current policies do this. One could say "can	See A-1027, 1024		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
1030	heading						create additional incentives," but am not overall convinced how meaningful this statement is. Just seems like pointing out the obvious. U.S. Government (Government of U.S. Department of State)			
SPM-1031	26 heading	A	14	30	14	30	"…..incentives for business and consumers……". The term "business" may be replaced by "producers" since all producers (e.g. subsistence farmers, village cooperatives) are not businesses. (Government of India)	See A-1027 ACC		
SPM-1032	26 heading	A	14	31	14	31	Add: 'Additional incentives related to direct government funding and regulations are also important, particularly in relation to innovation where market signals are insufficient.' This very important point, which does appear in the section below, needs to be highlighted. Market signals, dependent on regulations and/or financial incentives such as permit trading, are not sufficient to motivate the development of innovation beyond the short-term, because of the inhibiting effects of uncertainties over the persistence of government policies. (Ian Cook, United Kingdom Atomic Energy Authority)	See A-1027 REJ; this point is made sufficiently in section D		
SPM-1033	26 heading	A	14	31	14	0	Change "deliver the identified potentials" to "realize potential emissions reductions." Rationale: The assessment should not imply that emissions reductions are an "all or nothing choice" with a decision to be made between achieving "the" potential or doing nothing. U.S. Government (Government of U.S. Department of State)	See A-1027 ACC; change "deliver" into "realise"		
SPM-1034	26	A	14	32	14	33	Rephrasing is needed. The sentense should be "there are large potential at low costs". All the studies in the report suggests that there are large potential at low costs but ch 4-10 suggest that there is a wide range of policy instruments available as we see in the pp 15 l1-5.. The term "carbon pricing" implies emission trading systems or carbon tax to most policy makers. However, either of them are not the essential policy instruments in many cases in ch 4-10. Care is needed that what "carbon pricing " means are different for ch 3& 11 (modeller's chapter) authors and policy makers.	See A-1024 TIA when reformulating, to avoid misunderstanding that only through pricing instruments a price can be created; for some sectors non-pricing instruments are much more important (regulation in particular)		

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							(Taishi Sugiyama, CRIEPI)			
SPM-1035	0	A	14	32	0	0	suggest to add a new small paragraph such as " Public awareness is essential to make consumers voluntarly implement these mitigation options." (Faouzi Senhaji, I.A.V. Hassan II (GERERE))	DISCUSS; not worth a separate para; but how can we bring it in the SPM?	13	Is and will be better covered in para 27
SPM-1036	26	A	14	33	16	19	The order of paragraphs in this section might be revised. In particular, putting carbon prices first, without referring to the cap-and-trade system which drives much experience to date with carbon prices, could be in a better place. I would suggest beginning with teh overview (para 27), then looking at recent history of Kyoto (para 29), followed by carbon price (para 26), technology (28) and international (30). (Harald Winkler, University of Cape Town)	REJ; the logic is: if there are no incentives, nothing will happen; policies create incentives		
SPM-1037	26	A	14	33	14	34	Mitigation occurred in many businesses before a carbon price was established, for example, 7 EU manufacturing facilities that emit HFC-23 took mitigations actions for various reasons other than a carbon price; the EU Chemical Industry reduced emissions during the period from 1980 without a carbon price. It is, therefore, incorrect to state that a Carbon price is "essential". (Nick Campbell, ARKEMA SA)	See A-1024		
SPM-1038	26	A	14	33	14	33	It is suggested to add one paragraph which addresses relevant barriers. Then the following policies may be helpful to overcome these barriers. (Government of China Meteorological Administration)	ACC; add sentence		
SPM-1039	26	A	14	33	0	0	delete the first sentence-" Carbon pricing……confidence.". Reason: the value of carbon pricing should be based on some specific background or mechanism. (Government of China Meteorological Administration)	See A-1024		
SPM-1040	26	A	14	33	14	40	This section suggests that a carbon price of U.S.$20 to $25 per tCO2-eq would be sufficient to drive large shifts towards low-carbon technologies. Over what timescale? Does the recent experience with the EU emissions trading scheme bear this out? U.S. Government (Government of U.S. Department of State)	DISCUSS; is literature solid on this? How much of this comes from SRCCS?	11	Reject. IEA ref.: solid literature,. To be checked by ch 11.

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SPM-1041	26	A	14	33	14	36	Term "essential" makes it policy prescriptive. Don't think that, in a scientific sense, one can really prove this statement. The following sentence just says that "all mitigation and stabilization studies imply a positive 'price of carbon'…" U.S. Government (Government of U.S. Department of State)	See A-1024		
SPM-1042	26	A	14	33	14	40	Delete the bolded sentence, which is not policy neutral and is on its face incorrect. Replace with "Models point to the effectiveness of carbon pricing in stimulating mitigation actions." Statement is based on modeling, so this is policy neutral and factual. Replace "imply" with "assume," as this is a basic assumption of models. Finally, add the following sentence after "attractive:" "Models do not generally take into account institutional or distributional issues associated with carbon pricing." The paragraph needs to reflect limitations of these models' findiings. U.S. Government (Government of U.S. Department of State)	See A-1024 Suggestion that everything is based on models is not true; business is saying this all the time		
SPM-235	26	B	14	33	14	40	This section suggests that a carbon rice of U.S.$20 to $25 per tCO2-eq would be sufficient to drive large shifts towards low-carbon technologies. Over what timescale? Does the recent experience with the EU emissions trading scheme bear this out? U.S. Government (Government of U.S. Department of State)	Identical A-1040		
SPM-1043	26	A	14	34	0	0	This is the only confidence statement in section D, replace it by qualitative statement (HM) (Rob Swart, MNP)	ACC		
SPM-1044	26	A	14	34	0	38	This paragraph needs to bridge between the models and the market/business environment. The modelling is clear, but the early ETS market experience where carbon prices have reached these levels does not provide evidence of large scale shifts. In UK industry feedback is that there is a need for long, loud and legal carbon prices. (Government of UK)	ACC; add "sustained over longer periods" after "tCO2eq"		
SPM-1045	26	A	14	34	0	36	Para 26, lines 34-36 are unclear and need to be rephrased. "All mitigation and stabilisation studies imply the necessity of a positive 'price of carbon'…." would make the message clearer.	ACC		

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							(Government of Sweden)			
SPM-1046	26	A	14	36	14	37	The more specific sentence on the 20-25$ seems much more interesting than the current well-known and very general 1st sentence. I sugegst to move it up in bold italics. (Rob Swart, MNP)	See A-1024		
SPM-1047	26	A	14	36	14	38	This statement is overly optimistic and should be brought in line with the more accurate information provided in the Technical Summary (Table TS 9): 85% of CO2-abatement projects with CCS-plants will cost more than 50 USD/t. Thus it is inaccurate to speak of "large-scale shifts" from a cost level of 20 to 25 Dollar onwards, and the number should be replaced with 50 Dollars in line 37. (,)	DISCUSS, see also A-1040	11	See above
SPM-1048	26	A	14	36	14	38	The paragraph states that carbon pricing is an essential incentive for implementing mitigation options and carbon prices of US$20 to 25 per t/CO2 eq can begin to drive large scale shifts to zero carbon power supply…Although such a shift may be economical at such a price range, the cited paragraph should emphasize the local & regional clean energy availability constraints (not all regions of a country has clean energy potential like hydro capacity, wind etc) and the need for public/private partnerships to invest in clean fossil fuels as stated in other sections of the report. (Eli Turk, Canadian Electricity Association (CEA))	See A-1040		
SPM-1049	26	A	14	36	14	36	Carbon pricing will also reduce the rebound effects e.g. of increased consumption created by the money saved by increased energy efficiency etc. (Government of Norwegian Pollution Control Authority)	REJ; too detailed for SPM		
SPM-1050	26	A	14	37	14	37	It appears somewhat of an overstatement to say that US$20-25 / tCO2 drive a large scale shift TO zero carbon power supply. Many studies find that prices several times higher than this are required to actually achieve a zero carbon power supply on a global scale. It would be more correct to talk about a shift "towards" rather than "to" zero carbon power supply at this price level. (Andy Reisinger, TSU IPCC Synthesis Report)	See A-1040		
SPM-	26	A	14	37	14	37	Broadening the price range to, say, 20-50 $ would make the	See A-1047, 1050		

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1051							sentence more robust and supported by a larger amount of literature, including IEA's Energy Technology Perspectives 2006. (Cédric PHILIBERT, International Energy Agency)			
SPM-1052	26	A	14	37	14	37	"…….carbon prices of US$ 20 to 25 per tCO2-eq can begin". Is US$ 20-25 /t CO2 a global average, is it possible to give separately for developing and industrialized countries. (Government of India)	REJ; there is no difference CHECK ch 11	11	
SPM-1053	26	A	14	37	14	38	There is no such thing as a "zero carbon power supply" in the context of CCS. CCS may reduce CO2 emissions by CO2-capture by 60% to 95%, but a certain percentage of CO2 will never be captured due to ever increasing costs for the next marginal unit of CO2. Furtheron the signficant up- and down-stream emissions for mining and transport of resources and products as well as the increased demand for fuel due to CCS (increase by approx. one third) do not allow for a term such as "zero carbon power supply". Thus "large-scale" and "zero carbon power supply" should always be replaced in the whole report with a more suitable term such as "CCS-power plant". (Government of Germany)	REJ; also renewables are meant to be covered; add "(near)" before "zero-emissions .."		
SPM-1054	26	A	14	38	14	39	A crucial determining factor for the success and suitability of CCS as a climate change mitigation technology will depend on sufficient and safe storage reservoirs in vicinity to the CO2 point sources. Thus the following sentence should be added in line 38 and replace the sentence in line 38-39. "The availability of suitable geological storage sites for captured CO2 varies across different regions and may act as a limiting factor in some parts of the world. However Carbon Capture and Storage technologies hold valuable potential and additional incentives related to enabling regulations are also important." (Government of Germany)	REJ; not only CCS is meant, also other non carbon options		
SPM-1055	26	A	14	39	14	40	Make this sentence ('However, additional……..insufficient') a separate paragraph, and add to it the sentences: 'Market signals, dependent on regulations and/or financial incentives such as permit trading, are not sufficient to motivate the development of	REJ; no space		

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							innovation beyond the short-term, because of the inhibiting effects of uncertainties over the persistence of government policies. In particular, longer term development of innovative power sources, no matter how beneficial they may be, can only be supported by governments. A good example is the international ITER project, which is beginning construction of a 500 MW fusion power device in France and is undertaken by seven governmental partners from around the world (Europe, Japan, China, Russia, India, South Korea and the United States).' (Ian Cook, United Kingdom Atomic Energy Authority)			
SPM-1056	26	A	14	39	14	40	This final sentence needs reinforced. 'Additional government policies and incentives are still needed to stimulate the accelerated investment in the deployment and diffusion of existing technologies in the near term, and development of new technologies for the longer term'. Getting definitions clear and consistent is important. For example R&D is dealt with in technology on page 15, so its important to say what 'innovation' means here, if its different. (Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)	ACC; replace"innovation" by "technology development"		
SPM-1057	26	A	14	39	14	40	I would suggest changing the work "important" to something even stronger such as "essential." Several studies by EIA and the Tellus Institute have shown that certain renewable energy and efficiency options with high up-front costs but potential net long-term savings to consumers may not be adopted under a carbon pricing system. They have also shown that complementary policies for efficiency and renewable are needed and can lower the overall cost of achieving emission reduction targets. (Steve Clemmer, Union of Concerned Scientists)	TIA when reformulating para, see A-1034		
SPM-1058	26	A	14	39	14	40	It would be worth mentioning that regulation can also be important if significant change is required urgently. There is growing evidence of urgency to mitigation and it may be that regulation will be the only mechanism to deliver some changes in behaviour fast enough. (James Curran, Scottish Environmental Protection Agency)	See A-1057		

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SPM-1059	26	A	14	40	14	40	"important" should be replaced by "needed, and are essential in relation to innovation …." (assuming that this is backed up by the chapters) (Rachel Warren, University of East Anglia)	See A-1057		
SPM-1060	27	A	15	1	15	2	To add:¨.....to create the incentives and regulatory measures required....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; not needed, regulations are included		
SPM-1061	27	A	15	1	15	45	This is a useful summary of policy instruments. Worth talking also about coherence between policies; the need for longer term stabiltiy of instrumetn in order to de-risk investment in low carbon innovation and commercialisation; and the need for a critical mass market to sustain investment stimulated by the public purse or public policy. (Government of UK)	ACC; add some words about stability of policy DISCUSS issue of critical mass; might be relavnt for para 26	13	Look at full list of criteria (13) Bring out issue of stability. Looking into critical mass issue Rewording done on ES level. Wait for ch 13 text proposals
SPM-1062	27	A	15	1	15	24	Feed in tariffs and technology quota systems (such as green electricity certificates and renewable energy portfolio standards) are surprisingly not included in this list. They are also absent from Ch 13 (with the exception of one misplaced footnote). As stated in SPM Paragraph 13, in particular feed in tariffs have been successful. (Government of Sweden)	TIA; quota and portfolio standards belong under tradable permits; ; add in brackets Feed-in tariffs belong under financial incentives ; add in brackets/		Reject (13)
SPM-1063	27	A	15	2	15	24	uncertainty statements are missing, different from the other statements I suggest to apply those to each individual bullet. (Rob Swart, MNP)	ACC		
SPM-1064	27	A	15	2	0	26	Para 27. The text in bold defines four main criteria: environmental effectiveness, economic efficiency, equity, and political feasibility. Consistency would improve if those criteria were used in the bullets of the para. Regulatory measures and standards are characterised as	ACC; reformulate		Not correct criteria, see ES13 (13)

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							providing environmental certainty, depending on their stringency, while it is stated that for tradable permits the volume of allowed emissions determines their environmental effectiveness. To the reader it may seem as though regulatory measures generally provide a greater degree of certainty than do systems based on tradable permits. The following would be more consistent: "Regulatory measures and standards generally provide environmental effectiveness with a high degree of certainty, depending on…." "Tradable permits are effective to establish a carbon price and generally provide environmental effectiveness with a high degree of certainty, depending on the volume of allowed emissions, while the distribution of allowances has implications…" (Government of Sweden)			
SPM-1065	27	A	15	2	15	24	Although the four criteria (Line 5) include equity, none of the bulleted point refers to "equity" criterion. Similarly, there is little mention of the "political feasibility" of the conclusions regarding different policy instruments covered in the bulleted points; with the exception of the first bulleted point wherein the political feasibility is implicit. (Government of India)	ACC; reformulate		
SPM-1066	27	A	15	2	15	24	While this section suggests that it provides "general conclusion[s] about the performance of [the] policies" listed subsequently, it does not (except in the case of voluntary agreements), and in most cases cannot. Moreover, the four criteria listed—environmental effectiveness, economic efficiency, equity, and political feasibility—are not applied consistently, if at all, to the policies listed. Regulatory measures and standards: This section says these "may be preferable". Compared to what? Taxes and charges: This section says these are "economically efficient." Compared to what? Taxes and charges: This section says their "environmental effectiveness depends on stringency." What about the impact of	See A-1064, 1065		

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							stringency on cost? Voluntary agreements: This section states "With few exceptions, the majority has achieved little reduction beyond the baseline." Why is this one policy singled out for this type of assessment compared to a baseline? How have the other policies performed compared to a baseline? Delete this sentence. Financial incentives: This section says the "economic costs are generally higher" for financial incentives. Compared to what? U.S. Government (Government of U.S. Department of State)			
SPM-1067	27	A	15	2	15	0	Change "the incentives required" to "incentives". The assessment should not imply that emissions reductions are an "all or nothing choice" with a decision to be made between achieving "the" potential or doing nothing. U.S. Government (Government of U.S. Department of State)	ACC		
SPM-1068	27	A	15	4	15	6	Does the literature indicate this? The authors of Chapter 13 seem to establish this taxonomy themselves, rather than referring to existing literature. U.S. Government (Government of U.S. Department of State)	REJ; establishing a taxonomy in an assessment is acceptable (and sometimes necessary)		
SPM-1069	27	A	15	5	15	24	the four main criteria seems not to cover some elements used by policy makers, e.g. trade-of/spin-offs to national economic indicators such as employment, the last bullet about financial incentives seems also not to be covered by the four criteria (Hans Eerens, MNP)	See A-1064,1065 REJ suggestion to mention employment, etc; this is already in first bullet of para 27		
SPM-1070	27	A	15	5	15	5	I'm surprised that "longevity" is not listed as a key criterion for successful policy - it is something stakeholders always refer to: the need for continuity so that business can make long-term investment and change. (James Curran, Scottish Environmental Protection Agency)	DISCUSS	13	See 1016 (13)
SPM-1071	27	A	15	5	15	7	The statement does not appear to be consistent with the underlying chapter, which establishes its own taxonomy (environmental efficiency, etc) rather than drawing from an existing source or in reference to wide use by policy makers. It is also inconsistent with	DISCUSS	13	New list of criteria (13) has been fixed;

