Expert Review Comments on the IPCC WGIII AR5 First Order Draft – General

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12190	AII AR5	1				Dear authors, thank you for writing the first report. I have comments on selected text passages and sections which concern the interlinkages between mitigation and adaptation. If the task of this IPCC report is to give an overview, synthesise and analyise the content of existing literature: - the analysis on mitigation adaptation interlinkages lacks a systematic approach which is guided by clear analyitical question or a systamitized and explicit description and content analysis of available literature (either from a perspective of IPCC authors and their questions or from a perspective of the authors of the cited publications and their analytical questions - the literature review and accordingly the used literature is not comprehensive, e.g. on adaptive capacity - some text passages are based on the content of non refereed publications	Rejected. WG3 is tasked with analysing the science of climate change mitigation. Adaptation is primarily dealt with in Working Group 2. The synthesis report will focus on interlinkages.
5754	AII AR5	21	40	22	10	Please include the IPCC RCP regions in the Glossary. They are used intensely in the text but not explained in each chapter.	Noted. The description of regions are provided in Annex II.
4982	All AR5					Although there was something on Issue of gender in the social cobenefit subsection of chapter 7 & 9 (Energy & buildings), the issue can also be adressed in chapter of FOLU in section of cobenefits	Accepted. We have introduced a consistent treatment of co-benefits and adverse side-effects throughout the report (3,4,5,6,7,8,9,10,11) in economic, environmental and social dimension.
13512	All AR5					Although there was something on Issue of gender in the social cobenefit subsection of chapter 7 & 9 (Energy & buildings), the issue can also be adressed in chapter of FOLU in section of cobenefits	Accepted. We have introduced a consistent treatment of co-benefits and adverse side-effects throughout the report (3,4,5,6,7,8,9,10,11) in economic, environmental and social dimension.
17314	All AR5					Other recent publications that give an overview on gender and climate change are: Skinner, Emmeline 2011. Gender and Climate Change. Overview Report. Brighton, United Kingdom: BRIDGE, Institute of Development Studies. Dankelman, Irene 2010. Gender and Climate Change: An Introduction. London, United Kingdom: Earthscan.	Taken into consideration by author team.
17315	All AR5					There is evidence for gender differences of indiviuals' carbon footprints, and on gender differences in food/meat consumption, see: Carlsson-Kanyama, Annika & Räty, Riitta 2008. Kvinnor, män och energi; makt produktion och användning. Stockholm, Sweden: FOI. Räty, Riitta & Carlsson-Kanyama, Annika 2009. Comparing energy use by gender, age and income in some European countries. Stockholm, Sweden: FOI. Räty, Riitta & Carlsson-Kanyama, Annika 2010. Energy consumption by gender in some European countries. Energy Policy 38, 1, 646–649. Max-Rubner Institut & Bundesforschungsinstitut fürErnährung und Lebensmittel 2008. Nationale Verzehrs-Studie II Ergebnisbericht. Teil 2. Karlsruhe, Germany: Max-Rubners Institut, Bundesforschungsinstitut für Ernährung und Lebensmittel. Verkehrsclub Österreich (VCÖ) (2009) Gender Gap im Verkehrs- und Mobilitätsbereich, VCÖ, Wien	Taken into consideration by author team.

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17316	All AR5					There is also evidence for gendered attitudes and preferences regarding climate change policies: ARS research AB 2007. Genusperspektiv på allmänhetens kunskaper och attityder till klimatförändringen (tidigare växthusaffekten) (Gender aspects of the knowledge and attitudes to climate change). Stockholm, Sweden: ARS research AB. European Commission (2007) Europeans and Nuclear Safety, Special Eurobarometer 271, Brussels European Commission (2009a) Europeans' attitudes towards climate change. Special Eurobarometer 322, Brussels European Commission and European Parliament (2009) Europeans' attitudes towards climate change. Special Eurobarometer 313, Brussels Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik (2006) Umweltbewusstsein in Deutschland 2006. Ergebnisse einer repräsentativen Bevölkerungsumfrage, Berlin Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Reihe Umweltpolitik (2008) Umweltbewusstsein in Deutschland 2008. Ergebnisse einer repräsentativen Bevölkerungsumfrage, Berlin Bord, R. J. and R.E. O'Connor (1997) 'The Gender Gap in Environmental Attitudes: The Case of Perceived Vulnerability to Risk', Social Science Quarterly 78(4): 830–840 Finucane, M.L., P. Slovic, C.K. Mertz, J. Flynn and T.A. Satterfield (2000) 'Gender, race, and perceived risk: the `white male' effect', Health, Risk & Society 2(2): 159–172 Kiljunen, P. (2008) 'Finnish Energy Attitudes 2008', in Research Report, No. 15, Finnish Energy Industries, Helsinki	Taken into consideration by author team.
17317	All AR5					Moreover, there is evidence for gender differences in the response to policies, and gendered socio-economic impacts of policies and measures: Carlsson-Kanyma, Annika & Lindén, A. L. 2007. Energy efficiency in residences - challenges for women and men in the North. Energy Policy 35, 2163–2172. Johnsson-Latham, G 2007. A study on gender equality as a prerequisite for sustainable development: what we know about the extent to which women globally live in a more sustainable way than men, leave a smaller Ecological Footprint and cause less climate change. Stockholm, Sweden: The Environment Advisory Council, Ministry of the Environment. LIFE e.V. forthcoming. Determinanten der Wechselbereitschaft von Frauen: Analyse der Hemmnisse und Motivationsstrategien des Wechsels zu Ökostrom. Berlin, Germany: LIFE e.V. available at http://www.genanet.de/fileadmin/downloads/Strom_Wechsel_Frauen/AbschlussberichtFKZ_0325108-nbf.pdf an furthermore:	Taken into consideration by author team.
17318	All AR5					Milieu Ltd. & LIFE e.V. 2011a. Gender analysis of the policy initiatives of the Member States in relation to climate change in the sectors of transport and energy. Analysis paper.	Taken into consideration by author team.
17319	All AR5					Offenberger, Ursula & Nentwich, Julia 2009. Home heating and the co-construction of gender, technology and sustainability. In Gendering Climate Change. Women & Gender Research. Copenhagen, Denmark: Kristen Justesen.	Taken into consideration by author team.
17320	All AR5					Offenberger, Ursula & Nentwich, Julia 2010. Intertwined practices of gender and technology: the case of sustainable home heating. St. Gallen, Switzerland: Universität St. Gallen.	Taken into consideration by author team.
17321	All AR5					Oldrup, Helene & Romer Christensen, Hilda 2007. TRANSGEN. Gender mainstreaming European transport research and policies building the knowledge base and mapping good practices. Copenhagen, Denmark: Co-ordination for Gender Studies. University of Copenhagen.	Taken into consideration by author team.

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17322	All AR5					Schultz, Irmgard & Stiess, Immanuel 2009. Gender aspects of sustainable consumption strategies and instruments. Frankfurt/Main, Germany: Institute for Social-Ecological Research (ISOE).	Taken into consideration by author team.
17323	All AR5					Spitzner, Meike & Modlich, Regula 2006. Women at the crossroads with transportation, the environment and the economy - experiences and challenges in Germany. Women + environments international magazine. 70, 31.	Taken into consideration by author team.
17324	All AR5					Lan, L., Z. Lian, W. Liu and Y. Liu (2008) 'Investigation of gender difference in thermal comfort for Chinese people', European Journal of Applied Physiology 102(4): 471–480	Taken into consideration by author team.
11194	All AR5					The report overall makes little reference to the importance of good governance, respect for human rights, and in the context of AFOLU, respect for the rights of indigenous peoples, in achieving successful mitigation activities. Respect for rights is not just essential to make mitigation measures effective (eg putting rights into REDD+ projects) but also an opportunity to put the brakes on major drivers of deforestation and land degradation (eg helping people and communities to resist destructive land grabs).	Rejected. The treatment of justice and ethical issues is covered in more depth than any previous assessment.
11195	All AR5					The report includes dozens of references to the Clean Development Mechanism, but almost all references are positive, with hardly any information about the major problems with the CDM, both in terms of respecting the human rights of affected communities, and in terms of its inability to demonstrate additionality. Indeed, the CDM has been plagued with problems on these fronts, and its future is limited due to withdrawal by the European Trading System, and strong criticism by the US Government's Accounting Office.	Noted. We have made sure that the discussion on the CDM remains balanced.
7395	All AR5					The report is largely missing any assessment of the spillovers related to mitigation, technology, and finance and their impacts on developing countries, which continues to be an important issue for developing countries and crital for future climate change agreements.	Accepted. We have strengthened the draft in chapter 6 and 14 on this issue.
7396	All AR5					The draft provides very little very little attention to the issue of buren sharing and the prinicple of common but differentiated resposibilities in relation to mitigation (future pathways) and the sources and deployment of finance and technologies.	Accepted. We have continued to work on this issue in the context of chapter 6 as well as the summary documents.
8441	All AR5					REVIEW OF AR5 CHAPTER 15	No action needed.
8442	All AR5					Ian Bailey	No action needed.
8443	All AR5					My research collaborator Hugh Compston and I suggest that Chapter 15 could be made more useful for efforts to strengthen mitigation by incorporating more material on political opportunities for governments that want to take more effective action. Although the introduction to Ch. 15 briefly describes definitions and functions of institutions and governance, the excerpt on governance is restricted to pointing out that governance conceptualizes decision-making as a process involving multiple (governmental and non-governmental) actors. References are made to terms like political barriers and political acceptability at various points throughout the chapter but these are rarely specified and there is very limited discussion of their nature or strategic options available to manage political barriers.	Accepted. We have strenghtened the treatment of literature from political sciences on this issue.
8444	All AR5					Political barriers at the national level have proven to be decisive obstructions to climate mitigation policy in most, if not all, states and have been particularly prominent in key states like the USA, Australia, India and China. Greater analysis is therefore needed within Chapter 15 of the nature of these barriers and how they might be overcome. The types of political barrier falling within this category include problems such as:	Taken into consideration, but limited space is highlighted.
8445	All AR5					· Threats by major corporations to withdraw or delay investments from a country in response to a proposed emissions-reduction measure; the withholding or manipulation of emissions, financial, market or technical information by companies; and non-cooperation with the implementation of manipulation policies within the boundary of national law;	Noted.

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8446	All AR5					· Adverse public opinion towards an actual or proposed mitigation policy, as indicated by election results and opinion polls, due to factors such as the costs of mitigating actions. This may be aggravated by unfavourable media coverage and campaigns by opposition political parties;	Noted.
8447	All AR5					· Partisan politics, as Section 15.5.4.1 notes in relation to emissions trading in Australia and which can also be observed in Canadian and US climate politics.	Noted.
8448	All AR5					It is clear that these and other pressures have constrained national mitigation policies by increasing the risk that governing parties and individual politicians will either be unable to introduce stronger climate policies (policy blocks) or will suffer serious political damage if they do introduce new climate policies (policy penalties). Such pressures particularly affect democratic governments and acts as a strong disincentive for strong mitigation action, but may also be felt by those without representative democracy, through a loss of reputation and legitimacy among citizens and other major actors in society. Passey et al. (2012), for example, present systematic evidence that stakeholder pressure has, in many instances, blocked or weakened emissions trading schemes.	Political difficulty of enacting cap and trade programs noted in 15.5.3
8449	All AR5					Passey, R., Bailey, I., Twomey, P. and MacGill, I. (2012) The inevitability of 'flotilla policies' as complements or alternatives to flagship emissions trading schemes, Energy Policy, 48, 551-561, http://dx.doi.org/10.1016/j.enpol.2012.05.059.	Noted.
8450	All AR5					These pressures apply in both one-party and multi-party systems, and across a multitude of governance scales. The purpose of including a systematic analysis of political obstacles would not be to advocate particular actions or to make any statements that could be seen as political, since this is beyond the remit of AR5, but simply to describe the nature of political obstacles to mitigation policies and provide an impartial and informative review of the political options available, much as has been done for the sectoral and instruments analyses in earlier chapters of AR5 WGIII.	Noted. Effort made to describe political obstacles and provide impartial and informative review as commenter notes.
8451	All AR5					A wide literature exists on this topic. We recommend the following sources in particular:	Noted.
8452	All AR5					Bailey, I and Compston, H. (eds) 2012 Feeling the Heat: the politics of climate policy in rapidly industrializing countries, Basingstoke: Palgrave Macmillan.	Taken into consideration by author team.
8453	All AR5					Bailey, I. and Compston, H. 2010 Serendipity is still not a strategy: geography and the politics of climate policy, Geography Compass 4 (8), 1097-1114	Noted.
8454	All AR5					Bailey, I., MacGill, I., Passey, R. and Compston, H. (in press 2012) The demise of the Australian Carbon Pollution Reduction Scheme: a political strategy analysis, Environmental Politics, 31 (5): doi:10.1080/09644016.2012.705066.	Taken into consideration by author team.
8455	All AR5					Bulkeley, H. and Newell, P. (2010) Governing climate change. Abingdon: Routledge.	Taken into consideration by author team. Similar references by author used e.g. in Ch 15.
8456	All AR5					Carter, N. (2008) Combatting climate change in the UK: challenges and obstacles, Political Quarterly, 79, 194–205.	Taken into consideration by author team.
8457	All AR5					Compston, H. and Bailey, I. (eds) 2008 Turning down the heat: the politics of climate policy in affluent democracies, Basingstoke: Palgrave Macmillan.	Noted.
8458	All AR5					Compston, H. and Bailey, I. 2012 Climate Clever: how governments can reduce emissions and still win elections, Abingdon: Routledge.	Noted.
8459	All AR5					Giddens, A. (2011) The politics of climate change (second edition), Cambridge: Polity Press.	Noted.
8460	All AR5					Pralle, S. (2009) Agenda-setting and climate change. Environmental Politics, 18, 781–799.	Noted.
8461	All AR5					Stadelmann-Steffen, I. (2011) Citizens as veto players: climate change policy and the constraints of direct democracy, Environmental Politics, 20 (4): 485-507.	Noted.
8462	All AR5					Compston and Bailey (2012) and Bailey and Compston (2012) provide especially detailed theoretical and empirical investigations of political options. These options include:	Noted.

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8463	All AR5					· Unilateral action, for example taking small steps on many fronts, and introducing contentious policies early in a term of office to allow opposition to subside and benefits to become clearer before the next election;	Noted.
8464	All AR5					· Using communications to change other actors' policy preferences not only by providing accurate information on climate change and possible policy responses but also through stressing the co-benefits of climate policy for other, such as energy security, employment and regional development, and using metaphors and analogies to make ideas more accessible and appealing to target audiences;	Noted.
8465	All AR5					· Trading policy amendments for support, either amendments that relate to the climate policy under discussion, such as by providing transitional assistance, or amendments to other types of policies, such as business regulation;	Noted.
8466	All AR5					· Improving the bargaining position of advocates of strong policies by means such as integrating climate and energy ministries, and seeking cross-party consensus on climate change.	Noted.
8467	All AR5					Assuming no change in the structure of the chapter, the most appropriate place to insert material on political barriers and opportunities would appear to be 15.9 Barriers to Mitigation. This is currently focused on developing countries. Among other things a more comprehensive approach would replace Table 15.3 with a table showing constraints for countries whose actions can make a bigger contribution to reducing greenhouse-gas emissions, such as China and/or India (because of their status as major BRICs), Brazil (to illustrate constraints on reducing tropical deforestation); the USA (a major highly fossil-fuel dependent developed nation facing severe constraints on mitigation policy); and Germany or the UK (to illustrate European perspectives where stronger action has been taken). Useful summaries covering all the countries named are included in:	Partially accepted. A summary of mitigation action is included in 15.2, which notes increases in different areas of the world.
8468	All AR5					Bailey, I and Compston, H. (eds) 2012 Feeling the Heat: the politics of climate policy in rapidly industrializing countries, Basingstoke: Palgrave Macmillan.	Taken into consideration by author team.
8469	All AR5					Compston, H. and Bailey, I. (eds) 2008 Turning down the heat: the politics of climate policy in affluent democracies, Basingstoke: Palgrave Macmillan.	Noted.
15264	All AR5					Conflict resolution strategies are essential to resolving international, inter-organisational and cross geopolitical ideological differences. However, current strategies (apparently) follow normative, reductionist paradigms eschewing the human dimension in favour of the sublimely 'objective' allusion. It is time to embrace post-positivist, 'humanistic' methodologies as the subject matter so implores: passion, compassion, empathy - the full gamut of the human (and other creatures and associated systems') condition(s). Isolationary perspectives in terms of obervable phenomena are failing us all. Humanistic complexity perspectives may create a more complete picture of life for planet Earth in the Twenty First Century. Without this viewpoint we are all guilty of delusion of the severist degree.	Noted.
12611	All AR5					The messages from AR5 are very similar to AR4 and all other Ars before. I am concerned that this exercise is not having the desired effect on the international direction of climate change negotiations. In my view this stems from the inability or reluctance to properly consider the costs of climate change adaptation and impacts. As it stands each WG seems to be considering their issue in isolation which avoids the key balance of: Climate Change Mitigation vs. Climate Change Adaptation + Climate Change Impacts. Without trying to understand and if possible quantify this balance I feel AR6 will likely be telling the same story only with less time and more dire consequences at stake.	Rejected. AR5 provides a wealth of new insights in WG3. The structure of the IPCC assessment is that first each WG assesses a well-defined part of the literature. In the synthesis report - all knowledge is brought together. The issue of balancing costs and benefits of human responses to climate change will be dealt with in the synthesis report.