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							the taxonomy in the underlying chapter (which refers to "institutional feasibility" a more encompassing and accurate term for the discussion in Chapter 13). U.S. Government (Government of U.S. Department of State)			consistency in whole chapter See ch 13 material.
SPM-236	27	B	15	5	15	5	Incosistency of wording: Criteria "equity" is called "distributional considerations" in chapter 13. (Government of European Community / European Commission)	ACC; make consistent	13	New list of criteria (13)
SPM-1072	27	A	15	6	15	6	Change the word "conclusion" to "conclusions" (Government of MALAWI)	ACC		
SPM-1073	27	A	15	6	15	6	It is suggested to substitute "conclusion" by "conclusions". (Government of Austria)	See A-1072		
SPM-1074	27	A	15	7	15	7	To add:¨.....broader development policies - including sustainable development policies - , makes it easier...¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; not needed		
SPM-1075	27	A	15	7	15	8	Add a second sentence. "A first and critical step in doing so is developing strong communications, particularly in ensuring that we speak in a language that resonates with the policy makers/practitioners in the relevant files of development." (John Drexhage, International Institute for Sustainable Development)	REJ; too detailed		Chapter 12's bullet (13)
SPM-1076	27	A	15	7	15	24	It should be mentioned that there are options for more flexible design of existing economic instruments such as taxes and permit trading, to make them economically and politically more attractive. (As discussed in Technical Summary p. 107, line 35-48; and in Chapter 13, p.53 and elsewhere.) (Government of Australia)	REJ; section of TS refered to is on international regime options		
SPM-1077	27	A	15	7	15	8	"Integrating climate policies …...overcome barriers". It is important to mention that "integrating climate policies in developmental policies" will entail additional costs, particularly in developing countries. (Government of India)	REJ; in many cases there are no additional costs		
SPM-1078	27	A	15	9	15	9	I guess what is meant here is "certainty on emissions levels". By no means such certainty could be named "environmental certainty", for	ACC		Revises according to

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							this creates a misleading sense that certainty on emission levels provides certainty on the associated environmental impacts. This is wrong, firstly because short term emission levels do not drive climate change, but long term accumlation of GHG in the atmosphere and, more importantly (even if the certainty on emissions extends over centuries) because the Earth's climate sensitivity remains unknown and the local environmental consequences of climate change remain uncertain. Replace "environmental certainty" with "certainty on emission levels". (Cédric PHILIBERT, International Energy Agency)			ES13 (13)
SPM-1079	27	A	15	10	15	10	Regulation may also be preferable if there is urgency for change. (James Curran, Scottish Environmental Protection Agency)	REJ; other instruments can also work under such circumstances		
SPM-1080	27	A	15	10	15	0	Giving an example of what kind of "barriers" are being referred to here is recommended. (Government of Japan)	ACC; add some wording		See chapter for examples (13)
SPM-1081	27	A	15	10	15	10	……when barriers prevent business…..". It is suggested to replace ther term "business" with "producers" (Government of India)	ACC		
SPM-1082	27	A	15	12	15	14	Suggest rewording these lines to: "Taxes and charges are economically efficient. They cannot guarantee a particular short term level of emissions, but what matters for environmental effectiveness is average emissions over many years, which taxes may control. Taxes will be politically difficult to implement unless thresholds are used to reduce the amount of revenue raised." Comment: The point that environmental effectiveness does not need tight short-term control of emissions is made at line 18, p16 of Chapter 13, and it's a crucial one to pick up in the SPM so that taxes are not dismissed unfairly. The point about using thresholds to reduce revenue is my own. It's in footnote 4 on p10 of Ch 13, but it needs to be picked up in the SPM, because without thresholds, environmentally effective emission taxes are politically impossible (hence my "will be" above in place of "may be"), so not worth considering. (Jack Pezzey, Australian National University)	REJ; too detailed for SPM		

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SPM-1083	27	A	15	12	14	0	The stringency depends on political feasibilty. One advantage is that taxes can be added piecemeal. A tax on carbon can also be esaily combined wiht a subsidy on a green alternative such as biofuel. (Thomas Sterner, Univ of Göteborg)	REJ; too comples; subsidies come under 'FINANCIAL INCENTIVES		
SPM-1084	27	A	15	12	15	12	I guess what was meant here was "cost-effective", not "economically efficient". Indeed, taxes and charges are economically efficient" because, on top of being cost-effective, they spontaneously adjust the amount of emission reductions to the actual costs, so they get closer to economic efficiency, which requires equalising marginal costs and marginal benefits, than arbitrary fixed short term measures such as provided by standards. So please change "economically efficient" with "cost-effective"... or "but" with "because they"... (Cédric PHILIBERT, International Energy Agency)	"REJ; "economic efficient" is correct in this case		
SPM-1085	27	A	15	12	15	13	"cannot guarantee a particular level of emissions" To stringent statement, when taxes are flexible and adjusted according to the developments it can follow a certain emission path quite nicely (Hans Eerens, MNP)	REJ; this is secondary issue		
SPM-1086	27	A	15	12	15	21	The SPM offers a number of policy judgements that do not necessarily concur with what is known to apply to the aviation sector. While it concludes, for instance, that "[T]axes and charges are economically efficient" and that "[T]heir economic effectiveness depends on stringency", the International Civil Aviation Organization (ICAO) regards taxes and charges as the least cost efficient amongst market-based options. The SPM also judges voluntary agreements between industry and governments to be ineffective. Again, in the context of aviation, it appears that at least some (Kyoto) governments hold different views on the matter, as evidenced by the fact that they have opted for voluntary agreements with the aviation sector to achieve fuel efficiency improvements and reduce climate change effects. (Andreas Hardeman, International Air Transport Association (IATA))	REJ; scientific literature is solid on this; what the sector wants is something else TIA the comments on VA, since that text needs to be reformulaqted to reconcile the chapter 7 and 13 difference		Reconcile text on Vas (13)

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SPM-1087	27	A	15	12	15	14	All too often taxes and charges are NOT economically efficient. Instead they often have consequences the opposite of those intended or anticipated. Their environmental effectiveness therefore does NOT simply depend upon stringency. (Michael Jefferson, World Renewable Energy Network & Congresses)	REJ; what is the scientific evidence for that?		
SPM-1088	27	A	15	12	15	14	Taxes and charges: it is written "but cannot guarantee a particular level of emissions ...": why is this mentioned only for taxes and charges? Can the other instruments "guarantee" particular levels in the real world (this is different from abstract theory)? After all the "price effect / the law of demand in economics" works the best with clear taxes and charges, resulting in the highest effectiveness. The last sentence of the § takes this up, but would better be as: "Their environmental effectiveness depends on the height of the tax/charge levels relative to income levels of the targeted groups". (Aviel VERBRUGGEN, University of Antwerp)			1061 (13)
SPM-1089	27	A	15	12	15	17	The text should mention uncertainty not just under taxes, but also under tradable permits. Under taxes the amount of allowable emissions is uncertain (this is mentioned) while under permits the cost of compliance is uncertain (this is not mentioned). Suggest adding at the end: "Short-term uncertainty in the permit price, and hence in the cost of emission reductions, is a real cost to emitters that may reduce political acceptability." Comment: this picks up the last line on Tradable permits in the TS, and since it's a key (but not the only) reason why industry lobbies against market instruments of climate policy, it's important to mention in the SPM. (Government of Australia)	ACC; add wording, but keep it s\hort		1061 (13)
SPM-1090	27	A	15	12	15	14	Suggest rewording these lines to: "Taxes and charges are economically efficient. They cannot guarantee a particular short term level of emissions, but what matters for environmental effectiveness is average emissions over many years, which taxes may control. Taxes will be politically difficult to implement unless thresholds are used to reduce the amount of revenue raised." Comment: The point that environmental effectiveness does not	REJ; not the main point on taxes		1061 (13)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							need tight short-term control of emissions is made at line 18, p16 of Chapter 13, and it's a crucial one to pick up in the SPM so that taxes are not dismissed unfairly. The point about using thresholds to reduce revenue is in footnote 4 on p10 of Ch 13, but it needs to be picked up in the SPM, because without thresholds, environmentally effective emission taxes are politically impossible (hence my "will be" above in place of "may be"), so not worth considering. (Government of Australia)			
SPM-1091	27	A	15	12	15	13	"Taxes and charges are economically efficient….to implement". It may be modified to " Taxes and charges are economically efficient where market institutions are in place and operate perfectly but cannot guarantee a particular level of emissions and may be politically difficult to implement. (Government of India)	ACC; add institutional aspects		1061 (13)
SPM-1092	27	A	15	15	15	17	Suggest adding at the end: "Short-term uncertainty in the permit price, and hence in the cost of emission reductions, is a real cost to emitters that may reduce political acceptability." Comment: this picks up the last line on Tradable permits in the TS, and since it's a key (but not the only) reason why industry lobbies against market instruments of climate policy, it's important to mention in the SPM. (Jack Pezzey, Australian National University)	See A-1089		1061 (13)
SPM-1093	27	A	15	15	18	0	Tradable permits cannot easily be adjusted piecemeal (you cannot tighten the cap a little bit every now and then as you can increase taxes). And permits do not combine in a simple and addivie manner with subsidies on the green alternaives. Once you have a permit scheme that's it: a subsidy will not change emissions but possibly affect the price. The formulation "the distribution of allowances has implications for economic efficiency and competitiveness" is not ideal. The effects on efficiency (first order) are probably small. It would be better to say that the distribution of allowances has implications for political feasibility and income distribution effects." (Thomas Sterner, Univ of Göteborg)	REJ; not consistent with literature		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-1094	27	A	15	15	15	18	I think that the assertion that tradeable permits are effective is not really well demonstrated yet for carbon markets. Also, certainly the allocation affects equity and political feasibility as well as efficiency and competetiveness. (Paul Baer, EcoEquity)	See A-1089		
SPM-1095	27	A	15	15	15	17	To help distinguish tradeable permits from taxes and charges, you might wish to rephrase the first sentence to read: "Tradeable permits are effective to establish a real-world carbon price, but the actual future price is difficult to determine a-priori." (Andy Reisinger, TSU IPCC Synthesis Report)	See A-1089		
SPM-1096	27	A	15	15	15	17	Change the sentence, ".. ..while the distribution of allowances has implications for economic efficiency and competitiveness." to ".. ..while the distribution of allowances has implications for economic efficiency and competitiveness. It also generates the problem of 'equity' in its allocation." <Rationale> It is self-evidnet in EU Allowance allocation process that 'equitable' allocation of the allowance is impossible. (Shigeo Murayama, The Federation of Electric Power Companies)	REJ; not adding significant information		
SPM-1097	27	A	15	15	15	15	"Tradable permits are effective to establish a carbon price". Where is this proven or shown except in the abstract literature? What we observe so far in the ETS is a Jo-Jo of volatile carbon prices in thin (future oriented speculative) markets. Is it not too early to conclude so firmly as in this SPM text? (Aviel VERBRUGGEN, University of Antwerp)	See A-1089		
SPM-1098	27	A	15	15	15	17	Trading in permits also requires a very high standard of emissions data and a high degree of trust/auditability - not always apparent under existing regimes. (James Curran, Scottish Environmental Protection Agency)	ACC; add “institutional; requirements”		
SPM-1099	27	A	15	15	15	0	Changing "to establish" to "in establishing" is suggested here. (Government of Japan)	Acc		
SPM-1100	27	A	15	15	15	15	comment: the use of the word "permit" in relation to carbon trading can be misunderstood as environmental permits need to be changed to make carbon trading legitimate. It is therefore recommended to	Acc; BUT USE “ALLOWANCES”		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							use the term "tradable emission rights" throughout the entire report (Government of The Netherlands)			
SPM-1101	27	A	15	16	15	16	does the quote "while the distribution of allowances" excludes the option of auctioning? Maybe include the reference to (full) auctioning too, that may be needed to attain effectiveness of the instrument. (Aviel VERBRUGGEN, University of Antwerp)	REJ; wording used does not exclude auctioning		
SPM-1102	27	A	15	17	0	0	Replace "competitiveness" with 'equity'. Competitiveness is only one aspect of distrubutional issues. (Harald Winkler, University of Cape Town)	REJ; “competitiveness” is clearer than “equity”		
SPM-1103	27	A	15	17	15	17	Add after the end of the sentence "If tradable permits are combined with an emission cap, high environmental certainty is provided about achieving the emission target". (Government of The Netherlands)	REJ; tradable permits are always combined with a cap		
SPM-1104	27	A	15	18	0	21	It is possible that information campaigns and awareness raising may take some time to reach a tipping point on emission reductions; even if not directly effective, they may constitute crucial enabling conditions for other measures such as policy interventions to be effective. (Stephen Sheppard, University of British Columbia)	TIA when reformulating; see also A-1086, 1104-1113		
SPM-1105	27	A	15	18	15	19	The claim that voluntary measures are "politically attractive" is true not in general but particularly for businesses and others who wish to avoid costs, but not for environmentalists and others who wish to reduce emissions. (Paul Baer, EcoEquity)	TIA when reformulating; see also A-1086, 1104-1113		
SPM-1106	27	A	15	16	15	16	The distribution of allowances has wealth (profitability) implications. It has implications for competitiveness in an extended meaning (long term competitiveness, which rests on profitability), though little implication for competitiveness in a narrow sense (at the margin). It has little implication for economic efficiency, if any, as the final location of emission reductions does not depend on the initial distribution of allowances. (Cédric PHILIBERT, International Energy Agency)	ACC; drop “economic efficiency”		
SPM-	27	A	15	18	15	21	Replace ' Voluntary agreements between industry and governments	TIA when reformulating; see		

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1107							and information campaigns are politically attractive, raise awareness among stakeholders, and have played a role in the evolution of many national policies. With a few exceptions, the majority has achieved little reduction beyond the baseline' for ' - Voluntary agreements between industry and governments are politically attractive, raise awareness among stakeholders, and have played a role in the evolution of many national policies. With a few exceptions, the majority has achieved litte reduction beyond the baseline. - Public participation, Information, Education and Communication to society is a key part of every policy, and have a major role in climate change mitigation.' (Government of Spain)	also A-1086, 1104-1113		
SPM-1108	27	A	15	18	15	21	VA is described as "the majority has achieved little reduction beyond the baseline". However, it is true that depending on the approach to implement VA, it can be effective and the text should be modified to reflect this. Alternatively, relevant text should be added to TS p.104,L11-13 "The successful programs include, among other elements: clear targets, a baseline scenario, third party involvement in design and review and formal provisions of monitoring.". (Government of Japan)	TIA when reformulating; see also A-1086, 1104-1113		
SPM-1109	27	A	15	18	15	18	Delete the word "voluntary" This term is missleading. The agreements are agreements but may be more or less voluntary. (Government of Norwegian Pollution Control Authority)	TIA when reformulating; see also A-1086, 1104-1113		
SPM-237	27	B	15	18	15	21	… reduction beyond the baseline…: Please add "unless they complement other policies" (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	TIA when reformulating; see also A-1086, 1104-1113		
SPM-1110	27	A	15	20	15	21	Regarding the sentense starting with "with a few exceptions,….." , are there any major VA's that have failed to reduce emissions beyond BAU? If there are any, specific examples should be given. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	TIA when reformulating; see also A-1086, 1104-1113		
SPM-	27	A	15	20	11	21	The sentence ' with a few options…' is correct and should be kept.	TIA when reformulating; see		

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1111							For a evaluation of the EU ACEA agreement on fuel economy please see Volpi and Patrick ten Brink 'Environmental Voluntary Agreements' (Giulio Volpi, WWF International)	also A-1086, 1104-1113		
SPM-1112	27	A	15	20	15	20	suggest to replace the disqualifying "With a few exeptions, the majority has achieved little reduction beyond the baseline." with the more positive phrasing "Agreements assisted in speeding up the application of BAU-measures." (Government of The Netherlands)	TIA when reformulating; see also A-1086, 1104-1113		
SPM-1113	27	A	15	21	0	0	Statement is correct, but it would even be more interesting to note under which conditions VAs are likely to be successful, using the many years of good and bad experiences as a guide. (Rob Swart, MNP)	TIA when reformulating; see also A-1086, 1104-1113		
SPM-1114	27	A	15	22	15	24	It is stated that cost are generally higher for technology specific subsidies. This is only true in a static sense since the technology specific support normally is implemented to create learning and scale economies which reduce cost and thereby also the required subsidy over time. Since the early learning markets can be very small, the total cost may also be small since the level of the subsidy can decrease as the market grows. The second sentence that states that technology specific subsidies of some kind is needed to overcome thresholds acknowledge this fact, and implicitly says that it would be more expensive, not less, to overcome these thresholds in other ways. Hence there is a contradiction between the two sentences in the paragraph. (Government of Sweden)	DISCUSS Induced technology change? Amend language to avoid confusion	13	Will revisit text to improve clarity. Carefully consider line 22.
SPM-1115	27	A	15	22	15	24	Add a new sentence at the end of line 24 that would read as follows: “However, such incentives might divert scarce resources from other worthwhile societal tasks and needs.” (RATIONALE: Subsidies are a special type of incentive.) U.S. Government (Government of U.S. Department of State)	REJ; that is already covered by “higher cost”		
SPM-1116	27	A	15	24	15	24	Economic costs are generally higher than what? (Paul Baer, EcoEquity)	ACC; add “than other instruments”		
SPM-	27	A	15	24	15	24	add the words "development and" before the word "penetration"	ACC		

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1117							(Aviel VERBRUGGEN, University of Antwerp)			
SPM-1118	27	A	15	25	25	0	I would add two things to this section; Understanding the feasibility is a key issue. It is hard for politicians to commit to sufficiently serious instruments. There is a chicken and egg problem; without the policies there will be no new technology but without proof of new technology the politicans do not dare set high taxes. It also seems that lobbies can be build around succesively higher taxes (see aper quoted by Hammar et al above). It is important to start wiht a tax because it will make it easier to raise taxes more in the future. The second issue worth emphasis is that separate policies for technology are needed preferibly combinations of subsidies and a realistic commitment to higher carbon prices in the future. (Thomas Sterner, Univ of Göteborg)	DISCUSS	13	Revisit text; possibly reword
SPM-1119	28	A	15	26	0	0	Move up Figure TS8 from the TS? (Rob Swart, MNP)	REJ; too complex for SPM		
SPM-1120	28	A	15	26	15	31	I recommend to add an upgraded Figure TS8 to the SPM to visualize the processes and actors involved in technology development and transfer (Rob Swart, MNP)	See A-1119		
SPM-1121	28	A	15	26	15	31	This section needs to decide whether it is just R&D or whether it will also deal with deployment and diffusion (currently not dealt with as such in the SPM, but referenced in the chapters extensively). This is a key difference when it comes to the design of policies and incentives to stimulate new, or re-direct current investment (as per paragraph 6 on page 7), for each element of the process. I have made this comment with reference to chapters 1, 2, 3, 4, 11, and 13. Policy remains central central to this, and must be well designed to be effective in influencing investment choices. (Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)	DISCUSS what can be said about transfer and diffusion (that is indeed missing in SPM) Diffusion not mentioned too much yet in SPM. Will be broadened. Consider making a difference between R&D and diffusion (as in ch 4) See also files from ch2 for a contribution. Terry mentioned on para 28 that ITC studies conclude that there is a synergy between the instruments mentioned.	13, 11, 2	Good point. Has been integrated in chapter. Amend bullet accordingly but it is also mentioned in other parts of SPM
SPM-	28	A	15	26	15	31	It is not clear what the phrase "Better understanding" refers to:	ACC; modify sentence by		

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1122							better since the TAR, or the SRTT? Who has the better understanding - scientists, industry, policy-makers? Please clarify. (Andy Reisinger, TSU IPCC Synthesis Report)	leaving out "better understanding"		
SPM-1123	28	A	15	26	15	31	It would be helpful to extend this to cover not just renewables but also all energy technologies and infrastructure, and demonstration and pre-commercial trials. (Government of UK)	ACC; add other elements in last sentence		
SPM-1124	28	A	15	26	15	28	Insert "in combination with appropriate carbon pricing". Rationale: Carbon pricing is needed in order to make these intruments work without rebound effect. (Government of Norwegian Pollution Control Authority)	DISCUSS; not clear if this is in literature	2,11,13	
SPM-1125	28	A	15	26	15	26	In place of: "Better understanding of the mechanisms…" the text should be specific what amounts to (or what the examples are of) 'better understanding'. (Government of India)	See A-1122		
SPM-1126	28	A	15	26	15	31	No mention is made here, or in the supporting chapter, of public-private research partnerships. Many U.S. Department of Energy R&D programs are cost-shared, for example. Also, there is no mention of the importance of protecting intellectual property. U.S. Government (Government of U.S. Department of State)	TIA; PPPs are covered through the "government support" wording; issue that play a role in Techtransfer such as intellectual property rights cannot all be mentioned (there are quite a number), but general conclusions about techtrasfer can be listed (draw on IPCC SRTT)		
SPM-1127	28	A	15	26	15	28	I think this statement is oversimplified and borders on policy prescriptive. Even if the government puts in all of those things, technology transfer is a complex, poorly understood issue. Private sector technology innovation depends a lot on funding for basic science, in national labs, universities, etc. and that state of science in a country, which is not captured here. U.S. Government (Government of U.S. Department of State)	See 1121,1126 Details on innovation to be left to chapters /TS		
SPM-1128	27	A	15	15	15	15	Tradable permits: the distribution of allowances has implications for economic efficiency and competitiveness. And also welfare.	REJ; not needed		

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							(Juan F Llanes-Regueiro, Havana University)			
SPM-1129	28	A	15	29	15	30	The observation (this is true for both energy and non-energy R&D) that a given firm captures only a small fraction of the societal value of R&D is not justification for government to do R&D rather than the private sector. Suggest changing to "Societal benefits of R&D generally far exceed the value captured by the private sector, implying that government promotion of R&D is a public good." (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	TIA in reformulating		
SPM-1130	28	A	15	29	15	30	Care needs to be taken to avoid giving the impression that government RD&D expenditure is 'good' and private RD&D expenditure 'bad'. The effectiveness of government RD&D spending has often and long been criticised (the weakness of 'spin-off' arguments, for instance). What is obvious is that both public and private sector RD&D investment should ideally rise to help us cope with the technological needs of the future. (Michael Jefferson, World Renewable Energy Network & Congresses)	REJ; that is not what is said in para		
SPM-1131	28	A	15	29	15	29	Remove the full stop before the word "Public" (Government of MALAWI)	ACC		
SPM-238	28	B	15	29	15	31	Wouldn't it be useful to re-assess the full cost of government support for nuclear energy (including hidden costs such as agreeing to limited liability for accidents), and re-assess its real CO2-displacement potential? What if the money stranded in the nuclear sector was used to promote real energy efficiency ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	REJ; policy prescriptive		
SPM-1132	28	A	15	30	0	0	"However funding for energy research has been flat or declining for over two decades. The level of R&D in energy technologies is low compared with other industries, but massive changes will be required to meet the long-term goals of CO2 mitigation, such as the production of 500 EJ/year of non-CO2-emitting primary energy by 2100. Long-term, large scale, high-risk, high benefit energy research is not rewarded in the private market, and must be	REJ; SPM is not the place to single out nuclear fusion		

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							supported by governments. The international ITER project, in which China, the European Union, India, Japan, Russia, South Korea and the United States are joining to demonstrate the scientific and technological feasibility of fusion energy, is a good example of such investment." (Robert Goldston, Princeton Plasma Physics Laboratory)			
SPM-1133	28	A	15	30	15	31	The trend of government funded energy R&D is similar to the tend in government funding of R&D in general; what is different is the lack of private sector energy R&D growth compared with private sector non-energy R&D growth (according to OECD R&D statistics). Suggest that "however" be removed, and possibly remove the entire last sentence since it appears to be a selective observation. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	REJ; if there is a need for increased R&D and the trend is negative, then that is relevant for policy makers		
SPM-1134	28	A	15	30	15	31	The authors should specify if this is the absolute level of funding or relative to GDP etc. (Government of Australia)	ACC; it is absolute		
SPM-1135	28	A	15	30	15	30	Clarify by rephrasing: '…future international agreements'. (Government of Australia)	ACC		
SPM-1136	28	A	15	30	15	0	Add to the following sentence:"However funding for energy research has been flat or declining for over two decades. The level of R&D in energy technologies is low compared with other industries, but massive changes will be required to meet the long-term goals of CO2 mitigation. Long-term, large scale, high-risk, high benefit energy research is not rewarded in the private market, and must be supported by governments. The international ITER project, in which China, the European Union, India, Japan, Russia, South Korea and the United States are joining to demonstrate the scientific and technological feasibility of fusion energy, is a good example of such investment." U.S. Government (Government of U.S. Department of State)	See A-1132		
SPM-1137	30	A	15	38	15	38	Please replace "cost-effective" with "economically efficient" and, in the parethesis, "economically efficient" with "cost effective". Cost-	ACC		

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							effectiveness is one of the conditions of economic efficiency. (Cédric PHILIBERT, International Energy Agency)			
SPM-1138	29	A	15	32	15	36	Paragraph 29 should be deleted. The Kyoto Protocol is simply a political instrument and should not be singled out by the authors for exceptional treatment, especially in the context of an SPM. (Government of Australia)	REJ; the rest of the world deserves an analysis of its impacts; KP is an instrument like many others; no reason to delte this because of political differences on its value		
SPM-1139	30	A	15	37	16	5	The placing of broader participation under an assessment criterion of cost-effectiveness makes little sense. There is an attempt to motivate this on page 16, lines 3-5. There is a logical link between a broad participation and envrionemtnal effectiveness, yes, but what is the link to cost? Cost for whom? The marginal value of a dollar or a Rupee spent on mitigation is greater for a poor person than for a rich person; therefore if richer countries pay for mitigation, it is less costly. I suggest a) deleting "moving towards broader participation" on page 15, line 39; and b) deleting "will be more costly" on page 16, line 5. (Harald Winkler, University of Cape Town)	REJ; broader participation in a global arrangement does lower costs, because of the benefits of trading to capture the lowest cost options		
SPM-1140	29	A	15	33	15	36	I would add one other major achievement of the Kyoto Protocol and the COPs associated with it: The COPs and their Kyoto-debate are one of the PR-events (or THE major one) to sensitise the world (and especially the public in the host country) for the climate change issue, for its challenges and the possible mitigation solutions. How else does climate change obtain so much visibility in the media when the media report nearly daily from the COP and when the ministers gather? We know that public understanding for the risks and challenges of climate change is a necessary condition so that governments (in Annex I countries) can decide on regulation to mitigate climate change. See my comments on this for chapters 11 or 13. (Manfred Treber, Germanwatch)	REJ; not a major issue		
SPM-1141	29	A	15	33	0	36	Para 29. The text in bold is a value statement and should be modified. One notable achievement of the Kyoto Protocol that is	REJ; these are facts; national commitments are mentioned		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							not mentioned is a large number of Annex I countries' commitment to quantified national emission targets. (Government of Sweden)			
SPM-1142	29	A	15	33	15	36	This section states the impact of Kyoto's first commitment period likely will have little impact on global emissions. What about its impact on Kyoto-country emissions (i.e., for those countries that have undertaken targets)? It further states the economic impacts are "likely to be small". This appears to be a policy judgment. How is small defined? And small compared to what? U.S. Government (Government of U.S. Department of State)	DISCUSS Can these aspects be concluded from available literature?	13	Include, as it is supported by the literature (13)
SPM-1143	29	A	15	33	15	35	The sentences in this paragraph should be reversed, as the information from the second is more significant than that contained in the first. Substitute "the most notable achievements" with more neutral terminology, such as "noteworthy effects" are…". Add "array of policies in developed countries." U.S. Government (Government of U.S. Department of State)	REJ; why should that be the case?		
SPM-1144	29	A	15	33	15	36	Highlights achievements of Kyoto Protocol in bold, but leaves the fact that its effect on GHG emissions is "likely to be small" in plain text. Results vs. process. Policy prescriptive. Would reverse the statement order and corresponding formatting. U.S. Government (Government of U.S. Department of State)	See A-1143		
SPM-1145	29	A	15	33	15	36	Delete first sentence, or expand it to note that UNFCCC has also stimulated policies outside of the Kyoto Protocol framework." Rationale: Significant policy development is occurring outside of as well as within the Kyoto Protocol, including multiple international technology cooperation agreements in areas such as carbon dioxide capture and sequestration, energy efficiency, and methane capture and use. U.S. Government (Government of U.S. Department of State)	DISCUSS; can literature support something on the achievements outside KP?	13	TIA Word 'convention' is added in one sentence. CH 13
SPM-1146	29	A	15	35	0	36	Can we quantify the 'limited impact on global emissions' and 'small econimic impacts'. Chapter 11.4 might provide numbers on the latter although in that chapter no attempt is made to come to a consolidated global estimate of economic impacts (Ronald Hutjes, Alterra)	See A-1142		

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SPM-1147	29	A	15	35	0	36	The term "limited" should be clarified, since the Kyoto targets were intended to be limited; can the expected effects be related to the targets? (Stephen Sheppard, University of British Columbia)	See A-1142		
SPM-1148	29	A	15	35	15	35	As there is virutually no chance that Kyoto's impact on global emissions is unlimited, replace "is likely to be limited" with "is limited". (Cédric PHILIBERT, International Energy Agency)	REJ; it can also turn out to be zero		
SPM-1149	29	A	15	35	15	36	How can this statement be inferred? The first commitment period has not even begun. It is not clear how it is decided whether "economic impacts are likely to be small" or not. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	See A-1142; statement is based on literature		
SPM-239	29	B	15	35	15	35	...institutional mechanisms. Please add: ", that may provide the foundation of future GHG reduction efforts" (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC, modify sentence		
SPM-240	29	B	15	35	15	36	To what extent does the effect of the first commitment period deviate from the original expectations (5,2 % of Annex-I emissions). To what extent is the limited effect caused by the non-ratifying countries and to what extent by other factors? (Government of European Community / European Commission)	See A-1142		
SPM-241	29	B	15	35	15	35	Rephrase. "The impact of the Kyoto Protocol on global emissions in its first commitment period is likely to be limited and…" Setting the institutions and the process in motion may have a bigger effect on emissions after 2012. (Government of European Community / European Commission)	See B-239		
SPM-1150	29	A	15	36	0	0	Interesting to note that meeting of the targets of the KP (target years just after the AR4 publication year) is going to be dependent on the usage of the KP mechanisms on top of domestic measures (evidence from the EU and probably elsewhere)? (Rob Swart, MNP)	ACC; add sentences on CDM/JI (sentence in para 24 to be moved here) CDM will be mentioned in para 28		Reject not needed in SPM (13) CDM discussion, following on the Thursday

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
										plenary, CDM should be included here or in para 28. CDM is an instrument to enhance technological change and make development more sustainable. However, little evaluation of impacts yet.
SPM-1151	29	A	15	36	0	0	Delete "economic impacts are likely to be small". The criteria that decide what is small are not clear. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	See A-1142		
SPM-1152	29	A	15	36	15	36	Add "on global scale" after "and economic impacts" - the impacts on specific areas of the economy can be significant (Government of Finland)	DISCUSS; are numbers for countries available as in TAR? If so, then give range in SPM (numbers are probably lower than in TAR because at that time literature did not take into account the drop out of US and Australia)	13	Will be fixed. CH 13 proposal
SPM-1153	30	A	15	37	16	19	I'm surprised that "protecting international competitiveness" isn't explicitly mentioned in this paragraph. This is amongst the most frequently cited reasons for non-engagement or less stringent national policies on the side of countries dealing with emission targets under Kyoto. It would be helpful to have its role in future regime design assessed as far as the literature allows. This should	REJ; that falls under “fair/ equitable” ; could be mentioned in that context		

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							also be checked with the underlying chapter and TS. (Andy Reisinger, TSU IPCC Synthesis Report)			
SPM-1154	30	A	15	38	15	39	It is suggested to delete "...(flexible, economically efficient, moving toward broader participation, providing adequate investment certainty)". The reason is these four criteria have its own factors, and here only the factors of cost-effective are listed. In order to keep consistence with other items, such as fair/equitable and institutionally feasible, that part in the bracket should be delete. (Government of China Meteorological Administration)	REJ; attempt is made to categorise the manu different issues under four criteria; then a link should be made between the issues and the criteria		See new executive summary of the chapter (13) SPM is consistent with chapter Chapter 13 will suggest new wording here.
SPM-1155	30	A	15	38	16	18	The authors need to review paragraph 30 and its following dot points to ensure that they are not over stepping the mandate of the IPCC, by engaging in political commentary. In particular, (at page 16 lines 3-4) the authors imply that common but differentiated responsibilities should be entrenched in any future approaches. (Government of Australia)	TIA; all statements should be strictly based on literature and phrased in a policy neutral fashion; this may go gainst country preferences, but so be it		See new wording of the bullet in the executive summary (13)
SPM-1156	30	A	15	38	15	39	Delete parenthetical phrase, whose placement suggests that it is a definition of "cost-effective." Cost-effective has a specific meaning that is not equivalent to the range of attributes in parentheses. U.S. Government (Government of U.S. Department of State)	See A-1137		
SPM-1157	30	A	15	42	0	44	There is no mention of the possibility of setting supply reduction goals for fossil fuels as a proactive measure to reduce harm, stimulate development of alternative/renewable energy sources, and avoid wasted investment in exploring/developing new fossil fuel resources. (Stephen Sheppard, University of British Columbia)	REJ; not covered in the chapter		
SPM-1158	30	A	15	42	15	42	Suggest removing the term "important for investment decisions", since the link is not clear. Regulatory certainty is important, however, the relation between long term goals and regulation is not clear particularly if it is not clear how the goal will be met or enforced. Such goals can also reduce regulatory certainty and form	TIA; modify by adding sentence addressing investment conditions		Reject (13) There seems to be a difference in opinion in