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12654	All AR5					The messages from AR5 are very similar to AR4 and all other Ars before. I am concerned that this exercise is not having the desired effect on the international direction of climate change negotiations. In my view this stems from the inability or reluctance to properly consider the costs of climate change adaptation and impacts. As it stands each WG seems to be considering their issue in isolation which avoids the key balance of: Climate Change Mitigation vs. Climate Change Adaptation + Climate Change Impacts. Without trying to understand and if possible quantify this balance I feel AR6 will likely be telling the same story only with less time and more dire consequences at stake.	Rejected. AR5 provides a wealth of new insights in WG3. The structure of the IPCC assessment is that first each WG assesses a well-defined part of the literature. In the synthesis report - all knowledge is brought together. The issue of balancing costs and benefits of human responses to climate change will be dealt with in the synthesis report.
11188	All AR5					Congratulations for the quality of the job. I From my expert viewpoint , I have no comment.	Noted.
14327	All AR5					on Geoengineering: The scientific background to geoengineering concepts is also addressed in WG1 - chapters 6.5 and 7.5. There seems to be at least some repetition, possible redundancy and inconsistencies with the texts on geoengineering in WG3, e.g. in chapter 6.9.	Accepted. We have worked and will continue to work on this - in direct contact with the respective Working Group I authors.
14328	All AR5					on Geoengineering: In contrast to the description of the geoengineering science in the FOD of WG1, the FOD of WG3 only contains little text that is scattered over various chapters, e.g. in sections 1.2.1, 1.4.2; 1.4.5, 6.1; page 27; section 9.5.2; and 13.4.2. I I suggest that these various parts on geoengineering in WG3 should be brought together and concentrated under one specific subheading in one of the chapters, e.g. ch.6, with references to this subheading in the other chapters.	Accepted. We continue to deal with different aspects of geoengineering in different chapters of the report, but we moved towards synthesizing our knowledge more and more i chapter 6.

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14329	All AR5					on Geoengineering while the FOD addresses governance and policy questions on a number of other topics, there is virtually no analysis of the literature on the unresolved policy and governance implications of geoengineering e.g. implications for climate mitigation policies or for the climate negotiations A number of relevant pieces of literature have been published that have gone through legal peer review and are thus fit for use as IPCC source material I have submitted some of them as attachments to the email address comments@ipcc-wg3.de, in accordance with the instructions to reviewers Recent literature that should be included includes - Bodle, R., with Homan, G., Schiele, S., and E. Tedsen (2012). Regulatory Framework for ClimateRelated Geoengineering Relevant to the Convention on Biological Diversity Part II of: Geoengineering in Relation to the Convention on Biological Diversity Technical and Regulatory Matters Secretariat of the Convention on Biological Diversity. Montreal, Technical Series No. 66; - Bodle, Ralph, "Climate and Geoengineering," in: Hollo, Erkki, Kati Kulovesi and Michael Mehling(eds.), Climate Change and the Law. A Global Perspective, Berlin: Springer, forthcoming 2012 (submitted May 2012); - Bodle, Ralph, Geoengineering and International Law The search for common legal ground Tulsa Law Review. Geoengineering Symposium issue, 46 Tulsa Law Review 2 (2010) 305-322; - Bodle, Ralph, "International governance of geoengineeringRationale, functions and forum", in: William C.G. Burns and A. Strauss, (eds.), Climate Change Geoengineering Legal, Political and Philosophical Perspectives, Cambridge: Cambridge University Press (submitted February 2011; in press); - Lin A.C., International Legal Regimes& Principles Relevant to Geoengineering(in press). In: W.C.G. Burns and A. Strauss, (eds.), Climate Change Geoengineering Legal, Political and Philosophical Perspectives Cambridge: Cambridge University Press, Cambridge (submitted 2011, in press); - Rickels, W.; Klepper, G.; Dovern, J.; Betz, G.; Brachatzek, N.; Cacean, S.; G ssow, K.; Heintzenberg J.; Hiller, S.; Hoose, C.; Leisner, T.; Oschlies, A.; Platt, U.; Proelß, A.; Renn, O.; Sch fer, S.; Z rn M. (2011): Large-Scale Intentional Interventions into the Climate System? Assessing the Climate Engineering Debate Scoping report conducted on behalf of the German Federal Ministry of Education and Research (BMBF), Kiel Earth Institute, Kiel, available at http://www.fona.de/mediathek/pdf/Climate_Engineering_engl.pdf;	Taken into consideration.
13018	All AR5					This comment is in regard to Annex I - Glossary. Annex I Option in drop down list under the Chapter heading is not available. The term "carbon dioxide capture and storage (CCS)" is defined (page 7, line 3) and the term "sequestration" is defined (page 31, line 32). Under the "sequestration" definition, it refers the reader to the "carbon capture and storage"(page 31, line 38). definition it is recommended that this should be revised to "carbon dioxide capture and storage" to reflect the the formal definition in the Glossary.	Accepted.
13019	All AR5					This comment is in regard to Annex I - Glossary. Annex I Option in drop down list under the Chapter heading is not available. The term "carbon dioxide capture and storage (CCS)" is defined (page 7, line 3) and the term "sequestration" is defined (page 31, line 32). Under the "sequestration" definition, it refers the reader to the CCS definition elsewhere in the Glossary (page 31, line 38). However, under the CCS definition, it does not refer the reader to "sequestration." Since these terms are used interchangebly throughout the document, it is recommended that, under the CCS definition, there should be a reference to the term "sequestration" that redirects the reader.	Accepted.

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13020	All AR5					This comment is in regard to Annex I - Glossary. Annex I Option in drop down list under the Chapter heading is not available. The term "carbon dioxide capture and storage (CCS)" is defined (page 7, line 3). However, throughout the document, the technology is more commonly referred to as "carbon capture and storage." It is recommended that there should be clarification of the various ways CCS can be referred to under the CCS definition in the Glossary (e.g., also referred to as Carbon Capture and Storage and/or Carbon Capture and Sequestration."	Accepted.
13022	All AR5					This comment is in regard to Annex I - Glossary. Annex I Option in drop down list under the Chapter heading is not available. The term "geologic storage" or "geologic sequestration" is absent in the Glossary but identified in areas in the document (Ch 7, page 5, line 49) and alongside "carbon capture" (Ch 13, page 13, line 8) as a stand alone term. It is recommended that the term be included in the Glossary. In the absence of a proper definition, it is reccommended that the reader should be redirected to the terms "carbon dioxide capture and storage (CCS)" (page 7, line 3) and "sequestration" (page 31, line 32) in the Glossary, respectively.	Accepted.
15718	All AR5					None of the chapters make mention of a feature of global urbanization that may have the most far-reaching impact on the climate debate: An urban planet also means more large cities. UN DESA data show that more than a thousand cities now have populations in excess of half a million. These are places large enough to have technical and financial capacity to introduce change by means of planning, design, and local regulation.	Noted. We cover this aspect, but will work to make it more explicit.
15719	All AR5					The discussion in opening and concluding chapters completely misses the potential actions that are now and could be more often taken by subnational governments. Chapters One and Fifteen focus on national and international actors as though they were the sole and most promising agents to effectuate mitigation and adaption. Yet this model since Kyoto has proven elusive and faulty. Copenhagen, Durban and Rio showed a striking inability to get to grips with solutions. At the same time, Chapter Twelve (especially Section 12.4, 12.5, 12.6, and 12.7 contain extensive discussion about mechanisms and incentives which have achieved some progress in specific cities and classes of places, for example, cities in association with one another, suggesting that more could be done at the subnational level. Not a single reference is made to these discussions in Chapter One.	Rejected. This particular aspect does not need to be captured in chapter 1. But it is a point that is made in the report.
15720	All AR5					A further point along these lines is that also deserving of mention is that recent evidence suggests that cities in the 500,000 range are engaged in extensive and effective transfer of knowledge, on the order of thousands to tens of thousands of visits annually, and this horizontal exchange mechanism exhibits the earmarks of risk management by city officials who for reasons of short terms of office have little or no incentive to act on global goods. Identifying and adapting good practice reduces the risk for mayors. Coupled with proper national and international incentives, this subnational mechanism might be able to advance good and better practice where national fiat has failed.	Noted.
13057	All AR5					From Line 3 to 7 of this file I have reproduced the same comment related to the Costs&Potentials X-Cut issues of the chapters, to propose to put them in perspective with market realisation and policy issues	Noted.
12214	All AR5					General comment: Fluorinated greenhouse gases are not very well covered in the report. In particular, an extensive coverage of these relatively important GHGs and their alternatives under mitigation option should be covered in chapters 7 Energy systems (SF6 in high voltage appliances), 8 Transport (mobile air-conditioning), 9 Buildings (air-conditioning, heat pumps) and 10 Industry (commercial refrigeration etc.). The IPCC/TEAP special report "Safeguarding the Ozone Layer and the Global Climate System - Issues Related to Hydrofluorcarbons and Perfluorcarbons", as well as more recent publications, might serve as a basis for this coverage.	Noted. We have continued to work on this aspect.

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4513	All AR5					It is very important that it be made clear when giving the list of expert reviewers that participation in the review process does not indicate agreement with the methodology or conclusions of the Report. This is such a wide-ranging document, with so many topics and arguments fraught with unresolved conflicts and disagreements, that readers of the Report not have the impression that it is somehow a "consensus" document.	Rejected. The IPCC has never implied that reviewers agree with the findings of the report. They are helping to make it better as in any review process. Responsibilities lies with authors and Co-Chairs.
4514	All AR5					In particular, my comments and suggestions are by no means complete or comprehensive. Other time commitments preclude my reviewing the entire Report in detail.	Noted.
2215	All AR5					Optimally, use consistent quotation for the following report. Recommended: "McKinsey & Company, Pathways to a low-carbon economy - Version 2 of the Global Greenhouse Abatement Cost Curve, January 2009" (McKinsey, 2009), also seen in FOD as "Nauclér and Enkvist"	Noted.
2348	All AR5					Cost definitions and descriptions: 1) Use one consistent cost metric across entire AR5 to compare mitigation options between different sectors and measures (most likely $/tCO2e) 2) for the sectors where other, more sector-specific metrics are helpful and possibly better suited, COMPLEMENT this first metric with a second one (e.g. in power/energy $/kWh)	Rejected. This issue has been discussed, but authors agreed that this is not the best away of synthesizing the literature adequately.
2349	All AR5					Explain clearly what types of cost are included, and split those up as far as possible. For example, use "technical project cost (incl. Capex and opex incl. Fuel cost)" and "transaction=program=implementation cost" (not technical, just people capacity)	Noted. We continued to work on transparency.
2350	All AR5					Include cost development over time (e.g. abatement cost) and/or investment development over time, especially for technologies with high expected technological learning (e.g. solar PV (EUR/kW, EUR/kWh), 2nd gen LC ethanol)	Accepted. We have done so in places where appropriate.
2351	All AR5					Include investment needs over time for the measures - upfront financing is a key issue. This way you can also link up the financing needs with the Global Climate Fund of UNFCCC	Accepted. We provide an analysis of investment needs in chapter 16.
2354	All AR5					Currently often the essence/excutive summary of each chapter is in the FAQs at the end, which makes it hard to read Suggestion to have or each chapter two intro paragraphs: 1) Purpose of this chapter (1-3 sentences) 2) Key takeaways (5 bullets) - both should be as much as possible standardized across the sector chapters (energy, transport. etc)	Rejected. We have seriously considered this option, but opted against this. It is not suitable format given the particular remit of IPCC.
2355	All AR5					At least across the sector chapters, standardize the way how information is presented as much as possible. Same thing: Use SAME units for SAME information across chapters: e.g. CO2e (GWP100) rather than CO2e, C, etc. This helps the reader to get easy access to the content. Table formats, graphics. See for example "McKinsey & Company: Pathways to a low-carbon economy" as sample how standardization could look like. This needs to come from the TSU.	Accepted. We worked on these consistency issues.
2366	All AR5					All sector chapters should include a forecast of sectoral emissions, to have a baseline to which abatement potentials are relative to. Absolute abatement potentials without a baseline are unfortunately pretty useless.	Accepted. We have included or are still in the process of collecting such information.
6809	All AR5					There is a generally complacent tone about conditions, targets and measures in the inroduction and the chapters It needs to be stated far more clearly that short of aiming at full displacement of fossil fuel combustion with efficiency, sufficiency and renewable generation there is no hope to mitigate climate change effectively. http://pubs.giss.nasa.gov/abs/ha00410c.html	Rejected. This is not consistent with our assessment of the literature. Models show that fossil fuels can still be used, if the CO2 is captured and stored. But the report concludes that scenarios get out of freely emitting fossil fuels.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
6818	All AR5					It is clear that the chapter was written by different people with different agenda. There too much political smoothing of hard scientific facts - too much reluctance to name a spade a spade, too much and obvious pandering to the nuclear lobby.	Rejected. IPCC assessment have the merit that they do not reflect the view points of individuals, but of larger, well balanced chapter teams. This avoids bias.
15550	All AR5					In general, this draft does not, unfortunately, currently adequately address (or even frame) the undeniable starkness of the mitigation challenge that policy makers currently face, internationally, nationally, ot locally. In particular, the disconnect between the scientific basis established by AR's 1-4 (presumably to be even further re-enforced by AR-5 WG's 1&2) is not sufficiently contrasted with the potential mitigation benefits, co-benefits and opportunities described in previous AR's and again here. Too often, language and syntax deployed in this draft tends to frame the mitigation challenge as assessed potential deviation from fossil-fuelled BAU--without addressing the basic fact that BAU is no longer possible if < 2 oC is to be achieved. (See, for instance Box 13.7 in AR-4 WG-3). Additionally (and relatedly) I could not easily locate in this report any further work on, or development of, the vital topic of policy inertia, as previously so tellingly highlighted in the TAR, and referenced again in AR-4. These comments particularly apply to the introduction (since that is the one chapter that will probably be widely read by non-experts), but also apply more deeply and systemically to an undrecurrent throughout the report.	Rejected. The reports makes it very clear that BAU has to be avoided asap to maintain a good chance of staying below 2°C. We are in the process of building in new literature trying to understand how delay in international cooperation and technology constraints make this more challenging. But literature is still coming through. We deal with the iddues of balancing mitigation, adadptation and residual imapcts in the synthesis report.
5753	All AR5					The correct reference is "GBEP. (2011). The Global Bioenergy Partnership Sustainability Indicators for Bioenergy. FAO/GBEP, Rome, Italy." (The word Sustainability is missing in more than one place through the document)	Noted.
10725	All AR5					It is important to ensure consistency across the WG reports. This applies for estimates of current emissions, scenarios, description and and quantification of effects of various components, calculated contributions to climate change, and metrics for comparing effects of emissions. GWP and CO2 equivalents are used throughout the report but often without much explanation. The metric values used should later be made consistent with those given in the report from WGI.	Rejected. We use metric values from SAR consistent with the data available in most global databases. We will work with WG1 colleagues on consistency issues.
10726	All AR5					The authors of the sector chapters could see whether there is useful information in section 8.7.2.4 Metrics and Impacts by Sector in AR5 WGI	Noted.
10727	All AR5					GWP for a 100 year time horizon is often used without any indication that the GWP has been subject to evaluation and critisism in the scientific literature. It could be noted that there are other time horizons than 100 years and that several implicit choices have been made in the application of GWP100 (see WGI Chapter 8 and WGIII chapter 3). It could also be noted that the contributions calulated would look different if a different time horizon was used or if a different metric was used; see figure 8.31 in WGI. Some attention to choice of time horizon could be given - which is a value-based choice that can not be based on science alone.	Accepted. We have included a metric discussion in chapter 3. This is part of the framing of the report and will also be highlighted in the summary documents.
10728	All AR5					Since Life Cycle Assessment is used in several chapters I have a general comment for the whole report on this: When various emissions are aggregated and converted to "CO2 equivalents" the GWP-100 is usually applied. But as several studies over the last 5-10 years have shown, there are limitations related to this metric, and some alternatives have been presented. The use of 100 years time horizon is not an obvious choice and the effect of using different horizons could be given some attention. For example, using a GWP for methane of 25 (from AR4) will give much emphasis to some emissions and sectors relative to using the Global Temperature change Potential (GTP) which has a value of ca 4 for the same time horizon. I think it is important that the authors make the readers aware of this issue, and the potentially significant impact on the results.	Accepted. We have included a metric discussion in chapter 3. This is part of the framing of the report and will also be highlighted in the summary documents.