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							a barrier to investment. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)			business about the usefulness of stable long term goals. The current text is Europe centered. American companies seem not to want goals at all. But that seems no reason to change notion on long-term certainty.
SPM-1159	30	A	15	42	15	44	Suggest that "technology deployment targets or hedging strategies" are goals of a different nature from the other three in the group (all of which can be directly related to the atmosphere/climate) and thus should be separated out. (Government of Environment Canada)	REJ; these have also to do with long-term		
SPM-1160	30	A	15	42	15	44	To the list of long-term goals, add the following: “carbon intensity or carbon-equivalent intensity”. U.S. Government (Government of U.S. Department of State)	ACC; add “carbon-intensity obejectives”		Reject (13) too much detail but is included in chapter
SPM-1161	30	A	15	42	15	43	All sound like some form of a target (except maybe the last one). What about other long-term actions? U.S. Government (Government of U.S. Department of State)	UNCLEAR		
SPM-1162	30	A	15	42	15	44	Is it possible to be more specific here in terms of characterizing the pros and cons of different ways of target setting. E.g. what makes sense in which context? What has proven to drive investment decisions into one or the other direction? Does it make sense at all to set temperature goals, given the fact that global mean	DISCUSS	13	Too detailed for SPM. Issue is in main chapter text. (13)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							temperature does not tell you much about local or regional conditions to be expected? Is it possible to take a stronger stance in terms of what would be considered a perferential strategy on an international or intergovernmental level? (Government of Germany)			
SPM-1163	30	A	15	43	15	43	Add 'Medium and long-term goals…' as per comments to other chapters, many businesses are looking for visibility on scale and impact of policies in a 15-20 year timeframe, with respect to investment decisions being made today. (Kirsty Hamilton, Chatham House; UK Business Council for Sustainable Energy)	ACC		Rejected (13)
SPM-1164	30	A	15	43	0	44	Long term goals, are not important for investment decisions unless there is a framework for relating them to short term investment decisions, such as the Princeton Wedges. Without such a framework the goal is always over the investment and career horizon. (Chris Mottershead, BP)	See A-1163		Rejected (13)
SPM-1165	30	A	15	44	15	44	I suggest adding a bullet point immediately after the point on "long-term goals", reading: "A balance must be found between sufficient level of certainty given to market players and sufficient flexibility to make these long term goals economically effective in a context of uncertainties, ie adjustable to get closer from an optimal situation where marginal abatement costs are adjusted to equal the postulated marginal policy benefits." (Cédric PHILIBERT, International Energy Agency)	TIA; but keep very short		
SPM-1166	30	A	15	44	15	44	Add footnote to explain what a hedging strategy refers to i.e. more and earlier mitigation to lower the risk of e.g. abrupt climate change (Rachel Warren, University of East Anglia)	ACC		
SPM-1167	30	A	15	44	15	44	It is suggested to include a footnote related to "hedging strategies" in order to explain against what risks the strategy should hedge. (Government of Austria)	See A-1166		
SPM-1168	30	A	15	45	16	2	comment: the points in this para are difficultly put; please rephrase; do you meant to say "Methods for planning and phasing actions in different countries are available; these can help to determine	ACC; replace “with” by “leading to”		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							(binding and non-binding) commitments for different groups, depending on mitigative capacity, share in the GHG-emissions, and the ability to pay." (Government of The Netherlands)			
SPM-242	30	B	15	0	0	0	Paragraphs 27 and 30 are poorly written and organized, and the points being made are not clear. The paragraphs include slightly different terms to identify (presumably) the same things (e.g., "environmental effectiveness, economic efficiency, equity and political feasibility" in 27 and "environmentally effective, cost-effective . . ., fair/equitable, and institutionally feasible" in 30—and even slightly different wording appears in the headings in Table SPM.3). Apart from being confusing, the paragraphs are tautological, to wit, policy makers use these criteria to assess policies, therefore policies that exhibit these characteristics receive stronger support from policy makers. These two sections and Table SPM.3 need to be reworked. (See also comments below on Table SPM.3) U.S. Government (Government of U.S. Department of State)	ACC; improve consistency of wording REJ point on tautological; if these are driteria that policy makers use then they are the right ones to use in an assessment		
SPM-1169	30	A	15	0	0	0	Paragraphs 27 and 30 are poorly written and organized, and the points being made are not clear. They use slightly different terms to identify (presumably) the same things (e.g., "environmental effectiveness, economic efficiency, equity and political feasibility" in 27 and "environmentally effective, cost-effective . . ., fair/equitable, and institutionally feasible" in 30—and even slightly different wording appears in the headings in Table SPM.3). Apart from being confusing, the paragraphs are tautological, to wit, policy makers use these criteria to assess policies, therefore policies that exhibit these characteristics receive stronger support from policy makers. These two sections and Table SPM.3 need to be reworked. U.S. Government (Government of U.S. Department of State)	Identical to B-242		
SPM-	30	A	16	1	16	1	replace "mitigative capacity" with "current emission level".	REJ; That is not what is meant;		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
1170							(Yuan Guo, Energy Research Institute, National Development and Reform Commission)	the point raised is already covered by "contribution to climate change		
SPM-1171	30	A	16	3	16	5	replace "do not include all countries, or at a minimum the major emitters, will be more costly and less environmentally effective" with "encourage all countries paticipation, will be more costly and environmently effective". (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	"REJ; that changes the meaning		Tia, see text in executive summary (13)
SPM-1172	30	A	16	3	16	3	I suggest the insertion here of a new bullet point: "Options also exist to make commitments from industrialised countries more flexible, for example indexed targets or price caps. The rationale would be to facilitate the adoption of commitments by more countries. Commitments in a flexible architecture could also be made more ambitious than in a rigid architecture. With respect to long term objectives, certainty on emission levels is less important than policy ambition." (Cédric PHILIBERT, International Energy Agency)	DISCUSS	13	Rejected (13)
SPM-1173	30	A	16	3	16	3	The concept "global common" is a theoretical one, so far I know, there is no mention to the concept in UNFCCC. For PM a summary that needs to build and support an argument based on a theoretical economic concept is less serious. Take it from the practical side, : CC is becoming a top priority for scientific community and governments, (the Scientific Committee on Problems of the Environment of the International Council of Science answered to the special Geo 2000 survey with several environmental issues that may require special attention on the XXI Century: Climate Change 51%) GEO 2003. It would be most effective if all countries should collaborate in emissions reduction policies and take advantages from that. Technology and financial transfers, SD policies, co- benefits and an architecture based on a comprehensive approach could provide the incentives. (Juan F Llanes-Regueiro, Havana University)	REJ; "global commons"is a well known term		Delete the word "commons" (13)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-1174	30	A	16	3	16	5	"Since climate change is a global common problem, approaches that, respecting common but differentiated responsibilities, do not include all countries, or at a minimum the major emitters, will be more costly and less environmentally effective." this statement is questionable for 2 key reasons: (1)China believes that the words "major emitters" are misleading. Unless it is clearly defined that "major emitters" means those countries with high per capita emissions, this phrase should not be used without any definition. China and other developing countries with low per capita emission can never be called "major emitters". (2) This statement is concerned about political issue, acording to IPCC's principle, all the contents related to political issues (eg. mitigation responsibility) should not appear in the SPM, TS and all the chapters of WGIII AR4. Political issues should be dealt with by UNFCCC negotiation, but not IPCC report. It is beyond the scope of IPCC responsibilities.For the above two reasons, we suggest to delete this sentence. (Government of China Meteorological Administration)	REJ; major emitters are major emitters; for the increase in concentrations of GHGs in the atmosphere it is the total that counts; in the context of the discussion about international agreements the specific consitions of countries matters and therefore the wording on "common but differentiated responsibilities" is added So this statement is not taking any position on a political issue; it is based on facts DISCUSS if a less controversial formulation can be found	13	TIA (13)
SPM-1175	30	A	16	3	0	5	Para 30, third bullet. This is only given a predetermined starting date. Delaying action in order to find the regime that all countries can agree upon could significantly increase costs of mitigation and adaptation. (Government of Sweden)	UNCLEAR		Discuss (13)
SPM-1176	30	A	16	3	16	0	The use of "respecting" in this sentence is not clear and it is not understood if "accounting for" or "respect" is the intended meaning. Re-writing this sentence is suggested. (Government of Japan)	ACC: "accounting for"		Reject, see executive summary text on "higher share of global emissions" (13)
SPM-1177	30	A	16	3	16	4	Rewriting the subordinate clause "respecting common but differentiated responsibilities" into a separate sentence might make the message easier to understand. (Government of Norwegian Pollution Control Authority)	See A-1176		

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SPM-1178	30	A	16	3	16	3	The word "commons" may be replaced by "common". (Government of Pakistan)	REJ; would change meaning		
SPM-1179	30	A	16	3	16	5	Since climate change.....effective". This is based on the well known results derived from general concepts in economics and trade theories and not necessarily the finding of the AR4. The specific contribution of AR4 is not clear unless this is referenced to the specific text in the report. (Government of India)	REJ; this comes from assessment of literature in Ch 13		
SPM-1180	30	A	16	3	16	5	This statement seems subjective and presumptuous. It would seem to imply that there is already an effective and less costly approach against which other approaches can be compared (perhaps Kyoto?). This has certainly not been demonstrated. It also implies that alternative approaches on a more limited scale have no chance for success. It can certainly be argued that a smaller, targeted group of emitters might work together to demonstrate a more sustainable and climate-friendly trajectory, and that working in a bottom-up fashion through such targeted groups may have more success than a top-down process involving all major emitters. I would delete the lines or reword the sentence to include the possibility of success for a smaller, targeted group of emitters. U.S. Government (Government of U.S. Department of State)	DISCUSS	13	See text in executive summary on "higher share of global emissions" (13)
SPM-243	30	B	16	3	16	4	… respecting …responsibilities, do not include all countries: Please rewrite this sentence, as it suggests (wrongly) that the principle of CBDR prevents the inclusion of all countries. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; reformulate		
SPM-1181	30	A	16	4	0	0	Would it not be useful to point out here, for example, that China, the USA and India alone have accounted for over 70% of the World's increase in CO2 emissions from fossil fuel use since 1990? Do even SPM readers know that World CO2 emissions from fossil fuel use have risen over 30% since 1990? (Michael Jefferson, World Renewable Energy Network & Congresses)	REJ; too detailed; paras 1 and 2 deal with this issue		
SPM-	30	A	16	4	16	5	delete "do not", change: "more" to "less" and "less" to "more".	ACC		

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1182							(Government of The Netherlands)			
SPM-1183	30	A	16	5	16	5	add: "Speeding up the phase-out of production and consumption of ozone depleting substances that are also potent greenhouse gases, or preventing their emission and destroying them at the end of life, would also contribute significantly to efficiently combating climate change." (Government of The Netherlands)	REJ; not for this paragraph		
SPM-1184	30	A	16	5	16	5	add: "Overall cost efficiency and environmental effectiveness would also benefit from including sectors currently not included in the Kyoto Protocol, such as international air traffic and shipping." (Government of The Netherlands)	REJ; already covered in line 3-4		
SPM-244	30	B	16	5	16	5	… costly … : for whom ? (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; change to "will have lower overall costs"		
SPM-1185	30	A	16	6	16	7	replace " make agreements more efficient" with "reduce mitigation costs in overall". (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	ACC; change to "could reduce overall mitigation costs"		See executive summary, to include higher costs or more environmentally effective. (13)
SPM-1186	30	A	16	6	16	7	Affter"Expanding……efficient." add "While some obstackles continue to exist. For example, sectoral baselines are normally uncertain and leakages derived from sectoral approaches are remained." (Government of China Meteorological Administration)	UNCLEAR		Reject (13)
SPM-1187	30	A	16	6	16	6	Market mechanisms have already been said to improve the cost-effectiveness and efficiency of agreements. Change to "could further contribute to making agreements…." (Government of Environment Canada)	ACC		
SPM-1188	30	A	16	6	16	8	"Market mechanisms could" / "Transaction costs could" – what about might in both cases? Policy prescriptive. U.S. Government (Government of U.S. Department of State)	REJ; "could" is not policy prescriptive		Drop the sentence on transaction costs (13)

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-1189	30	A	16	7	16	8	replace "moving from project to sector/national mechanisms" with "better institution arragement and improvement of project process". (Yuan Guo, Energy Research Institute, National Development and Reform Commission)	REJ; that is not what is meant		
SPM-1190	30	A	16	7	16	7	The environmental argument for expanding the mechanisms is the subject of debate in expert literature, and this paragraph does not reflect this. U.S. Government (Government of U.S. Department of State)	DISCUSS	13	TIA in new formulation on reducing global costs or enhancing environemtnal effecitveness (13)
SPM-245	30	B	16	7	16	8	to sector/national mechanismms: Not clear what it means. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC; clarify		
SPM-1191	30	A	16	12	16	15	comment: seems to be inconsistent with Ch4/P109/L28-32, Ch5/P74/L22-25, Ch11/P79/L18-22, Ch13, P4/L29-30, P23/11-17, P32/L9-11, P62/40-48, Tables SPM-3 and 13.1 (Government of The Netherlands)	DISCUSS Needs to be checked thoroughly	13	Reject (13) Chapter 13 still has to look at the other chapters mentioned here and provide an answer.
SPM-1192	30	A	16	14	16	14	To add:¨.... Performance standards, technology transfer in preferential conditions, and adequate....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; that is not what chapter says		
SPM-1193	30	A	16	17	16	17	insert: "implementation of" before "agreements" (Government of The Netherlands)	ACC		
SPM-1194	30	A	16	18	0	19	Is this observed or expected performance of approaches (in Table SPM.3)? (Stephen Sheppard, University of British Columbia)	See A-1195		
SPM-1195	30	A	16	18	16	19	comment: this is no conclusion and should not be a bullet (Government of The Netherlands)	ACC; make it a bracketed statement “(see table 3)” (if the		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
								table remains)		
SPM-1196	30	A	16	18	16	19	Clarify focus of SPM. 3: 'in performance of specific approaches under an international agreement…' (Government of Australia)	See A-1195		
SPM-1197	30 F 3	A	16	18	16	19	Assessment commentary in SPM.3 is focussed upon international agreement considerations and is not always fully applicable when viewed only in a national context. (Government of Australia)	REJ; fig is meant to be on international agreements as the caption says		
SPM-246	30	B	16	18	16	19	This thext is not part of the "bullet points" (Government of Switzerland)	See A-1195		
SPM-1198	30	A	16	20	0	0	1. Re adaptation, distributed generation (DG) with clean energy sources serves both adaptation and mitigation. DG can pump water fro health, cooking, and irrigation; power lighting for education; and power small enterprises. The health and development benefits of DG systems will decrease vulnerabilities overall, increase resilience in the face of storms and heat waves (complementing grids, where present), and lower greenhouse gas emissions. Editorial comment: I find the absence of DG as an adaptive measure curious. There is a growing body of literature and even a new journal ("Mitigation and Adaptation Strategies for Climate Change") making these connections. There is growing urgency to address both adaptation and mitigation of climate change and I suggest that it not be omitted for the FAR of the IPCC. 2. I think it is central to include the deep ocean warming that underlies the acceleration of the hydrological cycle. Levitus et al. (2005) calculated that, in the past half century, the oceans have absorbed twenty-two times the amount of warming as has the atmosphere. Barnett et al. (2005) found that the pattern of warming in the deep ocean is unmistakably associated with the build-up of greenhouse gases. Barnett, T. P., Pierce, D. W., AchutaRao, K. M., Gleckler, P. J., Santer, B. D., Gregory, J. M. & Washington, W. M. Penetration of human-induced warming into the world's oceans. Science 309, 284-287 (2005). Levitus, S., Antonov, J.I., Boyer, T. Warming of the world ocean, 1955–2003,	UNCLEAR; most seems for WG II; point 1 may be considered by chapters 6,8,12	6,8,12	