Expert Review Comments on the IPCC WGIII AR5 First Order Draft – General

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
10729	All AR5					Somewhere in WGIII the various alternatives for design of multi-gas policies (as embedded in the UNFCCC) should be discussed; i.e. whether a gas-by-gas approach, a basket approach (like in the Kyoto Protocol) or a multi-basket approach is chosen. There are some recent papers in the literature on this; e.g.: 1) Smith et al., in Nature Climate Change. 2) Daniel et al. Climatic Change 111 (2): pp. 241-248. (See also brief disussion of this - and references - in section 8.7.1.5 of WGI).	Accepted. We deal with this in chapter 6 and have improved the text.
12999	All AR5					Much of the report seems to concentrate on, and sometimes simply assume, a rather narrow ethical framing cashed out in terms of contemporary CBA. This perspective is admirably pursued at great length and depth. However, it is (as the first half of chapter 3 and the beginning of chapter 4 suggest) only one of a number of ethical perspectives discussed and canvassed in the peer reviewed literature. It also has its own problems, most of which are either not mentioned at all or else pointed out only very quickly. If the aim of the report is to advise policy makers (and the general public), I respectfully suggest that greater balance would be desirable.	Rejected. The report draws little from CBA. Most of the scenarios, for example, are based on CEA. There are multiple framings and approaches used, which are introduced in chapters 2,3 and 4.
13010	All AR5					Arguments about the relevance of past emissions crop up in a number of places. Other concerns, such as responsibilities to future generations and nonhuman nature, are treated very briefly. Some adjustment would be helpful.	Accepted. We have further elaborated on this in chapter 3.
13012	All AR5					As is perhaps inevitable in a multi-authored first draft, the current treatment remains somewhat uneven and disjointed. For example, different normative approaches are emphasized in chapters 2-4, and chapter 4 seems to assume that a robust analysis of the discounting issue has occured in chapter 3 when in fact it is treated very briefly there. I also doubt the repeated claims that the normative foundations described in the first part of chapter 3 really do underpin the preceeding and subsequent discussions. Some evidence for these claims should be provided.	Accepted. We have worked and continue to work on the linkage between framing chapters (2-4) and the subsequent analysis. This is a challenging task, which takes time.
9781	All AR5					Even if the focus of the report is climate change, some statements could be relativated by addressing climate change as one important environmental issue. In some parts of the report this is well elaborated whereas in other parts, especially when conclusions are drawn, it could be added as the reader might not read the full report.	Noted.
11991	All AR5					I have a comment to Annex I i.e. The Glossary, which for some reason I could not select in this excel sheet's column B: Please add a definition of Cryosphere.	Noted. This is part of our definition of climate system. It is not a central term in WG3, which is used frequently across chapters.
4271	All AR5					There does not seem to be a systematic approach to searching for and assessing the quality and validity of specific articles. I think it will be important to have a transparent and defensible approach to deciding which papers to reference and why. Ideally search strategies for relevant articles should be publically available and quality criteria should be published, not necessarily in the main report but somewhere on the IPCC website.	Rejected. The IPCC has a very sophisticated and resource intensive author selection process. They are experts in the area and in the best position to choose the material relevant for the assessment.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
14991	All AR5					The decision to exclude discussion of adaptation from the WGIII report is problematic. Although at a theoretical level, it is often convenient to treat mitigation and adaptation as distinct policy responses to climate change, at the level of implementation, these distinctions tend to vanish in certain cases. For example, land-use planning and management, including management of agricultural and forest lands, must consider both mitigation concerns (maintenance of forest stocks, low-carbon agricultural practices) and adaptation concerns (adapting crop selections and agricultural productivity to future climate regimes, siting agricultural lands in the face of future water availability, effect of future climate regimes on forest composition and forest health). To the land manager, many of these concerns must be dealt with together. Indeed, as many countries and local areas go further down the path of grappling with climate change, a key consideration is how best to integrate mitigation and adaptation imperatives within very real budget constraints. Separating adaptation and mitigation policy responses in two distinct volumes written by different working groups leaves little to no opportunity for treatment of this timely and important issue facing policy makers and public managers, and risks the possibility that the AR5 will be largely silent on this topic.	Accepted. Note that adaptation is not excluded, but the main discussion takes place in IPCC WG2. WG3 has worked and will continue to work on strengthening relevant aspects of adaptation recognising the division of labour across WGs.
14992	All AR5					This issue could be addressed in chapter 14 of the WGIII volume, or in a separate chapter or cross-cut section.	It is unclear what the reviewer is referring to.
14993	All AR5					The decision to exclude discussion of adaptation from the WGIII report is problematic. Although at a theoretical level, it is often convenient to treat mitigation and adaptation as distinct policy responses to climate change, at the level of implementation, these distinctions tend to vanish in certain cases. For example, land-use planning and management, including management of agricultural and forest lands, must consider both mitigation concerns (maintenance of forest stocks, low-carbon agricultural practices) and adaptation concerns (adapting crop selections and agricultural productivity to future climate regimes, siting agricultural lands in the face of future water availability, effect of future climate regimes on forest composition and forest health). To the land manager, many of these concerns must be dealt with together. Indeed, as many countries and local areas go further down the path of grappling with climate change, a key consideration is how best to integrate mitigation and adaptation imperatives within very real budget constraints. Separating adaptation and mitigation policy responses in two distinct volumes written by different working groups leaves little to no opportunity for treatment of this timely and important issue facing policy makers and public managers, and risks the possibility that the AR5 will be largely silent on this topic. This issue could be addressed in chapter 14 of the WGIII volume, or in a separate chapter or cross-cut section.	Accepted. Note that adaptation is not excluded, but the main discussion takes place in IPCC WG2. WG3 has worked and will continue to work on strengthening relevant aspects of adaptation recognising the division of labour across WGs.
12556	All AR5					There is clearly a concerted effort to insert promotional material on geoengineering throughout the draft. This remains a conjectural mitigation strategy or set of measures, in contrast to all other mitigation measures examined throughout the report which have some experiential basis. It seems appropriate to include a generalized discussion of the concepts and approaches that have received serious discussion, e.g. in section 6.9. However, many references are sprinkled throughout the text and the wording leaves the impression that geoengineering is a measure and policy tool available today. For example, Ch. 1, p. 24, line 15, or Ch 6. p. 22, line 35, or Ch. 6, p. 81, line 23 ("SRM role in climate policy is shaped by the fact that it acts quickly" when in fact "it" does not currently exist). These standalone references and many others do not indicate the contingent nature of this strategy nor the very serious ethical and governance questions it raises, questions which are addressed to a at least some degree in section 6.9.	Rejected. The IPCC does an assessment of the literature. There is relevant literature on geoengieering. The IPCC is not promoting any technology.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
7606	All AR5					It would be desirable to add the following works of bibliography in the chapter listed: Cap 12. -Olcina, J., 2010: Spatial planning processes, territorial planning law and flood risk in the region of Valencia (Spain), in Risks Challenging. Publics, scientists and governments. [Menoni, S. ed.] Taylor and Francis Group, 191-204. -Olcina, J., Hernández, M., Rico, A.M., Martínez, E., 2010: Increased risk of flooding on the coast of Alicante (Region of Valencia, Spain), Natural Hazards, 10, nº 11, 2229-2234. -Olcina, J., 2008: Droughts and their economic and territorial effects on the Iberian peninsula, Environmental Economics [Burny, Ph.; Petrescu, D. C. (editors)], Les Presses Agronomiques de Gembloux, ASBL, 173-192. -Sauri, D. Serra, A. Olcina, J., Vera, J.F., 2011: Climate change and Europe's regions: Key findings. Case study Spanish Mediterranean coast. ESPON Climate. Climate Change and Territorial Effects on Regions and Local Economies / Stefan Greiving (Coordinator) / ESPON (European Observation Network for Territorial Development and Cohesion), 30-39. -Rico, A.M., Olcina, J. and Sauri,D. 2009: Tourist land use patterns and water demand: Evidence from the Western Mediterranean, Land Use Policy, 26, nº 2, 493-501. ANNEX I-GLOSARY -Olcina, J., 2007: Research into climate risk in Spain: challenges for the future, in Spanish Climatology. Past, present and future [Cuadrat, J.M. and Martín Vide, J. (coords.)], Prensas Universitarias de Zaragoza, 421-449.	Taken into consideration.
7608	All AR5					There are details to be made in the treatment of the concept of risk from the geographical point of view. The natural –climate- risk must be understood as an expression of territorial actions carried out by humans in the territory who have not taken into account the natural functioning of the environment where they occur. So if the man does not respect the dynamics of the physical land, infrastructure, economic activities, housing to develop man are deemed to be vulnerable to the development of a climatic event of extraordinary range (Olcina, 2007).	Noted. We deal with concepts of risk extensively in chapter 2.
3058	All AR5					There is an air of unreality about this entire report. Since 1990 IPCC has been discussing and urging reductions in GHG emissions. Despite all the detailed discussions of scenarios, paths, etc., GHG emissions have continued to increase, and (aside from fluctuating with the world economy) there is no indication that even this increase in the rate of GHG emission will slow. The threats of dire consequences may, or may not, be realistic, but the world is not paying attention.	Rejected. IPCC reports have never urged for emission reductions, but assessed the relevant literature on mitigation.
3059	All AR5					China continues to build one major coal-burning power plant a week, making all the talk of reductions of emissions in the US or EU or OECD irrelevant. The various simulations and scenarios have nothing to do with what the world is actually doing. They aren't wrong, in the technical sense, but are only academic exercises: If emissions follow a certain path, then GHG forcing will vary in a certain way, and people and institutions respond in a certain way to incentives and penalties...but on the basis of the last 22 years of experience, it is clear that there will not be (whatever their merit) incentives and penalties sufficient to modify a continuation of the present rate of increase in GHG emissions.	Noted. We are very clear that we try to identify the economic, technological and institutional requirements of alternative stabilization pathways. This is policy-relevant, but non-prescriptive input for policymakers.
3060	All AR5					Why bother?	Authors do not understand this comment.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
3065	All AR5					Geoengineering is conspicuous by its near absence from this report. There are two brief mentions in Chapter 1, and two pages in Chapter 6, in comparison to more than 1000 pages on emission reductions. Yet history shows that there is little prospect of reductions in emissions (or even in their rate of growth), while a persuasive case has been made that geoengineering can, at modest cost, reduce the net forcing function to its pre-industrial value, should that be desired.	Accepted. We have worked on the coverage of geoengineering and will continue to do so. It is covered at different places in the report, but material will be focussed in chapter 6.
3068	All AR5					Running through the entire report is the tacit assumption that warming and climate change will be, if not "mitigated" (although that is not standard English usage; the authors mean "reduced") harmful or even disastrous for humanity. This is an appropriate subject for scientific inquiry, but the question is entirely ignored, and a pessimistic assumption made without examination or inquiry. In order to convince governments and publics to engage in expensive reductions of emissions, they must first be persuaded of their necessity. WGIII ignores this entirely.	Rejected. We identify the economic, technological and institutional requirements of alternative stabilization pathways in Working Group 3. Working Group 2 deals with the consequences of different levels of warming. This is not treated in Working Group 3. The synthesis report will try to pull the different pieces together.
3069	All AR5					In many places a 5% annual discount rate is applied to future costs. This has the effect of making future expenditures almost free (the present value of a 2030 $, at this discount rate, is $0.42; a 2050 $ is $0.16; a 2100 $ Is $0.014) at this discount rate. This makes it possible for the authors to propose drastic emission reductions in the distant future, at only slight costs. Unfortunately, 5% is unrealistic. Real per capita wealth grows at About 1—2%, and that is the proper discount rate to use. This gives credibility to such fantasies as 80% emission reductions in 2050; in effect, it postpones any serious cost to the remote future, rather like the alcoholic who promises to stop drinking in some indefinite tomorrow.	Rejected. Discount rates are chosen by each modeling team individually and in some cases are endogenous (e.g. following the Keynes-Ramsey rule in growth models). A 5% discount rate for the calculation of net present value mitigation costs was used ex post to establish comparability between aggregate cost estimates. The technology deployment in the individual model scenarios is governed by the individual model's assumption of the discount rate.
3074	All AR5					In summary, this extraordinarily detailed report has two gaping omissions: Its detailed scenarios are entirely unlike the actual path the world has taken in IPCC's 22 years, which has been to make a few gestures in the direction of emission reduction, but to continue rapidly increasing emissions, and it never addresses (much less answers) the crucial question of whether warming and climate change are scientific phenomena for us to observe, or problems we must mitigate. The latter is tacitly assumed, without justification.	Rejected. We clearly highlight that current emissions increase despite mitigation policies. Scenarios assess future mitigation pathways with different levels of ambition ranging from likely 2°C scenarios to baseline scenarios.
18036	All AR5					The terms "low carbon" and "zero carbon" energy technologies must be defined. This is absolutely essential to ensure that statements in the text is precise. Otherwise conclusions and statements will continue to be ambigious and very unclear in many places. In Chapter 7 alone, the term is used more than 50 times, without any attempt to define it. Most would agree that, when it comes to energy sources, renewables are low carbon and nuclear is low carbon. But where is the cut off? at CCS? gas? It must bet the task of the IPCC to provide a reasonable definition of low-carbon energy technologies to avoid that text is wide open to interpretation	Noted.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5938	All AR5					Colour coding of charts, in particular gradations on a particular shade, make them difficult to read	Accepted. We have worked on this, but will need to continuously improve on this.
5259	All AR5					See additional sheet	Noted.
16678	All AR5					There are many references to sustainability or sustainable energy as part of the solution or requirement for effective mitigation. However, "sustainability" is not a well defined field of study or discipline, nor is there a great deal of agreement as to what the terms mean. If the problem is climate, the reports should focus on climate and lowering CO2/GHG emissions. If you ask climate policy to address all the world's problems it is unlikely to succeed on many fronts. (In fact a well crafted climate policy helps address other issues, but if it is shaped specifically to do these, it will likely be suboptimal in addressing anything). Many references assume sustainable energy means renewable energy, but as the terms lacks agreed definition, this may or may not be true.	Accepted. We tried to avoid misleading jargon.
16679	All AR5					At several points in the report, there is the apparent assumption that the best mitigation choice is renewable (or "sustainable") energy, without reference to the economic cost. Relying solely on renewable energy is a much more costly mitigation path -- this is covered in chapter 7, section 7.12.5, lines 16-26 -- this should be highlighted throughout report as countries consider their mitigation strategies and pathways. A "renewables only" policy framing is possible but much more costly -- countries may choose this, but to promote this without discussing costs impacts vs. a policy that includes all mitigation technologies is not helpful to policymakers. Claims that renewables are less costly are not supported by sound analysis.	Rejected. This is clearly not the case. For exampe, chapter 6 highlights the importance of CCS and BECCS. You will find this clearly written down in the first version of the summary documents.
16680	All AR5					Would be helpful if report included more context re the differences in costs of mitigation associated with various technologies and sectors. Not all mitigation options cost the same, nor do they cost the same even w/in same technology -- there is generally an upward sloping supply curve for all -- example, some wind energy installations will be less costly/more productive than others. Help reader understand that some mitigation options will likely deploy before others, and some may not deploy until some decades in the future. Policymakers interested in not wasting resources would do well to understand that not everything should occur in the first decade. They should also understand that a policy that fails to deliver the most costly options in the first decade is not a failure -- rather the policy may simply be driving less costly options first, which should be seen as desirable policy attribute/success.	Noted. We are still working with our authors on finding the best way to represent cost information. The literature is very heterogenous and the task therefore challenging.
16681	All AR5					Market or price based policies have been demonstrated on many occasions to be the least costly approach to controlling pollution -- they incorporate an externality into investment and consumption decisions. This is only touched upon in a few spots within the report. All sections re different sectors (buildings, energy, transport and so on) should demonstrate or explain how such an approach would apply within these sectors. Just describing the possible reduction options or technologies without providing context regarding their relative costs nor how they would likely deploy in a price based regime does not help policymakers understand the primary policy architecture under discussion. If this does not happen, the report is much less useful than it should be.	Noted. We do not necessarily agree that this only touched upon in a few places. It is a fundamental insight of the report. We have tried to make this clear, whilst at the same time recongnizing the plethora of evidence on regulation that has come forward.

Expert Review Comments on the IPCC WGIII AR5 First Order Draft – General

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16682	All AR5					This comment DOES NOT apply to the general discussion of chapter 3. However, there are references to "market failures" within the document (chapters 5, Energy efficiency discussion in Chap 10, in the context of "this technology is not deploying as fast as it should and this is evidence of a market failure." This may or may not be true, however, in most cases the fact a preferred action is not happening (even with a CO2 price) does not mean the market is failing -- even if an analysis indicates this is a low cost option. What is more likely is that the analysis fails to include other costs which are all too real to either the consumer or industry that is failing to "be rational" from the point of view of the analyst, or the analyst has failed to incorporate the risks involved in the investment decision, thereby raising the required returns and preventing investment.	Noted. This is part of on-going discussions we are having on issues such as "negative costs" or "co-benefits"
16684	All AR5					When discussing the cost impacts of a climate policy, the frame typically used is lost GDP or lost consumer welfare by a particular date in the future. As the future continues (barring the end of the world) and models almost always show growth continues, it might be more helpful for policymakers to understand how much additional time must pass to achieve the same level of GDP or the same level of consumer welfare in the policy case vs. the non-policy case. This helps place in context the fact that economies continue to grow despite the policy "costs," and helps reinforce the fact this occurs even in developing countries.	Noted. We are having this discussion right now, most importantly in chapter 6. But so far, we concluded not to express consumption or GDP losses in this way.
17635	All AR5					Figures should be systematically reviewed to be sure that : (1) they can be understood effectively when printed in black & white, (2) captions from the original/source graphic are not inappropriate included, (3) acronyms and abbreviations are defined in captions, legends or notes, and (4) captions provide enough guidance that a non-specialist reader can understand the figure without reading the text. (I suspect many, if not most, readers will read chapters in the IPCC report as PDF documents, i.e., without benefit of color display or reproduction.)	Accepted. We are reviewing figures continuously and will continue to do so until the final version of the report. We have already improved, but will require substantial future progress. All figures in their final version will be reproduced by a graphic designer taking account of such issues.
2576	All AR5					What are the levels of fossil fuel subsidies globally?	Accepted. We have included a discussion fo this in chapter 14.
15445	All AR5					There should be more cognizance of the4/ CMP.7 decision by which policy-makers will undertake a review of metrics starting by 2015. Policy-relevant aspects of the discussion on metrics could be brought out more clearly, and this would greatly help policy-makers when they approach their review.	Accepted. We have strengthened the discussion of metrics - particularly in chapter 3.
15714	All AR5					I wonder whether the WG III AR5 makes comparisons between the investments and costs of mitigation, avoided damage and avoided costs of adaptation, The Stern review (2006) did a first attempt but I assume there are much better publicationsis today . It is a crosscutting issue but I believe it deserves a prominent place in the WG III report	Noted. IPCC WG3 will not do this as this is a job for the synthesis report, which combines insights from all three WGs. Chapter 3 contains a general discussion of CBA models attempting such a comparison.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
15737	All AR5					An extremely general comment on IPCC: At some time, IPCC should be re-named to something like IPCW (W=Watch) or IPAW (A=Atmosphere). Humanity has now discovered that it can influence, and thus has responsibility for, general climate or atmospheric conditions. This will endure until eternity, even after the current GHG and warming problems have been solved. Moreover, “IPAW” will at some time have to be accompanied by an “IPOW” (O=Oceans plus polar glacier regions and their animals and plants) and an “IPLW” (L=Land including rivers, lakes and groundwater, plants and animals). Reason is that, as human activities become more and more effective and the mass of activities increasing (due to rising population and per capita income), its impact on all parts of the geosphere must be watched by permanent UN-based scientific organizations like IPCC making comprehensive five-years science-based reports with a well-organized review process. I am of course aware that these topics are none to be decided by the authors of AR5. Another general comment on AR4 and AR5: I have only access to the AR5 GIII draft. In order to understand the context apart from GIII, I have read several parts from AR4. In the SYR I was missing a table of contents and a complete list of abbreviation or glossary, explaining such basic terms as IPCC, SPM, WG I x.y, Annex I nations… These elements should be included in the Synthesis Report of AR5.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
15738	All AR5					Missing chapter in WGIII: What are the exact motives for mitigating actions? I am dearly missing an assessment of the motives for mitigating GHG emissions. There seems to be unanimity (WG I) that climate conditions are governed by the greenhouse effect (taking sun conditions as given) and in particular that, if humanity can affect climate conditions at all, then by affecting the greenhouse effect. Based on this, there are two largely independent motives for mitigating GHG emissions: Motive 1: If it is believed that there is long-term and persisting global warming and that this poses problems (WG I and II), then GHG emissions have to be reduced. Note that this reasoning is completely independent of the cause of warming. Even if global warming has increased solely due to some sun activity, the only measure to react on it is reduction of anthropogenic GHG emissions (and possibly going further and reduce natural net GHG emissions). In my view, the issue whether global warming has been caused by anthropogenic GHG is given too much emphasis in AR4 WGI and throughout (also in the introduction of AR5 WGIII). Of course, one should always try to find out the cause. But given the uncertainty about the cause and, on the other hand, the certainty about the cure (reducing CO2), it is of secondary importance. One may argue that, if the cause is anthropogenic, then this serves as an indicator that the problem can be solved at all. I.e. the dimension of the problem should then not be too large. Again, this is a second line argument. It is of limited value if, as is often said, the anthropogenic cause can trigger much more powerful chain reactions. Once such a trigger has been pulled, shall we then ignore the warming problem? I think we will then realize that we have to work even harder on GHG emissions. Motive 2 is a precautionary motive: We should mitigate GHG emissions, since these might change climate conditions in the long run. Note that this motive is (not completely but) quite independent of climate forecasts - only if we would witness a prolonged global cooling would this motive be weakened. In contrast to the first motive, this second motive is underscored by an observed and strong anthropogenic effect on GHG concentrations in the atmosphere. Maybe it would be a bit weak without this observation. But with it, it is quite strong: We should stop messing with the greenhouse machine, since this can be expected to change climate conditions in the long run. The two motives are complementary, that is, they add probabilities implying that mitigating GHG emissions is a good idea. This can be expressed as follows: Let p1 be the probability that global warming is already going on, and 1-p1 that climate is still stable (but might change in the future). Let p2 be the independent probability that GHG concentrations are already increasing due to human activities, and 1-p2 the sum of probabilities that GHG concentrations are not yet increasing or that they are increasing, but so far independently of human activities (but this might change in the future). Then mitigating GHG emissions is a good policy goal with probability p1 (first motive) + (1-p1)p2 (second motive) = p2 + (1-p2)p1 = 1- (1-p1)(1-p2). Of course, the reason for political action is strongest if both reasons are given. But this is only the case with probability p1p2, where it holds p1p2 < 1- (1-p1)(1-p2). A reasoning like the above is important, but I don't find it in the WGIII AR5 Draft or anywhere in AR4. It should be carried out (more elaborated and refined than I did here) in WGIII and taken up in the Synthesis Report. Instead, Chapter 2 of WGIII repeats textbook stuff on decisions under uncertainty at length without even discussing the uncertainty structure of the climate change problem (see my critical remarks on Chapter 2). I am aware that a	Noted.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
15739	All AR5					Missing chapter in WGIII: What are the general economic strategies for mitigating GHG emissions? The general economic principle stipulates that abatements should be made efficiently: Either by minimizing the total cost of achieving a given amount of mitigation, or by maximizing the total mitigating effect for a given total cost. In practice, the efficiency principle leads to basically two types of political strategies: Strategy A, the least marginal cost rule: Mitigation measures should ranked by their effectiveness (in CO2equiv reductions) per dollar spent, and those measures with the highest rank carried out first. This principle is taken up, for example, in WGIII AR5 Draft, Chapter 7 (Energy), p.54, line 28 by reference to the marginal abatement cost (MAC). Or in Chapter 6 (Overview), section 6.3.5.1, where the additional costs due to unjustified exclusion of some sectors are highlighted. Strategy B, push-through strategies in selected sectors: Where complementarities prevail (including economies of scale in production, network effects and so on), the marginal cost approach is probably misleading (i.e. not leading to the least cost solution). In that case the optimal policy might entail an orchestrated push-through in order to change the whole setup of the chosen sector. To repeat: the MAC rule is wrong as a general prescription when there are economies of scale or other complementarities (because the second-order condition for a maximum is then not necessarily satisfied). Note also: If a specific sector is (rightly) selected as a push-through target, this implies that other sectors are rightly given less focus and funds to realize abatements. This puts into perspective the view put forth in the above-mentioned Chapter 6 (Overview), section 6.3.5.1. An example of a push-through policy is the endeavor of some countries, like Germany, to change their power generation sectors profoundly. In power generation, complementarities arise from the facts (i) that there are potentially large economies of scale in the production of renewable energy (RE) facilities and (ii) that infrastructure investments are needed to enable a large-scale buildup of RE (compare Chapter 7, section 7.6). Another important economic principle, which stems from the considerable uncertainties associated with mitigation pathways, is the future option value of a current decision. Since both climate conditions and technologies are subject to uncertainties, flexibility of policy paths has value. This may favor some decisions compared to others. For example, investments in science and R & D leave a lot of flexibility in contrast to the implementation of particular abatement measures. Among sectors, it appears that power generation is a multi-purpose sector that might affect other sectors (like transport) in the future by opening up more opportunities. This calls for the power generation sector as a suitable starting point for action. On the other hand, electro-mobility in transport may be complementary to a push-through in power generation, since electric cars might provide the required energy storage. While option value is an important category, the danger of stranded investments is another (and opposed) important determinant of policy choices. For example, in Germany the stock of inherited power generation plants gets old and needs to be replaced by new facilities on a large scale anyways. Thus, it is just time to think about future technology, and it would be great economic risk to choose CO2-intensive technologies that might have to be replaced in the near future, incurring great losses to companies and society. The related issue of co-benefits is very important for any economic analysis and strategy, since co-benefits ca	Noted.
15381	All AR5					For general comments on policy chapters 13-16, see "wdavidmontgomery - general comments on policy chapters 13-16.doc" sent separately	Noted.
15416	All AR5					Need a more consistent application of the most common evaluation criteria – cost-effectiveness, predictability of emission reductions, administrative cost, institutional support required – some ignore these completely (14 and 16). No consistent discussion of role of government in large-scale demonstration and commercialization or effects of policy uncertainty on investment	Accepted. We have worked on this aspect for the Second Order Draft and will continue to do so towards the final draft.
17421	All AR5					Recommended reference: Angelsen A. 2010. Policies for reduced deforestation and their impact on agricultural production. Proceedings of the National Academies of Science 107(46): 19639–19644.	Taken into consideration by author team.
17422	All AR5					Recommended reference: Foley JA et al. 2011. Solutions for a cultivated planet. Nature 478: 337–342.	Taken into consideration by author team.

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17423	All AR5					Recommended reference: Foresight. 2011. The future of food and farming. Final project report. Futures. London Government Office for Science.	Taken into consideration by author team.
17424	All AR5					Recommended reference: Lambin EF, Meyfroidt P. 2011. Global land use change, economic globalization, and the looming land scarcity. Proceedings of the National Academies of Science 108(9): 3465–3472.	Taken into consideration by author team.
17425	All AR5					Recommended reference: Keating BA, Carberry PS. 2010. Sustainable production, food security and supply chain implications. Aspects of Applied Biology 102: 7–20.	Taken into consideration by author team.
17426	All AR5					Recommended reference: National Academy of Sciences. 2010. Toward sustainable agricultural systems in the 21st century. Washington, DC:The National Academies Press.	Taken into consideration by author team.
17427	All AR5					Recommended reference: Nelson GC, Rosegrant MW, Koo J, Robertson R, Sulser T, Zhu T, Ringler C, Msangi S, Palazzo A, Batka M, Magalhaes M, Valmonte-Santos R, Ewing M, Lee D. 2009. Climate change: impact on agriculture and costs of adaptation. Washington, DC: International Food Policy Research Institute.	Taken into consideration by author team.
17428	All AR5					Recommended reference: Vermeulen SJ, Aggarwal PK, Ainslie A, Angelone C, Campbell BM, Challinor AJ, Hansen JW, Ingram JSI, Jarvis A, Kristjanson P, Lau C, Nelson GC, Thornton PK, Wollenberg E. 2012. Options for support to agriculture and food security under climate change. Environmental Science and Policy 15: 136–144.	Taken into consideration by author team.
10776	All AR5					Use of nuanced collors in graphics is confusing. For instance, lilac blends with red, dark brown with black etc. Please, choose stark collors or graphic dots, lines.	Noted. All figures in their final version will be reproduced by a graphic designer taking account of such issues.
10777	All AR5					Biased criticism and unfair reporting by newspaper, TVs, pundits are pervading and spoiling public opinion and decision makers. Please add a critical review of the media coverage and advise readers on how to interpret them.	Rejected. This is beyond what IPCC can and should do. But IPCC can assess studies on the influence of media coverage on, for example, risk perception, behaviour or alike.
10778	All AR5					Language tone: sentences in the whole report were written as if for scientists and technical readers only and the often appears as academic style. Indexes display unassuming neutral titles "coal emissions", while it could convincingly say "coal emits most of CO2 to the atmosphere". The best would be to write in simple but scientifically correct English, accessible to decision makers, journalists, and politicians. Here are some senior science/ technical writers that may advise on how to bring AR5 closer to the general reader: Brian Green, Edmond Weiss, the UK´s Plain English Campaign, Elizabeth Kolbert (The New Yorker, climate change).	Noted. Above all, IPCC reports summarize the available science and should do so using the best possible language.
10780	All AR5					the terms "high agreement", "low confidence" "more than probable" etc may be rigorous in science writing, but are confusing and misleading to journalists, politicians, scholars in humanities, pundits, and the general public. They mean totally different things to laypeople. They should be replaced by other terms. Please see my commen on language tone, above.	Rejected. This is IPCC uncertainty language, which is critical for transparent reporting.
10781	All AR5					Worldmapper is a collection of world maps, where countries and territories are re-sized on each map according to the subject of interest, such as population, income, CO2 emissions, or women illiteracy; there are nearly 700 maps. In an outstanding way, they could show climate change issues- energy, beef consumption, emissions, pollution impacts etc. Please contact: http://www.worldmapper.org	Noted. But these may not always be the scientifically best way of transmitting information.
10783	All AR5					if the AR5 text had hyperlinks to definitions of technical words and acronyms, reading will be much easier for decision makers, leaders, non-specialists and so on. The glossary and a list of acronyms will suffice.	Noted.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
7854	All AR5					Generally, we see a dominance of the philosophical paradigm of weighed and discounted utilitarianism as well as efficiency oriented CBA in combination with rational choice approaches. This dominance seems to be even stronger than it was in the former ARs. The plurality of of the philosophical, economic and political debate about climate change is not well-represented throughout chapters 1,2 and 3. These chapters do not represent a balanced review of literature (matters seem to be differnt in chapters 4 and 6 though). If the paradigms of discounted utilitarianism, CBA and rational choice are seen as the most plausible/reasonable, criticism of these paradigms must be discussed. This is not the case, rather, the approaches are laregly taken for granted. See comments for deatils and literature.	Accepted. We have worked on a more balanced treatment.
7855	All AR5					The combination of the key messages of chapter 1 (almost infeasibility assumption regarding 2° goal and affirmation of root cause of climate change - GDP growth; see comments) and these pardigms (see comment 1) implies a remarkable shift from prioritizing mitigation to a portfolio approach entailing mitigation adaptation and climate engineering.	Rejected. IPCC should not be judging feasibility, which is not a purely scientific exercise. We have worked throughout the report to discuss requirements of different levels of mitigation rather than feasibility. But even as the report stands it does not judge on the priority of mitigation and should not do so. Only from the synthesis report, which combines information from all three WGs, policymakers might get an impression on how THEY might want to prioritize mitigation or not.
7939	All AR5					References:	Taken into consideration by author team.
7940	All AR5					Baatz, C. (2013): Responsibility for the Past? Some Thoughts on Compensating those Vulnerable to Climate Change in Developing Countries. Forthcoming in Ethics, Policy & Environment, 16. Available via: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2119604.	Taken into consideration by author team.
7941	All AR5					Baer, P., Athanasiou, T., Kartha, S. and Kemp-Benedict, E. (2009): The Greenhouse Development Rights Framework: The right to development in a climate constrained world. Available via: http://www.ecoequity.org/docs/TheGDRsFramework.pdf.	Taken into consideration by author team.
7942	All AR5					Baum, S. D. (2009): Description, prescription and the choice of discount rates. Ecological Economics, 69: 197–205.	Taken into consideration by author team.
7943	All AR5					Bell, D. (2008): Carbon justice? The case against a universal right to equal carbon emissions. In: Wilks, S. (Ed.): Seeking Environmental Justice. Amsterdam: Rodolphi. 239–57.	Taken into consideration by author team.
7944	All AR5					Betz, G. (2006): Prediction or Prophecy? The Boundaries of Economic Foreknowledge and Their Socio-Political Consequences. Wiesbaden: DUV.	Taken into consideration by author team.
7945	All AR5					Broome, J. (1992): Counting the Cost of Global Warming, White Horse Press.	Taken into consideration by author team.
7946	All AR5					Broome, J. (2012): Climate matters: Ethics in a warming world. New York: W.W. Norton.	Taken into consideration by author team.
7947	All AR5					Caney, S. (2006): Justice beyond borders. A global political theory. Oxford: Oxford University Press.	Taken into consideration by author team.
7948	All AR5					Caney, S. (2009): Climate Change and the Future: Discounting for Time, Wealth, and Risk. Journal of Social Philosophy, 40: 163–186.	Taken into consideration by author team.
7949	All AR5					Caney, S. (2009): Justice and the distribution of greenhouse gas emissions. Journal of Global Ethics, 5: 125–146.	Taken into consideration by author team.