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							Geophys. Res. Lett., 32, L02604 (2005). 3. As climate continues to change its contribution to storm destructiveness is projected to increase. Schiermeier, Q. Insurers' disaster files suggest climate is culprit. Nature 441, 674-675 (2006). (CROBriefing 2006) Chief Risk Officers Briefing: Emerging Risk Initiative- Position Paper. Authors: Markus Aichinger, Allianz; Eberhard Faust, Munich Re; Jean-Noël Guye, AXA; Pamela Heck, Swiss Re; Annabelle Hett, Swiss Re; Peter Höppe, Munich Re; Ivo Menzinger, Swiss Re; Ernst Rauch, Munich Re; Samuel Scherling, Swiss Re; Martin Weymann, Swiss Re (2006). With more types of weather extremes, greater intensity of extreme events, wide swings in weather, and shorter return and recovery times, all areas of the world and multiple sectors become more vulnerable. Climate change, itself, thus increases vulnerability in developing and developed nations. For example, the energy sector is vulnerable to more intense storms, widespread heat waves and blackouts, and melting tundra and the impacts on pipelines. Epstein, P. R., McCarthy, J. J. Assessing climate stability. Bulletin of the American Meteorological Society 85, 1863-1870 (2004). • Epstein, PR, Mills, E. (eds.). Climate Change Futures: Health, Ecological and Economic Dimensions, Center for Health and the Global Environment, Harvard medical School, Boston, MA [published with Swiss Re and the UNDP] (2005). 4. Given the accelerating pace of land-based ice melt in Greenland and in the West Antarctic Ice Sheet, previous linear projections for sea level rise may be punctuated by rises due to ice sheet discharges. Bindschadler, R. Hitting the ice sheets where it hurts. Science 311, 1720-1721 (2006). Ekstrom, G., Nettles, M., Tsai, V.C. Seasonality and increasing frequency of Greenland glacial earthquakes. Science 311:1756-1758 (2006). • Rignot, E., Kanagaratnam, P. Changes in the Velocity			

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							Structure of the Greenland Ice Sheet. Science 311, 986-990 (2006). • Smith, H. J. Climate Science: Twinned thinning. Science 2005 307: 182c, based on: • Payne et al. Geophys. Res. Lett. 31,10.1029/2004GL021106; 10.1029/2004GL021284 (2004). 5. The insurance industry is partricularly sensitive to the increased intensity of weather extremes. Insured and unisured losses have escalated in the past two deacdes, in association with social changes and more destructive storms. The WGII report needs to be updated to keep up with this hotly-debated, but most significant issuee: at least including it as a an impact scenario with potentially huge costs. Emanuel, K. Increasing destructiveness of tropical cyclones over the past 30 years. Nature 436, 686-688 (2005). Hoyos, C.D., Agudelo, P.A., Webster, P.J., Curry, J.A. Deconvolution of the factors contributing to the increase in global hurricane intensity. Science 312, 94-97 (2006). • Mills, E. Insurers in a climate of change. Science 308, 1040-1044 (2005). • Sriver R, Huber M. Low frequency variability in globally integrated tropical cyclone power dissipation Geophys. Res. Lett. 33, L11705 (2006). • Webster, P. J., Holland, G. J., Curry, J. A., and H.-R. Chang, Changes in tropical cyclone number, duration, and intensity in a warming environment. Science 2005 309: 1844-1846. (Paul Epstein, Harvard)			
SPM-1199	26	A	14	33	14	40	This is a good solid point and one that is abundantly supported by the technical literature that the IPCC is supposed to be drawing on to form the basis of this report. There is a huge literature that says that large scale adoption of GHG emissions mitigation activities does not occur unless there is a price on carbon and that there appears to be a trigger at about $20-25/tonCO2 when significant mitigation takes place. The wording here is far more technically	TIA in reformulating paragraph		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							defensible than the repeated statements in the SPM about the need for a strong government role or a significant government role. The authors of the SPM need to explain precisely what this active government role is and what the literature is that backs it up or simply stick with the point here as well as the points later on about investments in R&D which are also supported by the literature. (James Dooley, Battelle)			
SPM-1200	30 T 3	A	17	0	17	0	The term "technology cooperation" is vague, and the suggestion that cooperation is needed is potentially misleading. If stabilization of climate will require the fruits of an energy technology race, then technology cooperation is not needed at the R&D stage. (A race is "competitive" rather than "cooperative") Cooperation will, to a degree, be desirable when and if scaleable, economically competitive, technologies are developed and are ready to be deployed. Of course, there need to be enough entrants committed to, and in, the race. As long as a number of nations enter the race, and that there are at least several potentially successful technologies that could generate big payoffs, a Schumpeterian approach to innovation would emphasize the profit incentives instead of "cooperation". (Christopher Green, McGill University)	DISCUSS Table is too controversial to be kept and has to be deleted; can we find text that summarises the key findings from the literature on various regime approaches?	13	Maintain option of keeping the table or replace by a paragraph (13) Table has been revised. TSU to look at it. If not okay, a para will be submitted to replace the table.
SPM-1201	30 T 3	A	17	0	17	0	Table SPM 3: the assessment entry "0" is not explained in the title (Aviel VERBRUGGEN, University of Antwerp)	See A-1200		
SPM-1202	30 T 3	A	17	0	17	0	Table SPM.3: (1)column1,row3,the "sectoral agreements" should be clarified to be well understood.(2)column5,row3,what's the meaning of "0"? Is it a mistake? Please check and correct. (Government of China Meteorological Administration)	See A-1200		
SPM-1203	30 T 3	A	17	0	17	0	Table SPM-3 : vertical bold lines should be used to make it clear which column is qualified by the signs +, -, ? (Government of France)	See A-1200		
SPM-1204	30 T 3	A	17	0	17	0	Table SPM-3: Please define the rating of 0 - it is not in the caption. (Government of Environment Canada)	See A-1200		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-1205	30 T 3	A	17	0	0	0	table SPM.3, please add explanation for "0"-score (Government of The Netherlands)	See A-1200		
SPM-1206	30 T 3	A	17	0	0	0	table SPM.3, comment: the categories in this table do not correspond to the categories of policy instruments and international agreements in chapter 13; there is no relation between the text in the table and the scoring (e.g. "can be effective" results in either a +, - or ?); there is a bias in the table towards emission trading which is said to be highly cost effective, which increases with broad participation; economic efficiency of a trading system however also depends on the design and rules of the system and the number and size of entities participating; there are no scores given for institutional feasiblity; table needs to be redesigned completely (Government of The Netherlands)	See A-1200		
SPM-1207	30 T 3	A	17	0	17	0	Table SPM 3 - please explain also the meaning of "0" (Government of Finland)	See A-1200		
SPM-247	30 T 3	B	17	0	17	0	Define "0" (Government of European Community / European Commission)	See A-1200		
SPM-248	30 T 3	B	17	0	17	0	Approaches in Table SPM3 are not defined. Add further subcategories under "national emission targets" to show the richness of ideas in this area, see chapter 13. (Government of European Community / European Commission)	See A-1200		
SPM-249	30 T 3	B	17	0	17	0	Approaches in Table SPM3 are not defined. Add further subcategories under "national emission targets" to show the richness of ideas in this area, see chapter 13. (Government of European Community / European Commission)	See A-1200		
SPM-250	30 T 3	B	17	0	17	0	Added value of this table in the SPM is questioned. (Government of European Community / European Commission)	See A-1200		
SPM-1208	30 T 3	A	17	1	0	0	Table SPM.3: The discussion in chapter 13 lists a much richer set of approaches than the five listed in this table. While it is hard to summarise, for a digest of INTERnational agreements, there are	See A-1200		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							suprisingly many categories focused on national approaches. The first category 'national emissions targets and emissions trading includes 1) global approaches based on per capita 2) others based on historical responsibility, such as the Brazilian proposal, 3) multi-stage approaches, 4) targets based on emissions intensity, fixed or dynamic, 5) growth caps and 6) a variety of appraoches related to carbon markets. To assess, say the environmental effectiveness, of this broad range is not meaningful. I cannot come up with a better summary list of categories myself, and therefore would suggest moving the table back to chapter 13 (currently not there, but rferenced to 13.3. In the chapter, the summary is at least in teh context of the richer Table 13.2. In the SPM, I would suggest instead a text, briefly summarising the major approaches, but at greater disaggregation than the five table row headings allow. (Harald Winkler, University of Cape Town)			
SPM-1209	30 T 3	A	17	1	0	0	Table SPM.3: The "0" entries are not explained - replace with ? or explain. (Harald Winkler, University of Cape Town)	See A-1200		
SPM-1210	30 T 3	A	17	1	0	0	Table SPM.3: next to +, - and ?, there are 0s. These are not listed in the legend. (Same holds for table 13.1) (Michael Kohlhaas, German Institute for Economic Research)	See A-1200		
SPM-1211	30 T 3	A	17	1	17	1	Remove this table - premature and misleading.. There have been many technology agreements with differed degree of success. See the following (Mitchell, 1994; Barrett, 2003; Justus and Philibert, 2005; Ueno and Sugiyama, 2006). Mitchell, R.B., 1994. Intentional Oil Pollution at Sea: Environmental Policy and Treaty Compliance, Cambridge, Massachusetts: MIT Press. Barrett, S., 2003. "Environment and Statecraft: The Strategy of Environmental Treaty-Making." New York: Oxford University Press Inc. Justus, D., Philibert, C. 2005. "International Energy Technology Collaboration and Climate Change Mitigation Synthesis Report." COM/ENV/EPOC/IEA/SLT(2005)11, OECD/IEA: Paris.	See A-1200		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							Ueno, T., Sugiyama, T., 2006. International Cooperation in Technology Development and Diffusion: Case Analysis and Discussion on Future Climate Regime, Research Report No.Y05005, the Central Research Institute of Electric Power Industry, Japan (ISBN: 4-86216-173-1) (written in Japanese). (Taishi Sugiyama, CRIEPI)			
SPM-1212	30 T 3	A	17	1	17	1	In figure SPM.3, suggest that the columns with +, -, and ? be removed. The source of these judgements is not clear and does not appear justified. For example under environmental effectiveness, each are said that they can be effective but some are given +, some ? and some -? (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	See A-1200		
SPM-1213	30 T 3	A	17	1	17	1	In figure SPM.3, a key inefficiency (barrier to investment) with cap and trade is the lack of credible long-term allocation and the uncertainty related to non-compliance. Suggest adding this to cost effectiveness box. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	See A-1200		
SPM-1214	30 T 3	A	17	1	17	1	In figure SPM.3 suggest adding under institutions for the targets row, “mechanisms to generate national allocations”. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	See A-1200		
SPM-1215	30 T 3	A	17	1	17	1	In figure SPM.3 sectoral agreements are not necessarily global, yet the explanation makes it appear so. Suggest reconsidering. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	See A-1200		
SPM-1216	30 T 3	A	17	1	0	0	Table SPM.3, erratum: row sectoral agreements: comes out to negative, examples as ACEA agreement with car-manufacturs seems to suggest a more positive judgement, EU trading is a kind of sectoral agreement, due to the fact that only a limited nr of companies are participating, bench marking as part of trading (allocation discussion) can also be seen in the light of sectoral agreement. Third column distribution/equity issue cell seems the	See A-1200		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							most controversial statement! In the EU we got a burden agreement by agreeing on the different weight of various sector among countries (TRIPTICH). Countries don't need to be treated equally, everything is possible in a sectoral agreements, including minimum standards/obligations depending on the economic status of a country, or a sector agreement to reduce export obsolete technology and increase technology transfer (e.g. see AIDS medicine discussion where there has been an agreement with the industry/sector to sell cheap drugs, compared to OECD countries to Africa!). (Hans Eerens, MNP)			
SPM-1217	30 T 3	A	17	1	0	0	Delete Table SPM3. This is extremely policy-prescriptive with one-sided information. (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	See A-1200		
SPM-1218	30 T 3	A	17	1	17	1	table SPM 3: definition 'O' (Government of Belgium)	See A-1200		
SPM-1219	30 T 3	A	17	1	0	0	Table SPM.3（same as TS P109, Table TS.22、Ch13 P73/74 Table13.6） Overall, what decides weather an approach meets a criteria is rather vague and not objective and the columns with "+" "-" "0" should be therefore deleted. For example, "national emission targets and emission trading " effectiveness depends on participation, stringency and compliance. It means this evaluation is too difficult. (Government of Japan)	See A-1200		
SPM-1220	30 T 3	A	17	1	0	0	Table SPM.3（same as TS P109, Table TS.22、Ch13 P73/74 Table13.6） "sectoral agreements" seems to be unreasonably underestimated. The Asia-Pacific Partnership and G8 process adopt these "sectoral agreements" approaches are trying to go forward. This should be highly regarded. (Government of Japan)	See A-1200		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
SPM-1221	30 T 3	A	17	1	0	0	The table should be reformatted (for example with some tick lines) to make it clearer to which texts the +/-/? Belong. (Government of Norwegian Pollution Control Authority)	See A-1200		
SPM-1222	30 T 3	A	17	1	17	0	Table SPM 3 Sometimes combinations of instruments will turn out better than isolated, especially in lock-in situations (Government of Norwegian Pollution Control Authority)	See A-1200		
SPM-1223	30 T 3	A	17	1	17	0	Restrictions on emission trading will reduce cost-efficiency (Government of Norwegian Pollution Control Authority)	See A-1200		
SPM-1224	30 T 3	A	17	1	17	50	Table SPM 3: The authors need to provide an explanation of how the criteria were assessed (e.g. was it simply the expert judgement of the authors?). In addition, the authors need to explain what the "0" symbol represents. Taxes, charges and other price-based mechanisms should be mentioned in this overview table. (Government of Australia)	See A-1200		
SPM-1225	30 T 3	A	17	1	17	0	The assessment in this table is very general and speculative. It is not clear who has dome the assignment of +, - or 0 and what is the rationale for such an assignment. For the table to be useful this should be explained and references must be made to specific data or results in the report that support the assignment. (Government of India)	See A-1200		
SPM-1226	30 T 3	A	17	1	17	0	Table SPM: signs (+/-) are given only in 3 columns, no signs for “Institutional feasibility”. (Government of India)	See A-1200		
SPM-1227	30 T 3	A	17	1	17	0	This is the first instance in which 4 out of the five approaches listed have been mentioned. There is no discussion of them. Moreover, this list of approaches does not match the list of policies and instruments listed in paragraph 27 on page 15 (lines 1-24). Indeed, the four criteria that appear across the top of the table have been (in one wording or another) juxtaposed with the bulleted list of policies and instruments in paragraph 27, the bulleted list of conclusions in paragraph 30, and now the list of Approaches in this table. Paragraphs 27 and 30 and Table SPM.3 need to be reconciled. Further, there is no hint as to how these criteria were applied. U.S.	See A-1200		

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							Government (Government of U.S. Department of State)			
SPM-1228	30 T 3	A	17	1	17	0	The scoring (+, ?, -, 0) is inconsistent with parts of the text. For example, 'Can be effective, depending on participation, stringency and compliance' in the upper left box receives a '+', which to me implies a stronger statement than that given. U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-1229	30 T 3	A	17	1	17	0	Table SPM3 - What does "0" mean? U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-1230	30 T 3	A	17	1	17	0	Table SPM.3 - This table is confusing. What, for example, is the relationship between sectoral agreements, coordinated policies and measures, technology cooperation, and development-oriented actions? Each can be defined as falling within another's remit. These need definition, at a minimum (for example, it appears that "technology cooperation" here means technology R&D, but this is not a commonly understood limitation in the field. The references to "common but differentiated responsibility" are out of place and should not be included. Also, the use of "institutional feasibility" appears to differ from its meaning in Chapter 13. U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-1231	30 T 3	A	17	1	17	0	Table SPM.3 The value signs [+,-,?] are misleading, as they are entirely context dependent. They should be deleted. For example, "environmental effectiveness" of national emission target depends on participation, stringency and compliance (currently low on all counts) – so this should be "?" The same is true of each of the categories – the effectiveness or ineffectiveness of an agreement in addressing any criterion is dependent on its specific design. U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-1232	30 T 3	A	17	1	17	0	Table SPM. 3. Rather than describing R&D as an "ineffective" and "uncertain" measure "needed to be supplemented by policies promoting implementation" (see SPM Table 3; TS Table TS-22;	See A-1200		

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							Table 13-6), advances in technology should be seen as essential and enabling elements of a global transformation of energy and other GHG-emitting infrastructure. In this context, this genre of measure may be the most, not the least, effective in achieving long term UNFCCC goals. U.S. Government (Government of U.S. Department of State)			
SPM-1233	30 T 3	A	17	1	17	0	Table is too wordy to follow easily. Aslo, the approach used focuses on national emission targets and emission trading. Cost Effective – Highly efficient and cost effective. Is this accurate? How much data is currently available? Comments on Kyoto – SPM 15, 33-36 - say that the "impact of first commitment period is likely to be limited." U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-1234	30 T 3	A	17	1	17	0	Table 3 - Row 1: Box 3: Add "Allocation issues present significant challenges" Allocation also poses institutional challenges and is relevant for Box 4 on this Row. U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-1235	30 T 3	A	17	2	17	0	Table 3 - Row 2, box 3: Delete "which may run counter to the concept of 'common but differentiated responsibility' as this is reflects one interpretation of the relevant UNFCCC provision. Moreover, the proposition "All countries would be treated equally" is not necessarily correct. Sectoral agreements have been posited in a whole range of forms, and need not treat countries or entities equally. U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-1236	30 T 3	A	17	4	17	7	Table SPM. 3. Environmental effectiveness of cap & trade is marked as "+". However, as described in the table, it depends on participation, stringency and compliance. Given the fact that the total GHG emissions from Annex 1 countries that ratified the Kyoto Protocol is around one third and it will be shrinked to 20% in 2050, participation is crucially important. In this sense, I think mark for cap & trade should be "?". It is important to make it clear that cap & trade under current participation never be environmentally effective.	See A-1200		