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7950	All AR5					Caney, S. (2010a): Climate Change, Human Rights and Moral Thresholds. In: Gardiner, S. M., Caney, S., Shue, H., Jamieson D. (Eds.): Climate ethics. Essential readings. Oxford, New York: Oxford University Press. 163–180.	Taken into consideration by author team.
7951	All AR5					Caney, S. (2010b): Climate Change and the Duties of the Advantaged. Critical Review of International Social and Political Philosophy, 13: 203–228.	Taken into consideration by author team.
7952	All AR5					Gardiner, S. M. (2004): Ethics and Global Climate Change: Survey Article. Ethics, 114: 555–600.	Taken into consideration by author team.
7953	All AR5					Gardiner, S. M. (2010): Is “arming the future” with geoengineering really the lesser evil? Some doubts about the ethics of intentionally manipulating the climate system. In: Gardiner, S. M., Caney, S., Shue, H., Jamieson, D. (Ed.): Climate Ethics. Essential Readings. New York: Oxford Univ. Press: 284–314.	Taken into consideration by author team.
7954	All AR5					Gardiner, S.M. (2011a): A perfect moral storm. The ethical tragedy of climate change. New York.	Taken into consideration by author team.
7955	All AR5					Gardiner, S. M. (2011b): Some early ethics of geoengineering the climate: a commentary on the values of the Royal Society Report. Environmental Values, 20: 163–188.	Taken into consideration by author team.
7956	All AR5					German Advisory Council on the Environment (SRU) (2011): Pathways towards a 100 % renewable electricity system. Special Report. Berlin. 434 p. Available via: http://www.umweltrat.de/SharedDocs/Downloads/EN/02_Special_Reports/2011_10_Special_Report_Pathways_renewables.pdf?__blob=publicationFile.	Taken into consideration by author team.
7957	All AR5					German Advisory Council on Global Change (WBGU) (2009): Solving the climate dilemma: The budget approach. Special Report. Berlin: WBGU. Available via: http://www.wbgu.de/en/special-reports/sr-2009-budget-approach/.	Taken into consideration by author team.
7958	All AR5					German Advisory Council on Global Change (WBGU) (2011): World in Transition: A social Contract for Sustainability. Flagship Report. Berlin. 396 p. Available via: http://www.wbgu.de/en/flagship-reports/fr-2011-a-social-contract/.	Taken into consideration by author team.
7959	All AR5					German Advisory Council on Global Change (WBGU) (2012): Financing the Global Energy-System Transformation. Policypaper. Berlin: WBGU. Available via: http://www.wbgu.de/en/policypaper/policypaper-7/.	Taken into consideration by author team.
7960	All AR5					Goes, M., Tuana, N. und Keller, K. (2011): The economics (or lack thereof) of aerosol geoengineering. Climatic Change, 109: 719-744.	Taken into consideration by author team.
7961	All AR5					Gosseries, A. (2004): Historical Emissions and Free-Riding. Ethical Perspectives, 11: 36–60.	Taken into consideration by author team.
7962	All AR5					Hampicke, U. (2011): Climate change economics and discounted utilitarianism. Ecological Economics, 72: 45-52.	Taken into consideration by author team.
7963	All AR5					Hausman, D. M., McPherson, M. S. (1996): Economic analysis and moral philosophy. New York, NY: Cambridge University Press.	Taken into consideration by author team.
7964	All AR5					Howarth, R. (1992): Intergenerational justice and the chain of obligations. Environmental Values, 1: 133-140.	Taken into consideration by author team.
7965	All AR5					Jacobson, M. Z., Archer, C. L. (2012): Saturation wind power potential and its implications for wind energy. PNAS online, 109. Available via: http://www.pnas.org/content/early/2012/08/31/1208993109.full.pdf+html?sid=d85dcdfe-5962-4be3-b317-63412882be3a.	Taken into consideration by author team.
7966	All AR5					Jagers, S. C., Duus-Otterström, G. (2007): Intergenerational Responsibility. Historical Emissions and Climate Change Adaptation. QOG Working Paper Series 2007, 4. Available via: http://www.qog.pol.gu.se/working_papers/2007_4_jagers_duus-otterstrom.pdf.	Taken into consideration by author team.
7967	All AR5					Jänicke, M. (2012a): “Green growth”: From a growing eco-industry to economic sustainability. Energy Policy, 48: 13-21.	Taken into consideration by author team.

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7968	All AR5					Jänicke, M. (2012b): Dynamic governance of clean-energy markets: how technical innovation could accelerate climate policies. Journal of Cleaner Production, 22: 50–59.	Taken into consideration by author team.
7969	All AR5					Kost, C, Schlegl, T., Thomsen, J., Nold, S., Mayer, J. (2012): Studie Stromgestehungskosten Erneuerbare Energien. Fraunhofer-Institut für Solare Energiesysteme ISE. Available via: http://www.ise.fraunhofer.de/de/veroeffentlichungen/veroeffentlichungen-pdf-dateien/studien-und-konzeptpapiere/studie-stromgestehungskosten-erneuerbare-energien.pdf.	Taken into consideration by author team.
7970	All AR5					Lumer, C. (2002): The greenhouse. Awelfare assessment and some morals. Lanham Md.: Univ. Press of America.	Taken into consideration by author team.
7971	All AR5					Martínez Alier, J. (2003): The environmentalism of the poor: A study of ecological conflicts and valuation. Cheltenham: Edward Elgar.	Taken into consideration by author team.
7972	All AR5					Meyer, A. (2000): Contraction & Convergence. The Global Solution to Climate Change, Totnes Devon. Schumacher briefing, 5.	Taken into consideration by author team.
7973	All AR5					Meyer, L. H.; Roser, D. (2010): Climate Change and Historical Emissions. Critical Review of International Social and Political Philosophy, 13: 229 - 253.	Taken into consideration by author team.
7974	All AR5					Müller, B., Höhne, N. and Ellermann, C. (2009): Differentiating (Historic) Responsibilities for Climate Change. Climate Policy, 9: 593-611.	Taken into consideration by author team.
7975	All AR5					Neumann, J. v. and Morgenstern, O. (1944): Theory of Games and Economic Behavior, New York.	Taken into consideration by author team.
7976	All AR5					Ott, K. (2003): Reflections on Discounting - Some Philosophical Remarks. International Journal of Sustainable Development, 6: 7-24.	Taken into consideration by author team.
7977	All AR5					Ott, K. (2012b): Might Solar Radiation Management Constitute a Dilemma? In: Preston, C. J. (Ed.): Reflecting Sunlight. The Ethics of Solar Radiaton Management. Lexington: Lexington Press.	Taken into consideration by author team.
7978	All AR5					Ott, K.; Baatz, C. (2012): Domains of Climate Ethics. In: Westra, Laura; Soskolne, Colin L.; Spady, Donald (Eds): Human Health and Ecological Integrity. Ethics, Law and Human Rights. New York: Routledge.	Taken into consideration by author team.
7979	All AR5					Ott, K. und Hampicke, U. (guest editors) (2003): Reflections on Discounting. International Journal of Sustainable Development, 6.	Taken into consideration by author team.
7980	All AR5					Ott, K., Klepper, G., Lingner, S., Schäfer, A., Scheffran, J. and Sprinz, D. (2004): Reasoning Goals of Climate Change Protection. Specifiation of Art. 2 UNFCCC. Edited by Europäische Akademie. Bad Neuenahr-Ahrweiler. Available via: http://www.umweltdaten.de/publikationen/fpdf-l/2747.pdf.	Taken into consideration by author team.
7981	All AR5					Page, E. (2006): Climate Change, Justice and Future Generations. Cheltenham: Elgar.	Taken into consideration by author team.
7982	All AR5					Page, E. (2008): Distributing the burdens of climate change. Environmental Politics, 17: 556–575.	Taken into consideration by author team.
7983	All AR5					Parfit, D. (1984): Reasons and persons. Oxford: Clarendon Press.	Taken into consideration by author team.
7984	All AR5					Parfit, D. (2011): On What Matters. Oxford: Oxford University Press.	Taken into consideration by author team.
7985	All AR5					Partridge, E. (1990): On the rights of future generations. In: Scherer, D. (Ed.) Upstream/ Downstream. Philadelphia: Temple University Press.	Taken into consideration by author team.
7986	All AR5					Preston, C. J. (Ed.) (2012): Reflecting Sunlight. The Ethics of Solar Radiaton Management. Lexington: Lexington Press.	Taken into consideration by author team.
7987	All AR5					Randall, A. (2002): Benefit-Cost Considerations Should be Decisive When There is Nothing More Important at Stake. In: Bromley, S.W. and Paavola, J.: Economics, Ethics, and Environmental Policy. Contested Choices, Oxford: Blackwell.	Taken into consideration by author team.
7988	All AR5					Rawls, J. (1971): A theory of justice. Cambridge, MA: Belknap Press of Harvard University Press.	Taken into consideration by author team.

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7989	All AR5					Rickels, W., Klepper, G., Dovern, J., Betz, G., Brachatzek, N., Cacean, S. et al. (2011): Large-Scale Intentional Interventions into the Climate System? Assessing the Climate Engineering Debate. Comissed by: The Federal Ministry of Education and Research. Rickels, W. Klepper, G. und Dovern, J. (Ed.) Kiel Earth Insitute. Kiel.	Taken into consideration by author team.
7990	All AR5					Robock, A. (2008): 20 reasons why geoengineering may be a bad idea. Bulletin of the Atomic Scientists, 64: 14-18.	Taken into consideration by author team.
7991	All AR5					Robock, A., Bunzl, M., Kravitz, B. and Stenchikov, G. L. (2010): A Test for Geoengineering? Science, 327: 530–531.	Taken into consideration by author team.
7992	All AR5					Rohner, M.; Edenhofer, O. (1996): Ökonomie und Klimawandel: Kann sich die Klimapolitik auf die Nutzen-Kosten-Analyse verlassen? In: Brauch, H. G.: Klimapolitik: Naturwissenschaftliche Grundlagen, internationale Regimebildung und Konflikte, ökonomische Analysen sowie nationale Problemerkennung und Politikumsetzung. Berlin: Springer.	Taken into consideration by author team.
7993	All AR5					Roser, D. (2009): The Discount Rate: A Small Number with a Big Impact. Center for Applied Ethics and Philosophy (Ed.): Applied Ethics Life, Environment and Society. Kitaku. 12–27.	Taken into consideration by author team.
7994	All AR5					Rostow, W. W. (1990): The stages of economic growth: A non-communist manifesto. Cambridge [England]. New York: Cambridge University Press.	Taken into consideration by author team.
7995	All AR5					Schüssler, R. (2011): Climate Justice: A Question of Historic Responsibility? Journal of Global Ethics, 7: 261-278.	Taken into consideration by author team.
7996	All AR5					Shepherd, J., Caldeira, K., Cox, P., Haigh, J., Keith, D., Launder, B. et al. (2009): Geoengineering the climate: science, governance and uncertainty. Royal Society, London. Available via: http://royalsociety.org/WorkArea/DownloadAsset.aspx?id=10768.	Taken into consideration by author team.
7997	All AR5					Sikora, R. I., Barry, B. (1996): Obligations to future generations. Cambridge, UK: White Horse Press.	Taken into consideration by author team.
7998	All AR5					Shue, H. (1993): Subsistence emissions and luxury emissions. Law and Policy, 15: 39–59.	Taken into consideration by author team.
7999	All AR5					Shue, H. (1999): Global environment and international inequality. International Affairs, 75: 531–45.	Taken into consideration by author team.
8000	All AR5					Svoboda, T., Keller, K., Goes, M., Tuana, N. (2011): Sulfate Aerosol Geoengineering: The Question of Justice. Public Affairs Quarterly. Available via: http://www3.geosc.psu.edu/~kzk10/Svoboda_PAQ_11.pdf.	Taken into consideration by author team.
8001	All AR5					Vanderheiden, S. (2008): Atmospheric justice: A Political Theory of Climate Change. Oxford: Oxford Univ. Press.	Taken into consideration by author team.
8002	All AR5					Young, O. (1999): The Effectivness of International Environmental Regimes: The Causal Connections and Behavioural Mechanism. Cambridge MA, MIT Press.	Taken into consideration by author team.
10169	All AR5					I lack specificity about whether sustainable CCS methods are available and in use today, and what they are, or whether they are non existent hypothetical technology or technology under development.	Accepted. We have added to the CCS discussions throughout the report, but particularly in chapter 7.
10170	All AR5					Table and figure texts are generally poor in information, and may be difficult to interpret without reading the main text thoroughly	Accepted. We have worked a lot on the figures for the SOD and will continue to do so towards the final draft.
10175	All AR5					Figures and tables should be given more space and higher resolution and quality	Accepted. Once the design of all figures is finalized they will be re-produced by a professional graphic designer.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
10195	All AR5					The use of acronyms and/or abbreviations: although this will reduce the legnth of the text, the readablility of the text has to be taken inte account as well. At the moment the number and extent of acronyms used limits the potential to remember their meaning/definition and thereby understanding the text. The readability and ability to understand the text is especially reduced if the meaning/definition of the acronym is not given the first time it is used within a chapter (e.g. chapter 9, p. 4, l. 25 ICT, p. 6, l. 27 CR, p. 6, l. 32 ESCO, EPC, MEP etc but also true for the other chapters). Either limit the use of acronyms (i.e. use them in figures and tables, with accompanied explanations, but to a much lesser degree in the main text) and/or including a list of acronyms/abbreviations for each chapter would be useful (if not necessary).	Accepted. We have reviewed this issue and tried to imrove the balance between brevity and ease of understanding.
10197	All AR5					It is often difficult to understand from the text which mitigation measures are actually available, implemented and working today, and which are under development or only hypothetical/utopical	Noted. We highlight this in most cases clearly, but have continued to be as explicit as possible about this.
10200	All AR5					"Waste" and "Service sector" might merit their own separate chapters	Accepted. We have included a new section on waste at the end of chapter 10.
10201	All AR5					To reduce the length of text: 1. use standard reference style in the text, i.e. use only surnames and one (for one author or three or more authors) or two names (for two authors), e.g. Borg 1997, Borg & Pedersen 2012, Borg et al. 2003; 2. word economy, e.g. more concrete, less verbal models, more specificity and models that can be tested	Noted.
10210	All AR5					When references to empirical and theoretical studies are both given in the same paragraph it becomes more difficutl to entangle what is what unless (in each paragraph)one is dealt with first (e.g. theoretical) and the other thereafter (e.g. empirical)	Rejected. We do this structurally in the report. Chapters 2-4 provide the (theoretical) framing, whilst the later chapters are more dealing with the empirical material. This is more treu so fao chapters 5-12 than 13-16 (which are more of a mixture(.
10911	All AR5					Please make the use of "Life Cycle Assessment" and "Life Cycle Analysis" consistent.	Noted
10913	All AR5					Many chapters seem to give their own summary of GHG emissions and there drivers. Of course, each chapter puts its own spin on it, but I think overall it would be better of GHG emissions and their drivers were discussed in one chapter. In addition, none of the chapters seem to cross reference the similar work in the other chapters.	Rejected. We do both. Chapter 5 is devoted to this question. The subsequent chapters only cover the most relevant aspects for a particular sector at the beginning. We have made this set of graph consistent. They now directly link into chapter 5.
10948	All AR5					The WGIII report is quite different in structure to how the WGI report works. The WGI chapters are very disciplinary. If I am an expert on radiative forcing, there is only really one chapter to read. Someone interested in mitigation, is really interested in the entire WGIII report. I for example, wanted to read about 10 chapters, but only had the time to skim read a few chapters! Even through this, I noticed large areas of overlap. On the one hand, this is hard to avoid is each chapter needs some specific framing of the drivers of GHG emissions, for example. On the other hand, the overlaps makes the report very long and in some cases repetitive. As one example, many chapters discuss GHG emissions, GHG emission drivers, IPAT/Kaya type thinking, etc. As far as possible, it would be good to see some effort in reducing overlap and providing much greater linkage between sections with overlap. This makes it easy for a mitigation person to read more of the report!	Accepted. We have worked hard and will continue to work hard on reducing overlap. This is most challenging. As the reviewer correctly points out, the material from WG1 and 3 is very different. To be useful to policymakers it needs to be structured very differently.

Expert Review Comments on the IPCC WGIII AR5 First Order Draft – General

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
10949	All AR5					A constant theme in the report is the weighting of GHG emissions. For perhaps obvious reasons, authors fall bac to the Global Warming Potential with a 100 year time horizon, even though this has had a strong critique since its inception. The FAR even refers to it as an illustrative approach to demonstrate the difficultuies in comparing GHG! The CLAs and LAs should really be aware of the issues with using a GWP100. A read of the relevant part of Ch8 WGI is important. Using a Global Temperature Potential will greatly change the importance of food for example. It is worth point CLAs and LAs to the paper by Shine on the issue, Shine was a CLA for the IPCC FAR which introduced the GWP and his perspectives on why it is used should be read by anyone just assuming a GWP100 is ok. Shine, K.P., 2009. The global warming potential - the need for an interdisciplinary retrial. Climatic Change 96, 467-472.	Accepted. We have added to the discussions on metrics in different parts of the report - but most prominently in chapter 3.
17274	All AR5					I'd like to put attention that if we use more clean technologies cuting the aerosole emmision the anthropogenic warming increases because of a reduction of aerosole-related cooling. This is clear and quate significant effect. However, I have not found the obvious discussion of this issue (perhaps as a result of lack of time to read carefully all chapters).	Noted. The scenarios presented in chapter 6 almost all tend to account of this issue. Itis therefore well-addressed even though more implicitly.
7827	All AR5					Some language is too prescriptive. The IPCC must not prejudge decisions from policy makers/policy level. Concrete examples are given below.	Noted. We continue to review the language carefully to be policy-relevant, but not policy prescriptive.
7828	All AR5					It is suggested that finally all text is reviewed/edited by a native English speaker of high langauge skills in order to improve readability and clarity. E.g. chapters 9 and 10 offer already a very good flow of language.	Noted. There are native English speaker in each chapter. We will carefully check the language once the draft is more final.
7841	All AR5					Executive summary need to build on the assessments in the underlying subchapters. Therefore every paragraphs should include references to the underlying subchapters in order to allow the reader to check the original literature that informed any finding.	Accepted. We will make sure that this is the case ultimately.
7842	All AR5					It is noted that many statements in executive summaries do not include qualifications of the level of evidence for specific findings. It is of great importance for the weight of any finding to provide information on the level of uncertainty of each finding using the calibrated IPCC language. The authors should be prepared to explain any such judgements in a transparent manner.	Accepted. We will make sure that this is the case ultimately - unless we are dealing with "statement of facts".
10261	All AR5					In general : Lots of errors in reference names and in references list.	Accepted. We have already reviewed this issue and will continue to do so unitl the final version of the report.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
15071	All AR5					The distinction between 'direct' and 'indirect' policy instruments is an important one and thus made effectively (pp. 33 and 36 of Chapter 3). Indeed, it has often been the 'indirect' policy that has had most consequence (e.g, single largest climate change initiative in Canada was a coal-fired power station closedown, motivated by local air pollution concerns and local economic development aspirations) – see Rowlands (2007, below). This distinction between these two types of policies should be 'maintained' throughout, but they are subsequently 'mixed together'. For example, in Chapter 10 (p. 51), consideration of 'energy management systems' seems to be presented as a 'GHG mitigation policy', but it is the case that such systems are introduced for non-climate reasons; impacts upon net greenhouse emission levels are of secondary importance. Indeed, reference to 'indirect policies' are relatively rare (e.g., p. 21 of Chapter 16), even though – I would argue – much of the discussion is actually about 'indirect policy'. (And at other times, e.g., p. 34 of Chapter 16, line 9, they are bunched together completely – in this case, mention of 'energy and climate change goals'). I would have thought, particularly if attention was going to be given to 'indirect policies', more attention would have been given to sub-national approaches, and the 'policy successes' therein. Yes, Chapter 15 (p. 65) and Chapter 16 (p. 34) have some, but more might have been useful. Three sources of mine that might be useful for such a review are listed below: Ian H. Rowlands, 'Encouraging Renewable Electricity to Promote Climate Change Mitigation', in Barry G. Rabe (ed), Greenhouse Governance: Addressing Climate Change in America (Washington, DC: Brookings Institute Press, 2010), pp. 181-203. Ian H. Rowlands, 'Renewable Electricity: The Prospects for Innovation and Integration in Provincial Policies', in Debora L. VanNijnatten and Robert Boardman (eds), Canadian Environmental Policy and Politics: Prospects for Leadership and Innovation, Third Edition (Toronto, ON: Oxford University Press, 2009), pp. 167-82. Ian H. Rowlands, 'The Development of Renewable Electricity Policy in the Province of Ontario: The Influence of Ideas and Timing', Review of Policy Research (Vol. 24, No. 3, 2007), pp. 185-207.	Accepted. We deal with this issue now more comprehensively in the context of the issue of "co-benefits".
8505	All AR5					It would be better to use the term "climate engineering" instead of "geo-engineering" (or "geoengineering")	Rejected. This is a decision that has already been taken across WGs.
17074	All AR5					The comments are made with reference to CHAPTER on EQUITY AND SUSTAINABLE DEVELOPMENT and consequential changes will be needed in the text. A key concern is the use of the term "development path", which implies the reference is to developing countries, and the more neutral term "growth path" should be used as the term applies to both developed and developing countries – for example, we say 'green growth' and not 'green development'. In this context, what is the 'legacy of development'? This is not a commonly used term (title of paragraph 4.3.6); do you mean 'eradication of poverty"?	Noted.
3034	All AR5					This review is limited to the specific topics of energy efficiency and rebound effects.	Rejected. We are dealing with a plethora of issues throughout the report.
3035	All AR5					While it is deeply gratifying to finally see rebound effects addressed in this latest IPCC report, they do not appear to be very well integrated with the model results throughout the report. Rebound effects increase the climate change stakes enormously, because if they are not properly accounted for it means we have less time than we think--less time than our forecasts commonly predict--to devise climate change mitigation (or adaptation) solutions.	Noted. We have continued to work on this aspect in multiple chapters.

Expert Review Comments on the IPCC WGIII AR5 First Order Draft – General

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
11157	All AR5					Overall, the Chapters and Sections layout and sequencing is good. The idea of the FAQs at the end of each Chapter is brilliant. One suggestion on the FAQs sections: Could the FAQs be topical/current with the different chapters rather than FAQs that have been aoound for sometime? Examples of FAQs could include: Chapter 1: WHERE IS THE WORLD AT WITH RESPECT OT CLIMATE CHANGE MITIGATION?; Chapter 7: WHAT IS THE STATE OF THE ART TECHNOLOGIES IN ENENRGY WRT CLIMATE CHANGE MITIGATION? WHO IS EMMITTING THE MOOSTAND THEREFORE WHO IS THE MOST CALPABLE?WHO IS THE VILLAIN?	Noted.
11545	All AR5					Obviously a lot of hard work has already gone into this draft, and the result is already impressive. However, CLAs will need to spend more time to streamline the chapters and to cross-reference to the right places, otherwise there will be too much shallow repetition, and not enough deep substance where it is due.	Accepted. We have continued to do so throughout the report and will continue streamlining towards the final draft. This is one of the most challenging tasks in the writing of an IPCC report.
11547	All AR5					To the steering group: it may be worth reiterating to the authors of all chapters the difference between the style of an assessment and a journal article, and to remind them that their target audience are not their scientific peers.	Noted.
10415	All AR5					I suggest to include some works from developing countries, although these works may not be published in Eglish they could have a great value for the whole assement work.	Noted. Authors are encouraged to do so, if appropriate. This is fully in line with IPCC procedures.
15443	All AR5					These comments on the FOD of WGIII's contribution to AR5 were drafted by Kathy Jo Wetter, Ph.D., ETC Group, Programme Manager and Pat Mooney, ETC Group, Executive Director. Both Kathy Jo and Pat are registered as Expert Reviewers for IPCC WGIII AR5, FOD. Kathy Jo uploaded the comments.	Noted.
12970	All AR5					Thank you for letting me participate as an expert reviewer for the 5th IPCC draft. Please accept this statement as my position on the document. I do not support the work of the IPCC for the misuse of science including omissions of complex earth system dynamics and for the political insubordination of the free market and personal sovereignty. Hard science is a beautiful craft that reveals both our understandings of our world and the world of learning, critical thought and further understandings of life. Intellectual rigor in our thinking is as valuable as clean water or forests. Our impact on the planet is irrefutable. As is our thinking of our place in it. We are meant to be taking care of the world. Creating a system of centralized control of resources by a few people makes the everyday man, state and nation impotent in thought and action. You strip away mans ability to think, learn, grow and create something other than children, you do get a population problem. It is the only sense of personal control he has left. And then you get a resource problem. Instead, we need open vibrant minds who challenge the status quo. We need diversity in our life strategies that embraces and values talent of the individual and gives them permission to believe in themselves. To take care of themselves and not be dependant on the state to do it for him. A dignified world values the ability of self mastery of the person and their craft. An environmentally healthy world would embrace a science that supports that dignity. A freer political state would enable intellectual competitiveness and leadership. My biggest question is how -if - and when would we ever know these ideas to work unless we try.	Rejected. We appreciate the position, but do not agree with the implication the reviewers draws concerning the report. The IPCC does not advocate a particular way of dealing with the climate externality. It simply summarizes the state of the scientific literature in a policy-relevant, but non-prescriptive way.