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							(Mitsutsune Yamaguchi, Teikyo University)			
SPM-1237	30 T 3	A	17	5	17	5	Table SPM 3. The signals +,-, 0, ? , are policy prescriptive and controversial. The table is good enough without that, don't spoil it. (Juan F Llanes-Regueiro, Havana University)	See A-1200		
SPM-1238	30 T 3	A	17	5	17	0	Table SPM.3 Row 5: Finding that technology cooperation generally does not meet criterion seems to run counter to emphasis and importance placed on technology development and transfer throughout report. U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-1239	30 T 3	A	17	40	17	0	Table SPM.3, last row, entry under "Environmental Effectiveness", modify the last sentence as follows: "Specific development policies may have a positive or negative affect on climate." The Report should distinguish between "climate" and "climate damages" on one hand, and "climate change" and "climate change damages" on the other. Most of the damages we see today are due to climate and its inherent variability. In the future, as climate changes, the damages due to climate change will probably grow (all else being equal) and eventually exceed those due to the "baseline" climate (for lack of a better term). Until that occurs, the benefits of increasing adaptive capacity to cope with current climate (and variability) will exceed the benefits of reducing climate-change-related damages. See Goklany (2003, 2005a, 2006a) for a more detailed explanation. References: (1) Goklany, IM. 2003. Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation. Energy & Environment 14: 797-822. (2) Goklany, IM. 2005a. A Climate Policy for the Short and Medium Term: Stabilization or Adaptation? Energy & Environment 16: 667-680. (3) Goklany, IM. 2006a. Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development. Mitigation and Adaptation Strategies for Global Change, forthcoming. U.S. Government (Government of U.S. Department of State)	See A-1200		
SPM-	30	A	17	0	17	0	Table SPM3: I can not agree with the table at all. This table should	See A-1200		

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1240	T 3						be deleted. (the same comment to Table SPM3) (Keigo Akimoto, Research Institute of Innovative Technology for the Earth (RITE))			
SPM-1241	30 T 3	A	17	0	0	0	Table SPM.3: It is proposed to indicate that the actual effectiveness of any approach depends on the details of design, level of implementation and strength of enforcement. (Government of Austria)	See A-1200		
SPM-1242	30 T 3	A	17	0	0	0	Table SPM.3. In the figure legend the meaning of "0" is missing, it should be included or, alternatively, the symbol in the table can be changed for (+/-). The table legend of this figure (and any symbol change) should apply to tables TS.22 and Table 13.1. (Government of Spain)	See A-1200		
SPM-251	30 T 3	B	17	0	17	0	Table SPM3: column 8, line Sectoral agreements: Who is liable ? "Sectors" do not have a solid definition, that can stand in tribunal. Please add "and ensure liability for commitments" at the end of the box. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	See A-1200		
SPM-1243	31 F 6	A	18	0	18	0	Figure SPM-6: is not necessary and can be deleted. (Government of Environment Canada)	REJ; it helps to illustrate and was much appreciated in TAR SyR		
SPM-1244	31 heading	A	18	5	18	8	What about “may realize?” Probably accurate, but the experiments have not been done yet. Next line says: “two-way relationship between climate change mitigation and sustainable development can be mutually reinforcing but may not always be so” – Two sentences appear mildly contradictory or at least not extremely useful to a policy maker. U.S. Government (Government of U.S. Department of State)	Heading section E will be merged with para 31 bold section TIA; use “could”; “may”is too weak		
SPM-1245	31 heading	A	18	5	18	5	Integrating climate change “considerations” into… U.S. Government (Government of U.S. Department of State)	See A-1244 ACC		
SPM-	31	B	18	5	18	6	This statement is not supported by the text in the SPM on pages 18-	See A-1244		

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252	heading						20: the text has a very qualitative nature and does not provide concrete agenda items for the policymaker. Hence: relevance of current section E to the SPM is limited. (Government of European Community / European Commission)	REJ; this is relevant		
SPM-253	31 heading	B	18	5	18	5	Integrating climate change "considerations" into… U.S. Government (Government of U.S. Department of State)	identical A-1245		
SPM-1246	31	A	18	13	20	19	We propose to replace the text from line 13 to 19 with: "Policy reforms conducive to sustainable development can often be found that simultaneously release mitigation options. Important examples are elimination of energy subsidises or other inefficiencies in the sectors. Regulations in the energy sector may be designed to promote competition, and secure existence of efficient operators or fuels. Reforms should try to avoid a situation where machinery is outdated, for reasons such as high inflation and interest rates, policy uncertainty, etc." Furthermore we propose deletion of the text i line 23-to 27 at page 18. The text from line 31 to 36 at page 19 may be reduced because it is mostly covered in para 31. General comment to paragraphs 31 and 32: The text in the draft represent flawed logic if one is not more careful a) in developing a common thread and b) in highlighting that a bundle of studies (those subsequently cited, and graphed) represent examples. It is key i) to use the word reform (i.e. change in policy) rather than the word 'policy', and ii) to highlight that the win-win options relate both to existing policies (such as energy sector subsidies) and to the direction of the reform (removal of those subsidies). It has no informational content, no educational value, to say that 'fiscal policies can have a profound impact on emissions. But to say that fiscal policy reform is conducive to a more efficient use of energy if either energy subsidies can be eliminated or if the investment climate can be improved to get more efficient machinery in place makes a lot of sense. Peer reviewed literature demonstrating the power of energy	DISCUSS	12	Relates to text clarifications. Can and will be dealt with. CH 12 proposals

Chapter-Comment	para	Batch	From Page	From Line	To Page	To line	Comments	Response suggested by co-chairs	Action for chapter	Considerations by the writing team
							price reform in reducing emissions are: "Is Demand for Polluting Goods Manageable? An Econometric Study of Car Ownership and Use in Mexico." 1997. (Gunnar S. Eskeland and Tarhan Feyzioglu). Journal of Development Economics 53(2):423–45. "Prices that Clear the Air: Energy Use and Pollution in Chile and Indonesia." 1998. (Gunnar S. Eskeland, Emmanuel Jimenez, and Lili Liu). The Energy Journal 19(3):85–106. Papers demonstrating the importance of the investment climate are: "Moving to Greener Pastures? Multinationals and the Pollution-haven Hypothesis." 2003. (Gunnar S. Eskeland and Ann E. Harrison). Journal of Development Economics, _vol 70, pp 1-23. World Development Report 2003. Sustainable development in a dynamic world. August 2002. World Bank. Chapters 3 and 7. (para 32 can then be eliminated). (Government of Norwegian Pollution Control Authority)			
SPM			1	6	1	7	Ch 12 recommends that SPM heading A be replaced with: Without additional policies – both climate and development policies – global GHG emissions will continue to grow over the next few decades.			(Ch 12)
SPM			4	17	4	24	Chapter 12 recommends that SPM point 4 be replaced with: There has been a substantial increase in formulating GHG emission reductions, sink enhancement, and adaptation policies, but many remain unimplemented. Because climate change mitigation is closely intertwined in both developing and developed countries with issues relating to economic growth, energy security, environmental and social goals, in addition to climate specific policies, careful attention to non-climate policies will be essential to achieving greenhouse gases stabilization.			(Ch 12)
SPM-	31	A	18	8	18	9	Gives the impression that SD policies could contribute to increased	ACC; add "but in some cases		TIA; wording

1247							GHG emissions and climate change. This is surprising, given the principles of SD, which includes 'environmental effectiveness". This sentence needs to be modified. (Government of India)	there are trade-offs between climate change and other elements of sustainable development"		changed(Ch 12)
SPM-1248	31	A	18	8	18	13	"Suggest adding statement regarding GHG increases due to developing economies economic growth is major anticipated new and increasing source of GHG. Large opportunity to address two-way relationship thru how carbon technologies that will support sustainable development." U.S. Government (Government of U.S. Department of State)	REJ; not necessary here		REJ; not appropriate here(Ch 12)
SPM-254	31	B	18	8	18	19	Integration and synergies with adaptation should be mentioned here as well. (Jean-Pascal van YPERSELE, Université catholique de Louvain (Belgium))	ACC		TIA; wording will change to incl reference to adaptation (Ch 12)
SPM-1249	31	A	18	9	18	9	Where may be these guidelines be found and who has written them for whom (Rachel Warren, University of East Anglia)	DISCUSS	12	TIA; wording changed (Ch 12). Word "guidelines" will be removed.
SPM-1250	31	A	18	9	18	9	The phrase "but may not always be so" seems to negate the whole sentence. This phrase can be replaced by other more positive phrases like "on a greater part". (Government of MALAWI)	See A-1247		TIA; wording changed (Ch 12)
SPM-1251	31	A	18	9	0	0	We propose that a footnote is included to explain to which Guidelines reference is made. (Government of Norwegian Pollution Control Authority)	See A-1249		TIA; wording changed (Ch 12)
SPM-1252	31	A	18	9	18	10	"Guidelines …… sectors". This is a general statement. Either give the "guidelines" or drop sentences. (Government of India)	See A-1249		TIA; wording changed (Ch 12)
SPM-1253	31	A	18	9	18	10	The reference to "Guidelines have been proposed…" is out of place in the headline sentence. The idea of guidelines has not gotten serious attention and does not merit highlighting in a broad statement about the relationship between climate change and other SD objectives. U.S. Government (Government of U.S. Department of State)	See A-1249		TIA; wording changed (Ch 12)
SPM-255	31	B	18	9	18	10	The reference to "Guidelines have been proposed…" is out of place in the headline sentence. The idea of guidelines has not gotten serious attention and does not merit highlighting in a broad	See A-1249		TIA; wording changed (Ch 12)

							statement about the relationship between climate change and other SD objectives. U.S. Government (Government of U.S. Department of State)			
SPM-1254	31	A	18	10	0	0	What are development sectors? Define or provide examples. (Government of Germany)	ACC; add ”such as …”		TIA; wording changed (Ch 12)
SPM-1255	31	A	18	11	0	0	change to '-- sustainable development decisions...'. Distinguish between development (which may not be sustainable) and sustainable developmen. A definition of sustainability or reference to it would be helpful. Add reference to chapter in main body of report. (Government of Germany)	REJ; leave as “development” because there are no sustainable development sectors		TIA; wording changed (Ch 12)
SPM-1256	31	A	18	12	19	30	add uncertainty statement to 31 and 32, suggest HL (Rob Swart, MNP)	DISCUSS	12, CG uncertainty	Accept (Ch 12)
SPM-1257	31	A	18	13	0	0	This paragraph needs simplifying to make clearer (Ann Gardiner, AEA Technology)	TIA		TIA; wording changed (Ch 12)
SPM-1258	31	A	18	13	18	19	Please supply references to relevant underlying chapter sections in square brackets after this bullet. (Andy Reisinger, TSU IPCC Synthesis Report)	ACC; for all bullets the same		Accept (Ch 12)
SPM-1259	31	A	18	13	18	13	replace "climate change vulnerability" by "vulnerability to climate change". (Rachel Warren, University of East Anglia)	ACC		TIA; wording changed (Ch 12)
SPM-1260	31	A	18	15	18	19	REREAD AND WRITE COMMENT (Paul Baer, EcoEquity)	UNCLEAR		REJECTED, unclear (Ch 12)
SPM-1261	31	A	18	15	18	15	To add:¨.....by development paths and production and consumption patterns, as much as mitigation policies¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; development patterns include consumption/ and production patterns		REJECTED, development patterns include consumption/ and production patterns (Ch 12)
SPM-1262	31	A	18	15	18	15	"On the other hand .." has to match "on the one hand" (Aviel VERBRUGGEN, University of Antwerp)	ACC; modify		ACCEPTED (Ch 12)
SPM-1263	31	A	18	15	18	19	Reword for clarity: ‘On the other hand, climate change and associated response policies could have significant impacts on development: positive, by avoiding climate change damages and making development more sustainable; potentially negative, by	ACC; use “vital”		TIA, paragraph has been reformulated. (Ch 12)

							competing with other viable development objectives.' U.S. Government (Government of U.S. Department of State)			
SPM-1264	31	A	18	16	18	16	To add: ¨.....climate change itself and appropriate or not response policies...¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	UNCLEAR		TIA, paragraph has been reformulated. (Ch 12)
SPM-1265	31	A	18	17	18	19	Replace "positive" by "positively" and "negative" by "negatively". A key question is whether the climate change and development policies would really compete or not - or whether different sources of money will be used for the two purposes. (Rachel Warren, University of East Anglia)	ACC		TIA, paragraph has been reformulated. (Ch 12)
SPM-1266	31	A	18	19	18	19	Firstly, suggest to add after "other vital development objectives" the followings; "such as poverty, hunger, health as agreed in the Millenium Development Goals". Then secondly, suggest to pick up sentences from p. 10, lines 21-24 of TS, i.e. "This leads to the notion that climate change policies can be considered (1) in their own right ("climate first"), or (2) as an integral element of sustainable development policies ("development first"). Nevertheless, framing the debate as a sustainable development problem rather than a solely environmental one may better address the immediate goals of all countries". The purpose of this addition is to enhance the credibility of the IPCC assessment report, showing we, experts of climate change, have broad eyes to pay attention to other important issues and have in our mind to pursue a good balance among them. (Mitsutsune Yamaguchi, Teikyo University)	REJ; too detailed for SPM		ACCEPTED, While paragraph has been reformulated, sentence on climate / development first (Ch 12)
SPM-1267	31	A	18	20	18	24	Start the paragraph with a pithier sentence: "Climate policy on its own will not solve the climate problem." (Harald Winkler, University of Cape Town)	ACC; try and work in bold part		ACCEPTED, worked into bold paragraph. (Ch 12)
SPM-1268	31 F 7	A	18	20	19	25	I do not understand this graphic or how these specific quantitative values were derived. Are these annual emissions caused by these policies. Or are they a measure of the potential to avoid emissions through wise policies in these areas? Are these global levels? Over what time period? Please consider dropping this from SPM as I'm not sure the average reader of the SPM will be able to quickly grasp the point trying to be made here. (James Dooley, Battelle)	DISCUSS; Fig 7 is very controversial and has to be deleted; can we come up with a table that captures the most important points (based on the notes) or simple text?	12	ACCEPTED, Fig 12.7 will be removed and replaced by table with explanatory text. . (Ch 12) Or by a few lines in the text.

										See ch 12 proposal
SPM-1269	31	A	18	20	18	24	If confusion is to be avoided, Bullet 2 in point 31 and its associated chart (SPM.7) should be deleted, The chart is too selective in the drivers it identifies and certainly does not adequately identify the way they may (or may not) interact, re-inforce or contradict either themselves, or other aspects of sustainable development. Much more seriously, evaluation of low mitigation potential for decisions on rural energy development (based on potential for current emissions, not future emissions) is inconsistent with mtigation potential assessed for the other drivers (which are assumed to be future) and, most seriously of all, sends the wrong message to policymakers (Pat Finnegan, Grian)	See A-1268 Text to be retained		ACCEPTED, text retained and explains. (Ch 12)
SPM-1270	31	A	18	20	18	24	Please supply references to relevant underlying chapter sections in square brackets after this bullet. (Andy Reisinger, TSU IPCC Synthesis Report)	ACC		ACCEPTED, [12.2.2.2, 12.2.3.3] (Ch 12)
SPM-1271	31	A	18	21	18	21	To add:¨....energy security, selection of sectors where will be realized investments, forest conservation....¨ (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	REJ; unclear		REJECTED, unclear (Ch 12)
SPM-1272	31	A	18	21	0	0	We propose that "liberalization" is replaced by "policy" (in addition "liberalization or subsidies" might be added in brackets). (Government of Norwegian Pollution Control Authority)	ACC		TIA, will change to 'electricity market REFORM' (Ch 12)
SPM-1273	31	A	18	21	18	23	Why does forest conservation "seem unrelated to climate policy?" SPM talks about agriculture and forestry. U.S. Government (Government of U.S. Department of State)	REJ; because there are many good reasons other than climate change to do so		REJECTED, text says 'may' seem unrelated and there are good reasons other than climate change to do so (Ch 12)
SPM-1274	31 F 7	A	18	22	18	22	Fig SPM.7 is difficult to understand because phrase 'associated emissions' is not explained. Does it relate to current emissions levels or some point in future? Phrase 'profound impacts' also seems overstated when 'associated emissions' uses unit of Mt CO2	See A-1268		ACCEPTED, Fig 12.7 will be removed and replaced by