Expert Review Comments on the IPCC WGIII AR5 First Order Draft – General

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
8850	All AR5					General comments on the whole report: In general, chapters shall be shortened and sections shall be made more coherent within the chapter. All authors shall try to state facts (findings) and their limitations as well as applications. Besides drawing clear conclusions that are often applicable to certain circumstances/regions/countries, it's very important for authors to acknowledge and state information/knowledge gaps in a consistent way, and to clearly state and enlist recommendations that are appropriate for future work in each chapter that addresses specific sectors/areas/programs. The authors shall strive to minimize ambiguity througout the sections.	Noted. Some chapters are of appropriate length, while others will have to be shorted. We are continuously working on clarifying the language to the degree possible.
4692	All AR5					Annex I definitions can access the Boykoff and Okereke glossary assembled here: http://www.theboulderstand.org/climate-change-glossary/ The full glossary is in 'The Politics of Climate Change: A Survey', Boykoff, M. (ed) (2009) Routledge/Europa.	Noted.
8903	All AR5	0				There is more interaction needed between chapter teams to unify some (theoretical) positions and avoid repetitions	Accepted.We have worked on this for SOD and will continue this work towards the final draft.
8780	All AR5	0				Unthinking use of the term 'interests' which implies a utilitarian ethical assumption and framing to questions of mitigation of climate change, similar issues with the unthinking use of the terms 'cost and benefits', 'optimum', 'preferences', 'prosperity' and in places 'consequences' (cf. consequential/utilitarian/economistic ethics). This language is normative and policy prescriptive not neutral.	Working Group 3 has to deal with both facts and values. In fact, they cannot be easily seperated. We aim to provide alternatives and make their ethical implications transparent. For this reasons we have devoted three chapters only to the framing of the report. The later chapter draw upon these in a transparent way.
8544	All AR5	0				HAD PROBLEMS WITH THIS CELL. PLEASE START AT #2. Thank you.	Authors do not understand this comment.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16910	All AR5	0				Based on experience of previous IPCC Assessments, my sense is that AR5 is in relatively good shape for this stage of the process, albeit with some obvious exceptions that it is essentilal to address. Congratulations to the authors who have clearly put in a vast amount work already. However, it still lacks much intellectual integration across the different chapters and at present it is not at all clear what the "big new insights" may be. Nor is there a consistent intellectual structure to help the reader navigate the numerous short (/satisficing), medium (/optimising) and long term (/transformation) issues, even though the decision and economic processes at different timescales involved are quite distinct. There are some issues of intellectual integration across the “framing” chapters (1-6), but the bigger challenge is demonstrating consistency between the more top-down / theoretical structures of these, and the sector-specific insights in the sectoral chapters. My sense is that the “meso-scale” analyses represented in some of Part III – most notably chapters 12 and 14 – might help a lot here to make some of the connections; the interactions between these chapters and the framing chapters deserves particular attention, as I imagine it is otherwise easily lost. As I skimmed the report I was looking for “iconic” figures to summarise really core points that may not be familiar to a governmental audience. There may be several – perhaps the Secretariat could come to the next LA meeting with some suggestions. One “structure” of presentation in particular that caught my eye is Figure 14-12, of per-capita emissions vs per-capita wealth. Being grounded in real data this could have particular impact. However in its current form of aggregation it doesn’t do the job (and the different ways of interpreting it need to be better mapped out). I offer comments in Chapter 5 and 14 on this though it is also relevant to others eg Ch.4. Finally, in presenting data on the implications I think it important that IPCC considers the lessons on the importance of presentation and framing effects. Once they have established “baselines”, the modelling community almost entirely thinks in terms of changes from these baselines. Normal people think in terms of absolute changes. See for example my very brief comments on presentation in Chapter 6. Clearly there is a potential length problem, but reading across ther report there are significant possibilities simply by removing redunancies and getting authors to cross-refer to other chapters that address similar issues.	We accept most of the remarks. In fact, it is one of the key challenges to reconcile sectoral and cross-sectoral evidence. We have made some progress for the SOD, but we need to continue along this road.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16911	All AR5	0				The basic intellectual structure that starts to emerge in Chapter 2 (where it refers to System 1 and System 2 processes) could be usefully broadened, extended, and applied as an organising framework across many chapters in AR5. (a) Broadened, so that it is not purely about the psychology of individual decision-making, but about the wider characteristics of decision-making processes at different temporal and institutional scales. (b) Extended to recognise a third level of decision-making in the realm of strategy, security, decision-making under deep uncertainty, innovation and infrastructure, which also speak to the longer-term evolution of systems: broadly these go beyond the realms in which quantified cost-benefit approaches are practiced, or indeed practicable. There are thus three 'domains' of decisionmaking, not two. And (c) these three domains could be applied as a framework to help organise corresponding observations in many chapters of the report. For example, a lot of the material in the Buildings chapter is really grounded in characteristics of the first domain. A lot of transport discussion, with emphasis on infrastructure and innovation, is more about third domain processes. The norms of mainstream energy sector investments tend to be strongly about second domain chacteristics, which corresponds most closely to classical economic assumptions. For sectors and issues dominated by first and third domain processes, however, there is no intrinsic reason to assume that 'business as usual' corresponds at all to optimising behaviour or 'least cost'. At present, too many of the chapters seem to present information which jumbles up these different processes, and leaves the reader somewhat confused about the actual implcations for costs and policy responses. This may also help to provide an classificaiton framework for policy instruments, since the kinds of policy instruments appropriate to the different domains are very different, and have specific roles in relation to the characteristics of those domains. I will submit to the Secretariat the chapter from my book which is focused on defining these 'three domains' and tries to give some sense of their relative significance in relation to energy and CO2 issues.	Noted.
16912	All AR5	0				It would help enormously if chapters could be more systematic in including an up-front summary of the state of knowledge represented in preivous IPCC reports. In addition, the SPM or Technical Summary should be able to compile estimates of mitigation potentials and costs, in ways analogous to AR4, and to draw any comparison with AR4 in this realm. It is not at all obvious that the chapters yet provide any solid basis for such an effort.	Taken into account. We have encouraged all chapter teams to highlight what has changed since AR4.
9407	All AR5	0				Especially in Chapter 7, 9, and 10, when it comes to discussing amounts of mitigation potentials by sector (for example, reporting as XX MtCO2 mitigation potentials), it needs to be carefully clarified whether effects of electricity savings in the demand side are included in the demand side or such electricity saving potentials in the demand side are counted in the Power sector. Depending on its definition, results of mitigation potentials by sector will be different. This point was sometimes confusing in the IPCC AR4, thus it should be clearly mentioned or keep it consistent across chapters in the AR5.	Noted. We do not adopt the concept of mitigation potentials as AR4 did. But whenever it is used we should aim to be as transparent about methodology as possible.
14259	All AR5	0				I would be happy to provide additional comments if I had time (so, please let me know if the deadline is extended or if one can provide comments later/to later revisions).	Rejected. We cannot extend the deadline.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
9106	All AR5	0				I think that two topics would deserve inclusion to the publication, namely agglomeration economies and rebound effect. Cities are shown (as mentioned in the draft) to lead the global economy creating wealth and attracting both affluent consumers and businesses. This leads to cities being consumption centers as well where lifestyles may be much more GHG intensive than in less dense urban/human settlements. This may be a strong opposite effect for GHG mitigation through more dense structures. Related to this is rebound effect. If GHG mititgation leads to monetary savings the savings will be at least partly spent and will cause additional emission. E.g. Turner has demonstrated how the rebound effect may lead to even an overall increase in the emissions (Turner, K. (2009): Negative rebound and disinvestment effects in response to an improvement in energy efficiency in the UK economy, Energy Economics, 31, 648–666.)	Accepted. We have for the first time a chapter on human settlements and infrastructure to better understand the role of spatial structure and urban planning. We have further improved the coverage of the rebound effect in various chapters of the report.
9125	All AR5	0				As a suggestion to reduce the amount of pages in the report, to my opinion the sections 12.5-12.8 should be heavily reduced. The level of detail is not in balance with the earlier sections especially consedering the descriptive nature of the sections in general.	Rejected.
13237	All AR5	0				More integration between chapter 8 (dealing with behavioural aspect of transport) and chapter 12 (dealing with spatial planning) could lead to interesting debate : work by Schaefer or Laterrasse acknowledge that to combine behavioural measures (e.g. energy tax) and planning measures (e.g. densify city centers) can theoretically have greater impact on energy use for transportation.	Accepted. This is an important issue we have worked upon and will continue to work on towards the final draft.
13247	All AR5	0				More integration between chapters 8 and 12 could potentially reduce in length both chapters.	Generally accepted, but not sure about length reduction.
4045	All AR5	0				The issue of whether 2 degrees C can or cannot be achieved by the end of this century needs to be assessed and discussed transparently and robustly. As a member of the U.S. National Climate Assessment Development and Advisory Committee, we were also faced with the same question and have to deal with this head-on. It is clear from all modeling that the kind of policies and actions needed to achieve 2 degrees C would be impossible. What are the options and more realistic scenarios which the world can achieve?	Rejected. We cannot easily make a scientific judgement of feasibility. In fact, since AR4 there is more scenario evidence than ever consistent with a likely 2°C world. Working Group 3 puts an emphasis on discussing the technological, economic and institutional requirements of such a transition. Policymakers will then need to decide themselves what they can achieve or not.
4314	All AR5	0		0		My main comment is that, almost without exception, the chapter avoids discussing evidence that casts doubt on the main thesis–that renewable energy can make a large difference to carbon dioxide emissions. This is not unbiased science as I know it. I would also comment that it is extremely wordy and much of what is quoted adds little to the argument. I think it would be easy to reduce the length by 50% and, as a result, the important points would be easier to determine from the mountain of often irrelevant detail. My understanding is that this chapter takes as a given that greenhouse gases cause dangerous global warming and it is all about how to reduce the concentration of greenhouse gases. Therefore, the numerous references to 2° warming and various statements about the dangers of global warming should not be in this chapter. If they're all deleted–as they should be–then the chapter will be more objective and shorter.	Rejected. The report, in fact, stresses the importance of CCS and bioenergy for staying within 2°C. This is highlighted by the latest science trying to understand how difficult individual technologies can be replaced in a mitigation technology portfolio.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18576	All AR5	0				General comments Going through the material I was struck by three points: There is no obvious narrative or storyline, just an enormous amount of material. The overiding conclusions are unclear. How does the material relate to WG I and WG II material? Buildning on the three points I think it is really important to try answer three rather general questions. Why is the material produced? The material is said to be policy relevant but not policy prescriptive, but relevant to whom? To politicians? To policymakers? To scholars and experts? The extensiveness and comprehensiveness rule out a majority of politicians and policymakers. The lack of clear conclusions and reader-friendly summaries strengthen the effect. It is hard to read out any sort of general message or storyline. What is the intention? What is the consequence? Based on the material as it is presented you can easily draw and underpin very different stories and there is a clear risk that the material is partly “hijacked” by persons wanting to drive their own theses. A part of the problem is that the material is more of a mitigation encyclopedia (though not fully developed) but pretending to be a report. There is a choice to be made. The bottom-up approach also adds a lot of confusion since the same themes come up again and again in different chapter but partly building on defferent material and often pointing in different directions. What is the material trying to cover? From what I can read out the intention is to give an overview of existing knowledge form a scientific perspective and thereby give advice to policymakers. Scientific and knowledge is interpreted as peer reviewed material but I would argue that policymaking, even if built on existing knowledge and experiences made, goes far beyond what can said to be proven based on scientific methods. Sometimes I get the impression that the material tries to prove that going a direction has given consequences or try to prove the true consequences of a policy which I am convinced is fundamentally wrong. There is no such thing as correct or false choices purely based on science. Remember, policy relevant but not policy prescriptive	Noted. First drafts of the summary documents are provided with the SOD. They may provide a more concrete idea of the main findings of the report. The report is aimed at an array of policymakers, but the key outlet of IPCC reports are the international climate change negotiations.
11657	All AR5	0				The issues of HCFCs and CFCs are written in Chapter 1, 5 and 10, however, the banks of HCFCs and CFCs contained in existing equipment, foams and other products are not described. This is very important issue as these emissions from the bank with high GWP are not regulated neither by the Montreal protocol nor the Kyoto Protocol. The IPCC/TEAP special report in 2005 can be referred to present a significance of the reduction and the potential CO2-equivalent emissions when released to the atmosphere.	Noted.
10822	All AR5	0				In relation to emissions "embodied" in trade, the terms "embedded" and "embodied" are used. I suggest to consistently use "embodied"	Accepted. We have worked and will continue to work on consistency issues.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
11322	All AR5	0				Comments above refer - the chapters are not linked even though the content is. Chapters reviewed (5 and 12) could benefit from reflecting observations in Chapter 13, and vice versa.	Accepted. We have worked and will continue to work on cross-linkage of contents across chapters, but this is easier once the material is matured.
12840	All AR5	0				There are co-benefits but also conflicting items when it comes to measures and solutions. An example of this is the food-feed-fuel-fibre-forest topic as it comes to increasing biofuel and energy crops. As this differs between world regions like Europe with scarcity of land and other continents without scarcity, I propose to discuss this in some detail in Chapter 14. Actually I mean a solution for choice of land use valid for South America is not necessarily valid for Europe when it comes to biofuel production.	Accepted. We have added an bioenergy appendix to chapter 11. The body of the chapter also deals with the issue of land competition. We have added tables on co-benefits and adverse side-effects of mitigation measures to all sectoral and cross-sectoral chapters (6-12).
8936	All AR5	0				I miss in this report an overview of the literature that looks into the implications of different development pathways with respect to urbanization, income distribution or population structure for baseline emissions. This field has made major progress since the last Assessment Report. This literature includes, for instance, the literature that focuses on the future relations between urbanization and emissions, such as B. C. O'Neill et al., Global demographic trends and future carbon emissions. PNAS 107 (2010); V. Krey et al., Urban and rural energy use and carbon dioxide emissions in Asia. Energy Economics in press, (2012) and B. O'Neill, X. Ren, L. Jiang, M. Dalton, The effect of urbanization on energy use in India and China in the iPETS model. Energy Economics, (in press). Also, the relation between income distribution, energy access and baseline emissions is not discussed, as would be available in, for instance, B. J. van Ruijven et al., Model projections for household energy use in India. Energy Policy 39, 7747 (2011). I would expect a discussion of this literature in either Chapter 4 (4.3 or 4.4) or in Chapter 9 (9.2.3 or 9.3.8), or at another place that I might be overlooking	Noted. We discuss this material in chapter 12 and in various other places.
8939	All AR5	0				Access to electricity is discussed in multiple sections (4.3, 7.9, 9.2, 9.4, 14.2) and with different numbers for current access and using different future projections. Current access is probably best estimated by the IEA or the Global Energy Assessment. There have been multiple future projection produced over the past years (again IEA, GEA, or B. J. van Ruijven, J. Schers, D. P. van Vuuren, Model-based scenarios for rural electrification in developing countries. Energy 38, 386 (2012)), which could be used as a range for future projections of access to electricity, the impact of full-access on emissions and the potential for renewable energy to increase access to electricity	Taken into account.
3273	All AR5	0				Further coordination across chapters may be needed to reduce overall volume. For example, 2.4.4.3 and 3.11.1.1 make similar argument in some parts, referring to Attari et al. (2010) and Allcott (2011). Most of chapters include behavioural aspects, barriers and opportunities of mitigation. In general, they consist of two parts; common elements to all sectors and sector specific information. Common elements can be described under a chapter of "Framing Issues", such as chapter 3. and other chapter should focus on sector specific information.	Accepted. We have worked on the issue of overlap and will continue to do so. Some chapters have been shortened, but we may not reduce the overall length of the report significantly due to the breadth of literature and issues.
9948	All AR5	0				Any abbreviation appeared first time in each chapter should be followed by the complete spelling.	Accepted. We have worked and will continue to work on such editorial issues. But this is best done once the draft has further matured.
7379	All AR5	0	0	0	0	Use of calibrated uncertainty language is almost completely absent in many chapters and sections. This is a major failing of the FOD that requires urgent and consistent attention for the next draft.	Accepted.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
7380	All AR5	0	0	0	0	The treatment of GHG metrics (GWPs etc) is still very patchy in the FOD and does not do justice to the available literature or the policy-relevance of this issue. Metrics are discussed in 3.10.3, but none of the sectoral chapters seem to be aware of this or make any attempt to show how their emissions profile or mitigation potential could change under alternative metrics. This would be crucial for AFOLU, but also industry and transport. Lots of literature on the latter, and it could easily be done. Chapter 5 shows emissions trends only for GWPs, even though this would be a great place to demonstrate how different choices of metric would change the perceived contributions from different sectors. Chapter 6 makes brief reference to the role of metrics in transformation pathways in one small sub-section, even though different metrics could have far more pervasive effects. This is not to say that metrics are crucially important: in contrast, the FOD is missing an opportunity to demonstrate that the closer the policy framework is to a first-best world, the less metrics matter; but the more patchy the policy framework, the more significant could be the regional and sectoral implications of alternative metric choices.	Accepted. We have worked on the metrics section in chapter 3 and chapter 6.
6854	All AR5	0	0			These WGI TSU and Co-Chair review comments have been prepared by Thomas Stocker, Gian-Kasper Plattner, Alexander Nauels and Yu Xia.	Noted.
6855	All AR5	0	0			The WGI TSU and Co-Chair review comments cover issues identified in the WGIII FOD related to the WGI contribution to the AR5 with regard to consistency, missing references, and sometimes reassessments of WGI-material. We do not attempt to propose alternative text etc. but simply flag the issues. In many cases we feel that providing the physical science basis context by referring to the WGI AR5 rather than doing a separate assessment would already help substantially in avoiding duplication of assessments and ensuring consistency between WGIII and WGI.	Noted.
6856	All AR5	0	0			Referencing to IPCC WGI reports (to AR4 and/or AR5 FOD) currently is weak and in the rare cases it's done it's often too unspecific, i.e., lacking information of which Chapter of a specific report is being referred to. Often the entire report, or the SPM-only, is referred to as a whole. We suggest to be as specific as possible and to refer to the Chapters in the underlying report supporting the statements made whenever possible and feasible.	Accepted.
6857	All AR5	0	0			As a general comment, we strongly encourage the WGIII authors to avoid reassessing topics concerning the physical science basis in order to reduce redundancies and, more importantly, inconsistencies between the WGIII and WGI contributions to AR5. In case specific mention of physical climate science assessments is needed, please refer to the WGI AR5 and carefully ensure consistency with the assessment provided by the WGI AR5 Chapters. One topic for which this seems particularly relevant is Geoengineering. Geoengineering is mentioned in several of the WGIII FOD Chapters with several instances where a reassessment of the physical science basis of individual Geoengineering Technologies is provided. This clearly needs to be avoided (see also the related Chapter-specific comments).	Accepted. We have worked hard on the section on geoengineering and will continue to work with WG1 colleagues to ensure consistency.
6858	All AR5	0	0			FAQs: We suggest that the FAQs within the WGIII contribution to AR5 carefully stay within the remit of WGIII, i.e., when the Physical Science Basis is mentioned, this should merely serve as a starting point but then the FAQ should focus on mitigation etc.. It is crucially important that the WGI-relevant starting points provided in these WGIII FAQs are consistent with the assessment in WGI.	Noted.
6859	All AR5	0	0			FAQs: We note that in contrast to the WGI approach to FAQs, in the WGIII FOD FAQs are mostly short and do thus not allow for detailed answers. This approach, in our view, bears the risk to produce non precise language or gloss over caveats and subtleties. In order to help the reader, we strongly suggest that cross-references for "futher reading" or "detailed information" are provided as an integral part of the short FAQs, and that information on associated uncertainties be added.	Noted.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5421	All AR5	0	0			Overall, this report made an excellent summary for the key literature. I just add a few more comments to this report before it can be released.	Noted.
5422	All AR5	0	0			This report mentions the “green growth”, but a definition of “green growth” is missing in the document. What is the essential relationship of “sustainability” and “green growth”. Does the “green growth” belong to the “sustainability” category.	Accepted. We will try to avoid using too many broad concepts like SD and green growth.
5423	All AR5	0	0			Many of the citied references are a little bit old. The literature published in recent three years (>2009) was limited citied in this report. In addition, some important policy papers were still missing.	Accepted. We continue to add to the reference lists. Reviewer suggestions are one key input for this.
5424	All AR5	0	0			Climate action plans were an emerging new issue since last report. This report did address this important trend. However, the strengths and weaknesses of the current climate action plans were not fully identified. The current climate change action plans well addressed the energy efficiency in building, transportation and built environment; however, they did not appropriate consider other components (such as natural resources, agricultural lands, etc).	Noted. We have strengthened this discussion in chapter 12.
17727	All AR5	1		1555		referencing should be correct and uniform across all chapters; such as Sims et al. , rather than R Sims et al. Correct references such as "D Arent and Tol, Forthcoming"	Accepted. We are continuously working on such consistency issues.
7306	All AR5	1				Comments will be limited to "waste" management strategies, waste sector emissions, and mitigation costs & potentials.	AA: This is not a comment but rather a note
7317	All AR5	1				This is a long comment related to how emissions & mitigation potential associated with waste management activities were quantified in the AR5.WGIII report to date. Even through "Waste and Wastewater" had the smallest sectoral emissions in the AR4, this sector is, nevertheless, an IPCC reporting sector and, for completeness, it seems that this sector should have been explicitly included as a "sectoral chapter"in the AR5 (as was done for the AR4.WGIII.Chapter 10) or alternatively as a unified discussion in another sectoral chapter (?industry, as was generally the case prior to the AR4). Moreover, there are no clear guidelines for the definition of waste in the various sections of the AR5 draft where is it mentioned (municipal post-consumer waste, agricultural or forestry waste, mining & other industrial processing wastes, wastewater, etc.) Generally, in the current draft for the AR5, there are bits and pieces of discussion pertaining to waste management in several chapters (esp. 1,5,7,12) with sometimes contradictory numbers and erroneous citations (see other detailed comments). Importantly, in Chapter 1 for the WGIII AR5 FOD, the waste sector is generally missing from figures giving comparative sectoral estimates (Figs.1.4, 1.5 as mentioned above). Chapter 4 mentions waste in the context of sustainable development and consumption "accounting" practices (see 4.4.5.1). Chapter 5 (5.7 esp.) includes figures (FIgs. 5.7.1 through 5.7.5) detailing emissions from waste citing one major reference (Gerlagh and Van der Zwaan, 2012) which has to be erroneous because that reference does not discuss waste (instead, it discusses economic modeling of long-term CO2 leakage from CCS projects). The actual numbers given are similar to AR4.WGIII.Chapter 10 numbers, so perhaps that is the source with respect to the references cited therein? Chapter 7 (Annex) briefly discusses bioenergy from organic waste & residues--see 7.A.3.2. Most discussion of "waste" occurs in Chapter 12 in the context of "urban settlements, infrastructure, and spatial planning." Although one might argue that "urban" waste GENERATION is indeed an important aspect of the urban infrastructure, many activities related to urban waste MANAGEMENT occur at urban fringes or at remote sites far removed from urban/suburban development. Also (as mentioned above with respect to "waste" definitions), it is unclear how emissions from agricultural waste, forestry residues, and industrial waste/byproducts are being considered and quantified (or not being considered) in this report. Clarifications would be welcomed.	AA: Accepted - The main discussion on waste section will be discussed in chapter 10. Coordination with other chapters 5, 7, 11, and 12 will be done to ensure consistency. Also, reference used in chapter 5 figures will not be used and EDGAR data will be used instead. Agricultural waste and forestry residues are discussed in the bioenergy section. MYR (as per Estela's email): a new figure has been done for chapter 5 that shows global emission trends for the four categories in the Waste sector, and their relationships with GDP and population trends normalized at 1970 based on the updated EDGAR database. The figure was made thinking in avoiding any overlap with Chapter 10.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
7321	All AR5	1				This is a second long comment related to quantification of waste, GHG emissions from waste, and mitigation of GHG emissions from waste. As discussed in the AR4.WGIII report (Chap 10), annual numbers for waste generation from various countries can have high uncertainties and could greatly benefit from improved standardization of terminology and accounting at the national level. Especially, for many developing countries, the role of the "informal sector" for collecting, processing, and recycling waste is largely unquantified. I would highly recommend a 2007 World Bank book by Martin Medina titled "The World's Scavengers: Scavenging for Sustainable Consumption and Production". Although the overall numbers from various cities are not summarized in a table for readers, his specific case studies detailing jobs/livelihoods gained from informal waste recycling, as well as the economic value of those jobs and the materials recycled provides important quantification of the impact of this sector for selected global cities and regions. The challenge is to improve the living conditions for these waste workers and their children. However, recognition of the magnitude of the informal recycling and its economic value is an important point to make in the AR5.	AA: Taken into account - This issue will be included in the co-benefits discussion.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
7322	All AR5	1				This is a third long comment related to quantification of GHG emissions from waste. It's important to get the numbers right, esp. as many studies are beginning to focus on regional and local (urban-scale) emissions to better understand smaller-scale CH4 emissions using innovative tower-based, tracer, and aircraft-based methodologies for specific sources. Historically, the largest % of GHG emissions from waste has been from landfill CH4 (about half/see AR4.WGIII Chapter 10). Also, the IPCC National Inventory Guidelines for Waste (2006) have historically based landfill CH4 emissions on a first order kinetic model (termed FOD, "First Order Decay") which estimates the mass of CH4 produced over decades from waste landfilled in a given year in a given location. However, the existing methodology does not take into consideration the climate and soil microclimate conditions which limit those emissions, specifically: (1) the thickness and physical properties of site-specific cover materials, including seasonal soil moisture changes which limit gaseous transport in the cover materials; (2) the effect of engineered gas recovery on reducing soil gas CH4 concentrations at the base of the cover and thus limiting diffusive transport of CH4 to the atmosphere, and (3) seasonal CH4 oxidation (by methanotrophic microorganisms) in site-specific cover materials which is highly dependent on temporal variations in soil moisture and temperature. [For (3), current methodology allows either zero or 10% CH4 oxidation, the latter based on one of the first studies in the literature, Czepiel et al., 1996, JGR). In recent years, we have developed a freely available site-specific modeling tool which has been field-validated for 5 sites in California and is currently undergoing global validation. This model takes (1) - (3) into consideration through linkages with globally-validated U.S. Dept of Agriculture climate and soil microclimate models, scaling of oxidation to temperature and moisture via extensive supporting laboratory studies, and modeling of a typical annual cycle at 2.5 cm depth increments and 10 min time increments for user-specified site-specific daily, intermediate, and final cover materials (including both soil covers and engineered materials). The model was originally developed and validated for the state of California (and is called CALMIM, for CAlifornia Landfill Methane Inventory Model). The pertinent references are as follows (NB: ref. 1 gives additional background information on field and laboratory research by many groups over the last decade which facilitated the development of CALMIM): (1) Spokas, K., Bogner J., and Chanton, J., A Process-Based Inventory Model for Landfill CH4 Emissions Inclusive of Soil Microclimate and Seasonal Methane Oxidation, J. Geophysical Research-Biogeosciences, 116: paper G04017, 19 p. (2011); (2) Bogner, J., Spokas, K., and Chanton, J., Seasonal Greenhouse Gas Emissions (methane, carbon dioxide, nitrous oxide) from Engineered Landfills: Daily, Intermediate, and Final California Landfill Cover Soils, J. Environ. Quality 40:1010-1020 (2011). (3) Spokas, K., and Bogner, J., Limits and dynamics of methane oxidation in landfill cover soils, Waste Management 31:823-832 (2011). These 3 references have been emailed to the TSU as "authors, year".	AA: Taken into account. The text will address the limitation in emission estimation methodology.