							(see SPM.7) (Government of Australia)			table with explanatory text. (Ch 12)
SPM-1275	31	A	18	23	18	23	"On the other hand .." has to match "on the one hand" (Aviel VERBRUGGEN, University of Antwerp)	ACC; change into “however”		ACCEPTD; will change into “however” (Ch 12)
SPM-1276	31	A	18	23	0	24	Since we find this statement somewhat surprising, we propose that the rationale behind it is explained. (Government of Norwegian Pollution Control Authority)	ACC; modify sentence		ACCEPTED, modify sentence to clarify assumptions underlying studies (Ch 12)
SPM-1277	31	A	18	23	18	24	This point needs clarification. The authors should confirm that "decisions about rural energy development" do not have much influence on GHG emissions. Is this only in developing countries? Could the authors provide an example of what they mean by "rural energy development"? For example, a rapid and large increase in electrification rural areas may have significant consequences for emissions depending on fuel mix etc. (Government of Australia)	See A-1276		ACCEPTED, modify sentence to clarify assumptions underlying studies (Ch 12)
SPM-1278	31	A	18	23	18	24	The statement “On the other hand, decisions about rural energy developments for example will not have much influence on GHG emissions” is contentious. The experience in developing countries, and especially in India, suggest that rural energy policies are important in improving efficiency of biomass use, penetration of cleaner fuels and renewable energy technologies and therefore important vehicles for influencing the deforestation and transitions to less GHG intensive pathway. Recommend to remove the statement or qualify it with the explanation such as provided in the underlined text. In case the deforestation related GHG are clubbed under forestry policies, this should be clarified since these may include the contribution from rural energy policies. (Government of India)	See A-1276; add notions suggested		ACCEPTED, modify sentence to clarify assumptions underlying studies (Ch 12)
SPM-1279	31	A	18	23	18	24	"On the other hand, decisions about rural energy….GHG emissions". Why give this, better to focus more on synergy between “SD and climate mitigation.” Further, it could be wrong, rural population accounts for significant % of energy use in many developing countries.	See A-1276		ACCEPTED, modify sentence to clarify assumptions underlying

							(Government of India)			studies (Ch 12)
SPM-1280	31	A	18	23	18	24	Disagree with the assertion that rural energy development will not have a direct influence on GHG emissions by changing how a large percentage of the population that does not use a lot of energy now, but may in the future, thinks about energy choices. U.S. Government (Government of U.S. Department of State)	See A-1276		
SPM-1281	31 F 7	A	18	23	18	0	Authors should revise or reject this confusing, speculative, undocumented, and poorly labled figure U.S. Government (Government of U.S. Department of State)	See A-1268		
SPM-256	31 F 7	B	18	23	0	0	Delete figure SPM 7 and associated parenthetical reference. Rationale: The figure is unnecessary and highly speculative. Indirect/direct and high/low distinctions are very unclear, and its hard to see why those types of distinctions are mutually exclusive. For example, multilateral lending policies can have just as “direct” an impact on what energy sources are used as can fiscal policy. Also, fiscal policy can also influence all sorts of non-energy related emissions, including emissions related to deforestation and emissions of non-CO2 gases. The figure lends a very false sense of precision to a very general point. Authors should revise or reject this confusing, speculative, undocumented, and poorly labled figure. U.S. Government (Government of U.S. Department of State)	See A-1268		
SPM-1282	31	A	18	25	0	0	Since the word endowment is not so commonly used, we propose that a simpler wording is found (can "financial support of" be used"?) (Government of Norwegian Pollution Control Authority)	ACC; delete “endowments in”		
SPM-1283	31	A	18	27	18	28	What is meant by “participate equitably” in this sentence? An equal voice? Equal access? Equal burden/opportunity? Suggest striking “equitably” and substituting “meaningfully”. U.S. Government (Government of U.S. Department of State)	“equitably” is a common term, should be ok; see A-1284		
SPM-1284	31	A	18	27	18	28	Right idea and am wondering why so many of the statements in the SPM focus on government policies U.S. Government (Government of U.S. Department of State)	Thank you		
SPM-1285	31	A	18	28	18	28	It is suggested to either delete "equitable" or to substitute it by another more clear wording, e.g. by "and can contribute equally". (Government of Austria)	See A-1283, 1284		
SPM-1286	31	A	18	29	18	30	Instead of "Socio-Economic development paths", it could be put forth "Transition to a Sustainable Energetic", which could be defined as: a System for satisfying the demand for energy services,	UNCLEAR		

							based on Demand Side Management measures (including pure energy saving), and Renewable Energy Sources. It is true that to define Sustainable Development is a very difficult task, because it depends from many different situations and parameters, but Sustainable Energetic could be defined unambiguosly, in a much easier and direct way; however, attaining Sustainable Energetic is a pre-requisite if you want to attain Sustainable Development, whatever situation you are now, or whatever parameters you employ. Every country and region must find and construct its own Sustainable Energetic, based on its natural resources and characteristics, its own culture and preferences, its own scientific and technological development, etc. Once attained, sustainable energetic would reduce substantially production costs (fossil fuels won't be necessary), GHG emissions, atmospheric pollution, acid rain, etc., bringing many ancillary benefits as more health, less finantial difficulties caused by increasing fossil fuels prices, and others. (JULIO TORRES-MARTINEZ, Cuban Observatory for Science and Technology)			
SPM-1287	31 F 6	A	18	30	18	30	Figure SPM.6: The climate change circule must grow and intersect the Impact circule and socioeconomic box. Also circule and box of Impact and Socieconomic must intersect. The Emision circule would go in the bottom and become a box like in the base of the others. A arrow from Emision to climate globe as a balloon bottom will end in to valvules with a + in one (to inflate) and a - (to deflate). (Government of Spain)	REJ; figure is from TAR/Syr and has been quoted often		Noted. Fig.6 dropped (12) Unless it can be used in the initial part of SPM.
SPM-1288	31 F 7	A	18	30	18	0	As currently presented, the figure is problematic. Authors should elaborate the detailed source of this information. It is too subject to misinterpretation. The explanation in this chapter is sufficiently detailed in pages 51-52 to explain the meaning of the figure, but even in the TS and SPM, that detail disappears (could add figure caption from SPM.6 to Figure 12.4 too). For example, the SPM refers to policy areas, not sectors, implying that the correct choice of policies could eliminate the emissions. U.S. Government (Government of U.S. Department of State)	See A-1268		
SPM-1289	31 F 6	A	18	31	0	0	Figure SPM 6. There should be some mention of framing issues included in this figure. Please refer to the Technical Summary, page 10, lines 5-25 for appropriate examples. (Government of Japan)	ACC; add to caption		
SPM-	31	A	18	31	0	0	We propose that the word "dotted" is deleted.	REJ; dotted arrows still to be		

1290	F 6						(Government of Norwegian Pollution Control Authority)	added to figure		
SPM-1291	31	A	18	0	18	0	I remark the necessity of include a Summary Table in the style of SPM-3, where are detailed the main links among climatic changes and three sustainable development dimensions, such as was realized for each Chapter of WGIII, mainly for each sector from Chapter 4 to Chapter 10 and Chapter 12. (CRISTOBAL FELIX DIAZ MOREJON, MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT)	DISCUSS in relation to A-1268 (dropping the figure 7)	12	
SPM-1292	31 F 7	A	19	0	19	0	Fig. SPM 7: The graphical difference between direct and indirect influence could be made clearer. (Government of France)	See A-1268		Delete figure, convert to table, based on TS table (12)
SPM-1293	31 F 7	A	19	0	19	0	Figure SPM7: Putting the title of the figure at the top may make it more readable. (Government of Environment Canada)	See A-1268		Delete figure, convert to table, based on TS table (12)
SPM-257	31 F 7	B	19	0	19	0	Figure SPM.7. It should be noted that the figures in the graph do not add up. General comment: this graph requires quite some explanation. A different graphical representation and a better introduction in the SPM text might improve this. Otherwise, consider removing this figure. (Government of European Community / European Commission)	See A-1268		Delete figure, convert to table, based on TS table (12)
SPM-258	31 F 7	B	19	0	19	0	Figure SPM.7. caption: "Global CO2 emissions ….". (Government of European Community / European Commission)	See A-1268		Points taken for incorporation
SPM-1294	31 F 7	A	19	1	0	0	Figure SPM 7 We propose that the unit Gt CO2/y is used. (Government of Norwegian Pollution Control Authority)	See A-1268		Points taken for change (12)
SPM-259	31 F 7	B	19	1	19	0	Figure 7 - Hard to tell y values due to presentation and axis tick intervals. Are ones that don't have high or low estimates exact numbers? Would think all data in graph should have error bars. Authors should revise or reject this confusing, speculative, undocumented, and poorly labled figure. U.S. Government (Government of U.S. Department of State)	See A-1268		Delete figure, convert to table, based on TS table (12)
SPM-1295	31 F 7	A	19	5	0	0	Figure SPM 7 - would it be clearer if the y-axis referred to % of emissions covered. Then it would not be linked to particular scenario of emissions (Ann Gardiner, AEA Technology)	See A-1268		No numbers in table. (12)

SPM-1296	31 F 7	A	19	5	19	10	In Figure SPM.7, I do not understand how the insurance industry can have a significant effect on emissions as depicted in this figure. Suggest removing this bar. Also suggest converting this figure into a table since I find that the footnotes that explain what is meant by the bars is as, or more, important than the bars themselves. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	See A-1268		Modify text to make the linkage (12)
SPM-1297	31 F 7	A	19	5	0	0	Delete this figure. It is too subject to misinterpretation. According to figure SPM-1, CO2 emissions in 2002 were about 30 Gt. However, Figure SPM.7 shows the total of all influences is over 60 Gt. While more than one policy can affect a single source of emissions, except for indicating that multilateral bank lending is an indirect influence, the figure does not indicate which influences are dominant. Also, for three of the seven bars on the chart, including fiscal policy, which is the largest bar, there is only a single estimate of influence. The notes indicate that for these three categories, all of the emissions in the category can be affected by policy, implying that the correct choice of policy could eliminate the emissions. This is clearly not the case in the period to 2030 that is the focus of the SPM. Finally, the title of the chart refers to policy areas, but the insurance sector, which is largely in private hands, is included. (Lenny Bernstein, L. S. Bernstein & Associates, L.L.C.)	See A-1268		Delete figure, convert to table, based on TS table, no umbers will be included in table (12)
SPM-1298	31 F 7	A	19	5	19	25	Where is Figure SPM7 cited from? (Koji Kadono, Global Industrial and Social Progress Research Institute(GISPRI))	See A-1268		More refs will be added in the table to be converted from figure (12)
SPM-1299	31 F 7	A	19	5	19	0	Figure 7 is confusing and documentation is unclear. Authors should revise to address these issues. U.S. Government (Government of U.S. Department of State)	See A-1268		Deleted. (12)
SPM-1300	31 F 7	A	19	5	19	25	Footnote 2 appears to be unclear. The graph addresses among others deforestation. Their are many drivers and causes of deforestation, but only logging is mentioned in footnote 2. Logging is an activity which does not lead necessarily to deforestation, as logging is also a normal activity in sustainable forest managent. What is meant here (illegal logging)? Please specify! Were agriculture and land-use policies not taken into consideration? (Government of Germany)	See A-1268		Changes to be made (12)
SPM-260	31 F	B	19	5	0	0	Delete this figure. It is too subject to misinterpretation. According to figure SPM-1, CO2 emissions in 2002 were about 30 Gt.	See A-1268		Delete figure, convert to table,

	7						However, Figure SPM.7 shows the total of all influences is over 60 Gt. While more than one policy can affect a single source of emissions, except for indicating that multilateral bank lending is an indirect influence, the figure does not indicate which influences are dominant. Also, for three of the seven bars on the chart, including fiscal policy, which is the largest bar, there is only a single estimate of influence. The notes indicate that for these three categories, all of the emissions in the category can be affected by policy, implying that the correct choice of policy could eliminate the emissions. This is clearly not the case in the period to 2030 that is the focus of the SPM. Finally, the title of the chart refers to policy areas, but the insurance sector, which is largely in private hands, is included. Authors should revise or reject this confusing, speculative, undocumented, and poorly labled figure. U.S. Government (Government of U.S. Department of State)			based on TS table (12)
SPM-261	31 F 7	B	19	12	19	12	Explain brief in brief terms what is meant by "[l]iberalization of electricity markets". Authors should revise or reject this confusing, speculative, undocumented, and poorly labled figure. U.S. Government (Government of U.S. Department of State)	See A-1268		Texts will be changed in the table based on TS table (12)
SPM-262	31 F 7	B	19	13	19	13	Reference is only to oil "[e]nergy security". What of gas ? Is it possible to address this ? Authors should revise or reject this confusing, speculative, undocumented, and poorly labled figure. U.S. Government (Government of U.S. Department of State)	See A-1268		Changes will be made to be consistent (12)
SPM-1301	31 F 7	A	19	15	19	17	The estimate (in Figure SPM 7) of rural energy supply in developing countries is very low. In case partly these are included in the deforestation, this should be mentioned and the explanation point no. 5 under the figure should be appropriately modified. (Government of India)	See A-1268		Changes will be made to be consistent (12)
SPM-263	31 F 7	B	19	21	19	21	What of insurance industry influence on "energy use and emissions associated with" particular products and industrial and manufacturing processes ? Building construction practices, locational metrics. These are becoming insurance-related issues internationally – Swiss Re, etc. State insurance commissioners and state pension managers in the U.S. Emerging issues for financial/investment community." Authors should revise or reject this confusing, speculative, undocumented, and poorly labled figure . U.S. Government (Government of U.S. Department of State)	See A-1268		See above. In addition, the table to be converted (based on TS) will be added to chapter 12 text as well. (12)
SPM-	31	A	19	25	0	0	Figure SPM.7: Seems incomprehensible and prone to	See A-1268		Rejected as

1302	F 7						misunderstanding in this context; should be omitted (Michael Kohlhaas, German Institute for Economic Research)			figure will be deleted (12)
SPM-1303	31 F 7	A	19	25	19	25	What is reference (2002) and where does this figure come from? (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	See A-1268		See above. In addition, the table to be converted (based on TS) will be added to chapter 12 text as well. (12)
SPM-1304	31 F 7	A	19	25	19	25	in figure SPM.7 it is unclear what the reduction potential within the policy areas is, is it identical to the associated emissions? (Government of The Netherlands)	See A-1268		See above. In addition, the table to be converted (based on TS) will be added to chapter 12 text as well. (12)
SPM-264	31 F 7	B	19	25	19	25	Write: "with selected climate-relevant policy areas (2002)" (Government of Switzerland)	See A-1268		See above. In addition, the table to be converted (based on TS) will be added to chapter 12 text as well. (12)
SPM-1305	32	A	19	27	20	6	Para-32: The positive and negative aspects of reducing deforestation and forestation are presented in such a way to confuse a policy maker. It is possible to interpret the para to state that such activities could adversely affect sustainable development. (Government of India)	DISCUSS	12,9	Accepted. This will be better qualified. (12)
SPM-1306	32	A	19	28	19	28	The statement "…implementation in such as way that there will be no conflict with..." should be modified to"…implementation in such as way that there are synergies and no conflict with...". (Government of India)	ACC		Not Ch8 issue. (8) Accepted. Will be taken into account (12)