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7323	All AR5	1				This is a 4th and final long comment related to quantification of GHG emissions from waste. There are a large number of existing CDM (Clean Development Mechanism) projects related to the recovery & utilization of landfill CH4, as well as CDM projects which rely on the "avoidance of landfill CH4 generation" through composting, combustion, or anaerobic digestion. Again, it is important to get the numbers right. The majority of landfill gas CDM projects are under-producing relative to the modeled (FOD model) CH4 generation and recovery predicted in their Project Design Document (PDD). In many cases, the waste composition was poorly known (including the impact of informal recyclers and on-site waste burning to recover metals), overly-optimistic modeling by sometimes-inexperienced developers, and uncertainties regarding the extent (volume) of waste in place. For landfill CH4 projects, however, the PDD projections do not matter so much since the credited CERs are quantified directly and solely on the CH4 collected and destroyed by combustion. However, for the "avoided landfill CH4 generation" projects, the CERs are credited on the modeled (presumed) CH4 that would have been generated, IF the organic waste had been deposited in a local landfill site. Given the variability in landfill CH4 generation at specific sites (as landfills are inefficient anaerobic digesters in the ground), the multiplicity of site management factors which direct affect CH4 generation & recovery, and lack of inputs regarding the factors which actually limit emissions (discussed in previous comment), one might argue that the "avoided CH4" projects' CERs are not always real, quantifiable, and additional. This issue should be re-examined with respect to continuing Kyoto, bilateral, or other mechanisms.	AA: Taken into account. The text will address the limitation in emission estimation methodology and the possible impact on offset estimation which are used as a mechanism to help reach mtigation targets.
2238	All AR5	1				This whole Report is based on the assumption that emissions of greenhouse gases have a harmful effect on the climate. There is no evidence for this assumption, so the entire Report is unnecessary..This assumption is based on personal opinions of the value of the absurd model of the climate sponsored by the IPCC. These opinions are made by people paid to make them, so the conflict of interest means that they are worthless.	Rejected. We are assessing the science of climate change mitigation in the WG3 contribution. Potentially harmful climate impacts and the physical science foundations are discussed by WGs 1 and 2. The essence of these report point in a different direction.
2239	All AR5	1				Annex 1 Should have definitions for CONVECTION and LATENT HEAT which are the most important methods of heat transfer in atmosphere	Noted.
16665	All AR5	1				I mainly reviewed chapters 3 and 4. There is a lot of both overlap and inconsistency between them, and a great deal of self-reference on the part of some of the authors. This compromises the claim that this report is supposed to provide a snapshot of the state of the art in this field. Some references should be deleted as not central to the climate ethics discussion (or at least multiple references to the same piece), and others added. I feel awkward about the fact that many of the references that I suggest adding are to my work. On the other hand it seems strange that after 24 years of contributing to this field there is no mention of my work in the 24 pages of chapter 3 references. A further point: I have a lingering concern that both chapters are too prescriptive for an IPCC report.	Noted. We have worked on the overlap between chapters 3 and 4 and will continue to do so. We continuously update the references during the drafting process.
6220	All AR5	1		1555		Throughout the report the graphs are much too complicated and need considerable simplification and careful consideration needs to be given to the colours used. Complicated graphs impede understanding of the message.	Accepted. The work on figure material has been a key focus during the revisions and will received continued priority. Note once the figure material is stable, it will be reproduced by a professional graphic designer.

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12908	All AR5	1				The FOD seems to have still value judgements in which should be avoided.	Rejected. Value judgements cannot be avoided, but need to be made transparent. For this very reason, WG3 has provided an array of three framing chapters, where this transparency is established.
15051	All AR5	1	1	36	41	Annex I - The definition of value capture, walkability, complete streets, automotive dependence, automobility were not considered in the glossary.	Noted.
15052	All AR5	1	1	36	41	Annex I - The definition black carbon sould be improved to fit Chapter 8.	Noted.
15053	All AR5	1	1	36	41	The following a anacronysm that are importatn for Chapter 8 were not considered: TOD, BRT, LRT, PRT, HRT, LDV, ICE, CH4, EV, BEV, PHEV, NGV, FCV, V2G, ITS, VKT	Noted.
7050	All AR5	1	1	1	1	Did not use this row because "Comment" field does not wrap.	Noted.
7075	All AR5	1	1	1	1	this line not used because the cell does not wrap the text	Noted.
4689	All AR5	14				throughout the FOD, particularly noted in Chapter 1 (p. 14), Chapter 6 (p. 15) and Chapter 8 (p. 52) the loose references to 2 degrees Celsius temperature targets detract from the effectiveness of the work. In the 2010 paper by Boykoff, Frame and Randalls ''Discursive stability meets climate instability: A critical exploration of the concept of 'climate stabilization' in contemporary climate policy', Global Environmental Change, 20(1), 53-64, they state the following: An important framing of climate science and policy today revolves around the concept of 'climate stabilization'. While many factors contributed to the rise of this concept in the 1980s, this article reasons that this 'stabilization' discourse is problematic. Drawing upon emerging climate science, the article suggests that the heavy focus on monotonically increasing concentration pathways, stabilization and climate sensitivity have led to insufficient policy inferences relating to the range of uncertainties, the weak relevance of equilibrium for today's policy and the idea that there is a magical threshold of 'dangerous anthropogenic interference'. However, this article argues that the stabilization-based discourse became attractive because stabilization and its ancillary concepts developed from the connected arenas of climate science, environmental economics and energy concerns. That this discourse is tethered to these ways of thinking is unsurprising; but that it has remained relatively free of critical scrutiny can be associated with fears of unsettling often-tenuous political processes taking place at multiple scales. Nonetheless, with this historical trajectory in mind and on the cusp of an agreement in Copenhagen to succeed the Kyoto Protocol, we argue that the time has come to re-assess the concept of stabilization and to explicitly move to more productive ways of framing action to address anthropogenic climate change. The implications of this historical analysis is that stabilization is a problematic way of conceptualizing climate policy and that new approaches need to be found that focus on short- to medium-term decarbonization goals. This needs to be considered when making these claims, and/or parroting comments from UN negotiations between parties.	Noted.
4345	All AR5	4	16	4	22	"production-side option" and "demand-side potion" are new categories. Detail explanation is necessary in the first place of this section. Figure or table may be helpful for understand. I can see the word of "supply-side" in the text. Is this same as "production side"?	Noted.
4346	All AR5	4	1	5	26	The authors seem to avoid duplicative discussion in AR4, but important massages to political decision makers should be incooporated. It would be better to address clearly on several options relating to forestry.	Accepted. We continue to focus on "what's new", but restate AR4 finding if they are central to the understanding.

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16052	All AR5	5				The message of AR5 could be more assertive on the remaining possibility or not of sufficient mitigation to attain international goals limiting climate change, either at the technical or political levels. Yes or no is it still possible? If no consensus is here, could the report at least be blunt about the lack of consensus?	Rejected. Feasibility of goals cannot be easily assessed by science. We outline the economic, technological andinstitutional requirements and as such provide a basis for policymakers to judge the feasibility of alternative mitigation pathways.
2160	All AR5	All				Although the Contribution's recommendations are directed at policy makers, it lacks specific "sectoral" policy recommendations that could drive transformation of engineering practices through regulatory and standard changes. Without setting such policies directed at engineering practices, engineers might be slow to adapt their practices that are necessary prerequisites to any adaptation of the built environment/infrastructure to climate change. It seems to me that the Contribution has the objective of recommending policy changes at sectoral/high level, and does not go to specificity levels that are appropriate for engineers to take hold of something as a basis to transform engineering practices. It might be necessary to have an additional effort by another group to take these policies in the Contribution and establish policy interpretations to bring them to engineering-specific changes in standards and practices.	Rejected. We have a whole serious of sector chapters, which make important conclusions, which are also relevant to engineering.
8358	All AR5	all				CO2, Co2, CH4, SO2, N2O and etc. should be revised according to their mocular formula.	Noted.
3485	All AR5	all				Throughout the entire report, chemical symbols are written incorrectly, without subscripts and superscripts. For example, the correct symbol for CO2 has the 2 as a subscript [this form does not allow me to format it correctly]. Sometimes you have it right, but in many places it is wrong. This needs to be cleaned up for all chemical symbols throughout the report.	Accepted. We have been revieweing this and will continue to do so.
7653	All AR5	Annex I, 7				Could add 'carbon footprint' to the Glossary, e.g. from; Wiedmann, T. and Minx, J. (2008) A Definition of 'Carbon Footprint'. In: C. C. Pertsova, Ecological Economics Research Trends, 1: Chapter 1, pp. 1-11, Nova Science Publishers, Hauppauge NY, USA. https://www.novapublishers.com/catalog/product_info.php?products_id=5999	Noted.

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Expert Review Comments on the IPCC WGIII AR5 First Order Draft – General

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