SPM-1307	32	A	19	29	19	30	The last part of para 32: or, where trade-offs are inevitable, to allow rational choices to be made" is difficult to understand. This is, because the time horizons for decision making related to sustainable development might differ considerable from the time horizon necessary to assess mitigation options. The same is also true for the geographical scale relevant; whereas decisions related to sustainable development are made at a national or sub-national scale decisions on mitigation require a global perspective. The assessment reports of the IPCC are among the most important products to link sustainable development and mitigation. The linkage between sustainable development and mitigation seems to be the avoidance of climate change impacts in the medium and long term thanks to mitigation. If we fail to mitigate climate change the impacts of climate change might become an unsurmountable barrier to sustainable development whereas mitigation now does practically no harm to sustainable development on a global scale. However, some well designed burden sharing might be required in order to avoid local/sectoral economic problems. From that perspective the last part of para 32 might be wishful thinking for the time being. Nevertheless it is good to hear from the authors of WG3 that in their view there is no more excuse to further postpone mitigation of climate change. Given this relationship between mitigation, adaptation, impacts of climate change and sustainable development para 32 might be deleted at this stage and addressed in a broader context in the Synthesis Report. The Synthesis Report of the AR4 hopefully will put things better into context thanks to the improved understanding and better information. (Government of Austria)	DISCUSS	12	Not Ch8 issue (8) Noted. Second part of sentence will be dropped (12)
SPM-1308	32	A	19	30	20	7	What of conserving natural resources ? U.S. Government (Government of U.S. Department of State)	UNCLEAR		Not Ch8 issue (8) Rejected as it is not clear. (12)
SPM-1309	32	A	19	31	19	31	There are a vast array of ways to improve energy efficiency that are not cost effective and are thus not used. Suggest replacing “almost always” with “often”. (Haroon Kheshgi, ExxonMobil Research and Engineering Company)	ACC		Not Ch8 issue (8) Accepted. Will be modified (12)
SPM-1310	32	A	19	31	19	36	The statement that energy efficiency options are almost always cost effective may need to be qualified by the (almost tautological) caveat of "where they still exist" - because clearly, once these	REJ; efficiency is not easily exhausted		Not Ch8 issue (8) Rejected

							options have been taken, energy efficiency does not offer any further options. In other words, the relevance of energy efficiency options would appear to be very strongly dependent on regional and national circumstances and pre-existing policies. Also, please provide explicit reference to relevant underlying chapter sections in square brackets after this bullet (and separately after the next). (Andy Reisinger, TSU IPCC Synthesis Report)			(12)
SPM-1311	32	A	19	31	19	31	Insert 'and saving' options are almost always cost effective. (Government of Spain)	REJ; no need		Not Ch8 issue (8) Rejected (12)
SPM-1312	32	A	19	31	0	36	We propose that regional (air) pollution is also included in the additional benefits. (Government of Norwegian Pollution Control Authority)	REJ; is covered already		Not Ch8 issue (8) Rejected (12)
SPM-1313	32	A	19	31	19	32	It is said that energy efficiency options are almost cost effective. This depends on which technology we are talking about and the cost. The fact that these options are not already implemented can sometimes be explained by hidden costs. (Government of Norwegian Pollution Control Authority)	See A-1309		Not Ch8 issue (8) Accepted (12)
SPM-1314	32	A	19	31	19	0	Rewrite the first sentence of the bullet starting on this line with the following, for greater accuracy: “MANY energy efficiency options are cost effective, AND WILL improve energy security and reduce local pollutant emissions. HOWEVER, OPPORTUNITY COSTS MUST BE CONSIDERED”. [Note: Inserts are shown in UPPER CASE; deletions are not shown.] U.S. Government (Government of U.S. Department of State)	Prefer A-1309		Not Ch8 issue (8) Accepted (12)
SPM-265	32	B	19	31	0	0	Rewrite the first sentence of the bullet starting on this line with the following, for greater accuracy: “MANY energy efficiency options are cost effective, AND WILL improve energy security and reduce local pollutant emissions. HOWEVER, OPPORTUNITY COSTS MUST BE CONSIDERED”. [Note: Inserts are shown in UPPER CASE; deletions are not shown.] U.S. Government (Government of U.S. Department of State)	Identical A-1314		Accepted (12)
SPM-1315	32	A	19	32	19	36	Energy security goals are sometimes in conflict with GHG emissions reductions goals. U.S. Government (Government of U.S. Department of State)	ACC; add wording to show trade-offs		Not Ch8 issue (8) Accepted. Will be taken into account

									(12)
SPM-1316	32	A	19	33	19	33	Phrasing: '…that either there will be…' (Government of Australia)	UNCLEAR		Not Ch8 issue (8) Rejected as it is not clear (12)
SPM-1317	32	A	19	34	19	34	By "more hard currency" do the authors mean increased foreign expenditure? (Government of Australia)	ACC; replace “hard” by “foreign”		Not Ch8 issue (8) Accepted. Will be modified (12)
SPM-1318	32	A	19	37	19	38	Insert "in certain circumstances" between "may" and "result" and "short-term" between "result in" and "loss of" in line 38. Reducing deforestation may well result in a temporary short term loss of economic welfare in those countries and regions where deforestation is currently providing unsustainable short-term gains in the economic (but not necessarily environmental or developmental) sense. There can be little doubt that sustainable development, properly implemented (including carbon crediting) could help to both prevent deforestation and enhance economic welfare. (Pat Finnegan, Grian)	REJ; “may”already indicates that there is a probability	.	Not Ch8 issue – refer to Ch9 (8) Agree to the comment, currently inconsistent with ch 9 . Suggest to delete first sentence of the second bullet (9) Reject; ‘may already indicates that there is a probability (12) Still needs to be discussed with chapter 9 (jayant & gert-jan). Initiative is with chapter 12 to contact 9 and possible other chapters
SPM-1319	32	A	19	37	19	38	"Reducing deforestation….may result in loss of economic welfare": if that is already so, it is only temporarily so as deforestation leads	DISCUSS		Not Ch8 issue – refer to Ch9

							mostly to the loss of sources of income in the longer term, soil degradation, etc. In its current formulation this is an outdated view dating back to the time of the elaboration of the Kyoto Protocol when the only option to reduce deforestation was by some perceived to be limited to the establishment of national parks and the eviction of indigenous people from those parks. Currently projects to reduce emissions from deforestation and/or forest degradation are undertaken mostly for and by local communities and lead to higher levels of welfare and empowerment of the communities. (Eveline Trines, Treeness Consult)			(8) Agree to the comment (9) Noted; will revise (12)
SPM-1320	32	A	19	37	19	38	In contrast to what this paragraph seems to argue, recent literature indicate that reducing deforestation not only has positive impacts on biodiversity, local communities and indigenous peoples, air quality and other environmental and socio-economic goods and services but also promotes sustainable long-term economic growth. For example see Carvalho, G. D. Nepstad, D. McGrath, M. Santilli, M. Vera Diaz. 2002. Brazil's Amazon development policy: scenarios of environmental impact and alternatives. Environment 44: 34-45. We propose to replace the current paragraph with the following 'Reducing deforestation can have significant biodiversity, soil and water conservation benefits and can also promote sustainable long-term economic welfare'. (Giulio Volpi, WWF International)	DISCUSS	12	Not Ch8 issue – refer to Ch9 (8) Noted; will revise (12)
SPM-1321	32	A	19	37	19	38	sentence seems inconsistent with 9.7.2.1, please rephrase (Government of The Netherlands)	See A-1319, 1320		Not Ch8 issue – refer to Ch9 (8) Noted; will revise (12)
SPM-1322	32	A	19	37	19	38	"Reducing deforestation can have.....loss of economic welfare". Surprising to find the sentence about Deforestation. Is there evidence in the chapters to show that “Deforestation has lead to loss of economic welfare”. Sentence needs modification, since increase in crop productivity will avoid deforestation. (Government of Ministry of Environment and Forests)	See A-1319, 1320		Not Ch8 issue – refer to Ch9 (8) Noted; will revise (12)
SPM-1323	32	A	19	37	19	41	“Reducing deforestation can have significant biodiversity, soil and water conservation benefits but may result in loss of economic welfare.” This statement does not seem to give credit to the significant economic benefits that can be obtained from biodiversity whose	See A-1319, 1320		Not Ch8 issue – refer to Ch9 (8) Noted; will revise

							conservation can be greatly assisted by decreasing deforestation activities, including the following economic benefits: pharmaceutical opportunities, water purification, pest control, pollination, soil protection, recreation and ecotourism, etc. See reference "Environmental services of biodiversity" by Norman Myers, PNAS 93, 2764-2769, 1996. Also, conserving biological diversity and its sustainable use have a fundamental role in the daily lives of humans and is critical for human health. A source of reference is a book resulting from a 1995 conference sponsored by NIH, NSF, the Smithsonian Institution, NAPE, PAHO that discussed issues linking human health to biodiversity. Book: Biodiversity and Human Health. Grifo F and J Rosenthal (editors). 1997. Island Press, Washington, DC, ISBN 1-55963-501-0. U.S. Government (Government of U.S. Department of State)			(12)
SPM-1324	32	A	19	38	20	5	"Forestation and bioenergy plantations can….": not only these 2 options can do all of that. Rehabilitation of degraded natural vegetation cover and improved forest management practices can do the same (Eveline Trines, Treeness Consult)	ACC; add		Not Ch8 issue – refer to Ch9 (8) Accept; will add (12)
SPM-1325	32	A	19	38	19	38	replace "but may result in loss of economic welfare" by "but may result in a different distribution of welfare, benefiting local communities and the informal economy" (Government of The Netherlands)	TIA in reformulating text, see A-1319-1322		Not Ch8 issue – refer to Ch9 (8) Noted; will revise (12)
SPM-1326	32	A	19	38	19	38	Even it is not wrong that avoiding deforestation may result in loss of economic welfare, on could also predict that avoiding deforestation by implementing sustainable forest management may result in long term economic benefits. Therefore it is suggested to add after "...benefits but may result in" short term "loss of economic welfare". (Government of Germany)	See A-1319-1322		Not Ch8 issue – refer to Ch9 (8) Noted; will revise (12)
SPM-1327	32	A	20	7	0	0	Add from chapter 12: "Mitigative capacity can be understood as the capability to reduce anthropogenic greenhouse gas emissions or enhance natural sinks. This "ability" refers to the skills, competencies, fitness, and proficiencies that a country has attained which can contribute to GHG emissions mitigation, and is rooted in the development path. Major capacity exists to make development paths more sustainable, but is not being tapped to address climate	REJ; not appropriate here (would belong in para 31, but there not really needed)		Not Ch8 issue – refer to Ch9 (8) Reject; does not integrate well with this section (12)

							change mitigation". (Harald Winkler, University of Cape Town)			
SPM-1328	TS	A	81	44	81	49	The waste management sector is also a source of F-gas emissions through the disposal of F-gas containing waste. This topic needs to be discussed, and these emissions added to the sector total. F-gas mitigation potential and cost should also be assessed. U.S. Government (Government of U.S. Department of State)	Is for TS	TS	For TS (12)
SPM-1329	27 T 3	A	109	1	0	0	Table TS.22（same as SPM P17, Table SPM.3、Ch13 P73/74 Table13.6） Overall, what decides weather an approach meets a criteria is rather vague and not objective and the columns with "+" "-" "0" should be therefore deleted. For example, "national emission targets and emission trading " effectiveness depends on participation, stringency and compliance. It means this evaluation is too difficult. (Government of Japan)	Table SPM 3 to be deleted		Not Ch 12 (12)
SPM-1330	27 T 3	A	109	1	0	0	Table TS.22（same as SPM P17, Table SPM.3、Ch13 P73/74 Table13.6） "sectoral agreements" seems to be unreasonably underestimated. The Asia-Pacific Partnership and G8 process adopt these "sectoral agreements" approaches are trying to go forward. This should be highly regarded. (Government of Japan)	Table SPM 3 to be deleted		Not Ch 12 (12)
SPM-1331	16	A	12	29	12	30	“Achieving the emissions reduction potential in the transport sector will depend” not only “on government policies” but also on consumer behaviour and oil prices. Suggest appropriate changes be made in the text. (VOLODYMYR DEMKINE, UNEP)	REJ; that is not the point of the sentence		Not Ch 12 (12)
SPM-1332	13	A	12	6	12	7	Realising “energy supply mitigation measures requires” not only “an active government policy involvement” but also full participation of the private sector. Suggest appropriate changes be made in the text. (VOLODYMYR DEMKINE, UNEP)	TIA WITH OTHER COMMENTS		Not Ch 12 (12)
SPM-1333	21	A	13	27	13	34	Further introduction of genetically engineered crops may also have significant impacts on the emissions from this sector. Though the level of confidence with respect to GMO/LMO is unclear at this point, the driver mentioned above can hardly be ignored. (VOLODYMYR DEMKINE, UNEP)	REJ; not significant enough for SPM		Not Ch 12 (12)
SPM-	1	A	0	0	0	0	Figure SPM 1 is supposed to be the same as Figure TS 1. But they	ACC; will be reconciled		

1334	F 1						are different. Why? Also Fig. TS 1 refers to “biofuel” while Fig. SPM 1 applies the term “traditional biomass”. Needs harmonization. (VOLODYMYR DEMKINE, UNEP)			
SPM-1335	1 F 3	A	0	0	0	0	Figure SPM 3 refers to IEA (2005a) while Figure TS 5 refers to both IEA (2005a) and EDGAR 3.0 database but these two figures are the same. Needs to be harmonized. (VOLODYMYR DEMKINE, UNEP)	Will be reconciled		
SPM-1336	5 T 1	A	0	1	0	0	Table SPM 1 refers to “Probability of staying below 2 degrees C above pre-industrial at equilibrium” and “Probability of staying below 3 degrees C above pre-industrial at equilibrium”. However the meaning of these figures is not clear. Why 2 or 3 degrees is so critical? There must explanation of this in the main text. (VOLODYMYR DEMKINE, UNEP)	DISCUSS	3	Noted. Table to be revised in consultation with WGI. (3)
SPM-1337	6	A	0	0	0	0	The statement that “Energy efficiency is playing a key role for all regions and timescales” is misleading. The correct statement could be “The total energy consumption, the structure of primary energy supply and energy efficiency are playing a key role for all regions and timescales.” (VOLODYMYR DEMKINE, UNEP)	REJ; that is not what was meant		
SPM-1338		A	0	0	0	0	Will it be understood by readers that in this context “biomass” does not mean “traditional biomass”? (VOLODYMYR DEMKINE, UNEP)	UNCLEAR		
SPM-1339	0	A	0	0	0	0	Application of UGN terminology has improved, some observations: (a) not all paragraphs have an uncertainty statement; (b) it is often not clear to which sentence(s) the statement refers; maybe some general rule of thumb can be agreed like one statement just after each bold/italic heading; (c) outer bounds of ranges and outliers should get more attention; (d) some statements are about confidence, others about qualitative aspects, these can be complementary, but could also lead to confusion, it is not evident that the choice for this was always based on the same considerations. Urge authors to reflect on difference or (as suggested in other comments) opt for uniform terminology per section A-E. (Rob Swart, MNP)	DISCUSS	All, CG Uncertia nty	
SPM-1340	0	A	0	0	0	0	There is a general inconsistency between statements that are labled "High confidence" and those labled "HM" or "HL" (Paul Baer, EcoEquity)	See 1339		
SPM - 1341	5h ea	A	5	1	5	1	The authors need to define what they mean by "technically feasible" (is it the same as technical potential?).	Heading will be dropped		

	ding						(Government of Australia)			
SPM - 1342	5	A	5	7	5	8	The statement that "Global emissions need to start declining at some time in the future…" is obvious and needs sharpening to be useful. Suggest "A risk management framework suggests that global emissions need to be stabilised within a period of 1-3 decades and to be strongly reduced thereafter, to achieve stabilisation of GHG concentrations without undue risk." (Ralph Chapman, Victoria University of Wellington)	TIA		
SPM - 1343	6 F 4	A	7	25	8	15	The SPM needs to be a bit more precise in its language when it attempts to equate various CO2 stabilization levels to policies that would seek to hold radiative forcing below some level. The emissions pathways are not the same and this matters especially when one adopts such a short time frame as 2030. If larger emissions reductions are needed in the next couple of decades under the radiative forcing scenarios -- as compared to something like a WRE stabilization scenario -- that will require a different set of actions and carbon prices which will change which technologies deploy. These are not the same thing. Need to be more careful on this point. (James Dooley, Battelle)	UNCLEAR		
SPM - 1344	0	A	9	0	11	0	following the suggestion to apply only qualitative statements about uncertainty in section B this could also be suggested for the general parts of section C (statements 9-12), where this is already the case in most statements. (Rob Swart, MNP)	DISCUSS	4-11, CG Uncertainty	
SPM - 266	12	B	11	41	11	41	“Potentially large cost reductions” – on the order of ? U.S. Government (Government of U.S. Department of State)	Identical A-803		
SPM - 1345	14	A	12	16	0	0	Suggest add after the word "unattractive": "; and there are sequestration risks associated with CCS." (Ralph Chapman, Victoria University of Wellington)	TIA when reformulating		
SPM - 1346	16	A	12	34	0	0	Suggest add reference to public transport oriented development. Specifically, insert after "facilities" the words "and public transport oriented urban development" (Ralph Chapman, Victoria University of Wellington)	ACC; add “urban development”		
SPM - 1347	15 - 16	A	12	34	0	0	Add sentence to end of paragraph: "Many of these measures have health benefits or other social co (Ralph Chapman, Victoria University of Wellington)	TIA in reformulating		
SPM - 1348	21 -	A	13	27	13	33	different from chapter 9 and chapter 8, it is the first time that a confidence level is mentioned. It is absolutely unclear how the high	DISCUSS	8,9, CG Uncertia	

	22						confidence was gained given for example the statement in TS at page 71 lines 26 to 33 and 35 to 38. Delete "high confidence" (Government of Germany)		nty	
SPM - 1349	22	A	13	37	13	38	neither in the underlying chapter nor in the TS there is any paragraph dealing with that issue: delete whole sentence from "In estimating…to … sequestration" (Government of Germany)	REJ; chapter 9 needs to deal with this in light of political interest	9	
SPM - 1350	27	A	15	17	0	0	Suggest add reference to equity implications. Also, it is not clear that the distribution of allowances always has implications for efficiency. Thus, specifically, suggest add after the words "…may have implications for" add "equity, and may have implications for" (Ralph Chapman, Victoria University of Wellington)	UNCLEAR		
SPM - 1351	4	A	4	14	4	15	The main problem with using MERs rather than PPPs is with the 1990 baseline. Use of MERs underestimates the size of the economy of the developing world. With convergence assumptions this exaggerates economic growth assumptions. The authors need to provide a footnote to this effect in the SPM. (Government of Australia)	TIA; we need a better conclusion on this issue (comments is restating the well known criticism, but point is what the literature assessment says of this)	3	Noted. More precise statement/s on issue to be incorporated in Ch3. (3)